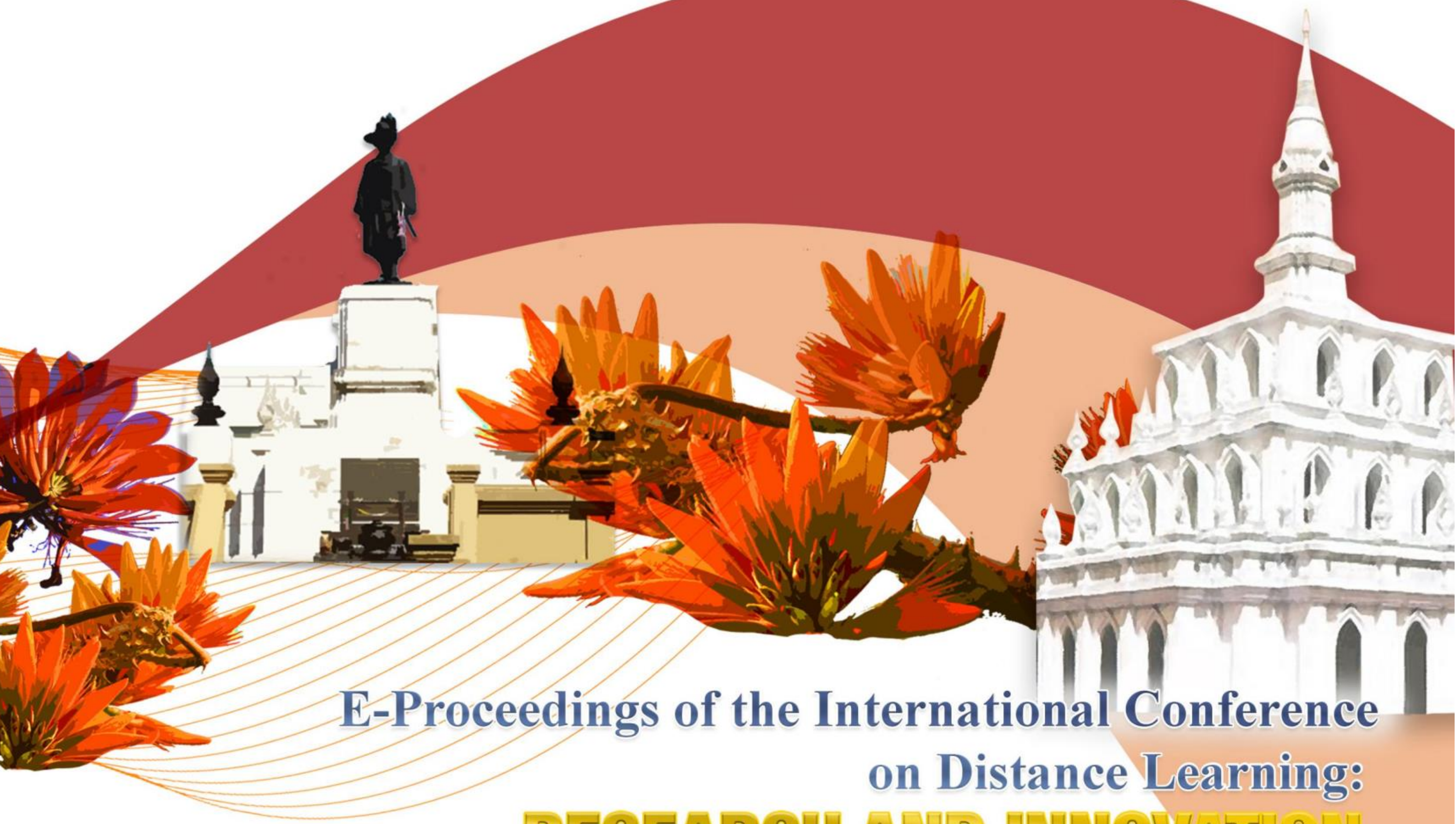
United Nations
Educational, Scientific and
Cultural Organization

Sustainable
Development
Goals

Bangkok Office
Asia and Pacific Regional Bureau
for Education

STOU 40th ANNIVERSARY



E-Proceedings of the International Conference on Distance Learning:

RESEARCH AND INNOVATION FOR A DIGITAL SOCIETY

1 - 3 August 2019

Sukhothai Thammathirat Open University, Thailand

Supporting Partners

SEAMEO

TCEB
THAILAND CONVENTION
& EXHIBITION BUREAU

TCU
THAILAND CYBER UNIVERSITY

E-Proceedings of the International Conference on Distance Learning

ISBN: 978-616-16-1953-4 (e-book)

Copyright © 2019 Sukhothai Thammathirat Open University

All rights reserved.
No part of this publication may be reproduced, stored or transmitted in any form or any means without prior permission from Sukhothai Thammathirat Open University.

Published by
Sukhothai Thammathirat Open University
9/9 Chaengwattana Road, Bangpood
Pakkret, Nonthaburi 11120 THAILAND
Tel: +66 2504 7171-6
E-mail: if.proffice@stou.ac.th

TABLE OF CONTENTS

Page

MESSAGE FROM THE PRESIDENT OF STOU 1

MESSAGE FROM THE DIRECTOR OF UNESCO BANGKOK 3

KEYNOTE SPEAKERS 5

SUB-THEME 1 TRENDS ANALYSIS IN DISTANCE LEARNING 11

Retrospective Review of Legislations and Policies on Distance Education in the Philippines 12

Open and Distance Learning Program for Secondary Schools in West Java Province, Indonesia 21

Evolution of Distance Education in Bangladesh: A Critical Analysis 29

Design of a Students' Learning Web Site using AI Chat Bot Based on FAQ data for Enhancing Remedial Education at the Open University of Japan 41

Correspondence to Intelligent Flexible Learning Model: Challenges and Implications at the Open University of Sri Lanka 46

Online Learning Community Model to Enhance Knowledge Management in Research: Challenges in Distance Education 55

Teacher's Attitude towards OER: A Comparative Study of Uttarakhand Open University, India and Sukhothai Thammathirat Open University, Thailand 64

Factors Affecting Students' Academic Performance during Examinations: A Study of Live Helpline 73

The Introduction of a Double-Layered Community of Practice Model: A New Conceptualisation of Online Learning 82

The Role of Smart Media in Enhancing the Distance Learning Capability: Teacher's Motivation, Grades, and Preferences 90

Pre-sessional Provision for Distance Learning Students: A Universitas Terbuka Experience 96

Enhancing Distance Learning of Art, Culture and Heritage Using Digital Technology at Museums in Bangladesh 100

SUB-THEME 2 DISRUPTIVE INNOVATIONS IN DISTANCE LEARNING 116

A Study of e-Assessment System and its Efficacy in Evaluating Learning Outcomes 117

Effectuality of Using Chatbox Class Discussion (CCD) Platform among Filipino Grade 12 Students 127

Technological Innovation for Achieving SDG4 in Coastal District of Bangladesh ... 136

SUB-THEME 3 SUBJECT-SPECIFIC RESEARCH IN DISTANCE LEARNING 142

Who are the International Students in Online Higher Education? 143

Effectiveness of Blended Learning in Teacher Education Programme through Distance Mode 151

Influenced Drivers of Human Capital of Innovation Creativity in a Distance Education Organization 160

Ubiquitous Education: Platform and Environment for Future Education 170

Strengthening Civil Rights and Civic Duties in the Democracy on Election for People with Autism 177

The Research and Development of a Non-Human Proctored Online Assessment Platform 182

SUB-THEME 4 LIFELONG SKILLS DEVELOPMENT FOR A DIGITAL SOCIETY 188

Study of the Potential of Community Learning Resources and the Learning Needs and Opinions of People toward the Development of the 21st Century Smart Community Learning Resources to Enhance Lifelong Learning Characteristics of People 189

Creating Webpages as an Electronic Portfolio Foundation for Academic and Lifelong Learning Applications 197

‘TheTeacherApp’ as Concept Building Approach for Digital Teachers: A Lifelong Skills Development 206

Use of Innovative Technology Solutions in Open & Distance Education & Skill Development 216

Can a Facebook Group Make People’s Lifestyle Zero-Waste? 223

The Development of Electronic STOU-EPT 230

ACADEMIC COMMITTEE 239

INTERNATIONAL REVIEWERS 240

MESSAGE FROM THE PRESIDENT OF STOU

It is my great pleasure to welcome you to Sukhothai Thammathirat Open University (STOU) for **the International Conference on Distance Learning: Research and Innovation for a Digital Society.** We are delighted to have you here, I wish you a fruitful conference, and hope you enjoy your time in Thailand.

STOU was founded as Thailand's eleventh state university in 1978 and the first open university in Southeast Asia to teach via distance education. We offer a full range of programs using distance education, allowing anyone, anywhere, to take advantage of the benefits of higher education. This means that our programs serve the educational needs of working professionals, traditional bachelor's degree students, and learners who might find it difficult to attend a conventional university, such as the disabled, those living in remote areas and prison inmates. In four decades of existence, STOU has had a significant impact on Thai society; as approximately 500,000 graduates have gone on to apply their knowledge and skills for the benefit of society.

I would like to emphasize that the university's human resources are the heart of the university, with ICT and language as tools for addressing the educational challenges of the present and future. STOU has already broadened our provision of distance education beyond Thailand when we apply more flexible learning strategies in our teaching and learning programs. Besides, the university has created various innovations and technologies related to distance learning in order to achieve the mission of excellence as an open university. To achieve that goal and to celebrate our 40th Anniversary of the Foundation of STOU and to advance the Education 2030 agenda, we expect this international conference will assess the current status of distance learning, share successful initiatives and good practices and explore innovative strategies, partnerships and mechanisms to **promote quality distance learning, research and innovation for a digital society.**

I would also like to thank those who have helped make this conference possible, especially UNESCO's Asia-Pacific Regional Bureau for Education (UNESCO Bangkok). STOU has enjoyed a long relationship with this esteemed organization, which kindly co-hosted this **International Conference on Distance Learning: Research and Innovation for a Digital Society**.

Finally, I am delighted that this international conference is being attended by the distinguished keynote speakers, honorary guests, presenters, and participants. I wish all of you gain the most experience out of this conference and enjoy your time.

Once again, thank you for coming to STOU for the **International Conference on Distance Learning: Research and Innovation for a Digital Society**. And we are truly grateful for this opportunity to share the warmth of Thai hospitality with you.

Prof. Dr. Prasart Suebka
Acting President of STOU

MESSAGE FROM THE DIRECTOR OF UNESCO BANGKOK

Dear Delegates, Researchers and Participants,

Welcome to the International Conference on Distance Learning. On behalf of the Asia and Pacific Regional Bureau for Education at UNESCO Bangkok, it is an honor and privilege to co-host this important conference together with our partners at Sukhothai Thammathirat Open University.

Open and Distance Learning has never been more timely and important, especially given the increased demand for higher education and training throughout the region. Today, over half of the world's tertiary education students are from Asia and the Pacific, which underlines a unique responsibility to ensure equal access to quality education. Distance learning can contribute significantly to the development of lifelong learning systems, yet more effective policies and programmes are required for the provision of quality teaching and learning opportunities throughout the region.

UNESCO is happy to co-host the International Conference on Distance Learning in celebration of STOU's 40th anniversary. The event is an opportunity to reflect and take stock of what is needed to build a truly peaceful and more equitable world. The conference theme on Research and Innovation for a Digital Society is fundamentally linked to the Sustainable Development Goals (SDGs), including SDG4 on quality education. Throughout the region, there is a recognized need to assess the contributions of Open and Distance Learning to improve access and the quality of teaching through a learner-centered approach. UNESCO and the entire UN system will join you on this journey to promote inclusive and equitable quality education and lifelong learning opportunities for all. Thank you for joining us during this conference as we explore your innovative research and insights on how to achieve the SDGs.

Mr. Shigeru Aoyagi
Director of UNESCO Bangkok

Conference Secretariat

Sukhothai Thammathirat Open University
Bangpood, Pakkret, Nonthaburi, Thailand 11120
stouconference2019@stou.ac.th

KEYNOTE SPEAKERS

STOU and Distance Learning in the Next Decade

Professor Dr. Wichit Srisa-an
Chairman of the STOU University Council
Founding President of STOU
Former Minister of Education, Thailand

EDUCATION:
1959 B.A., Faculty of Arts, Chulalongkorn University, Thailand
1961 B.Ed., Faculty of Education, Chulalongkorn University, Thailand
1964 M.A. in Educational Administration, University, of Minnesota, U.S.A.
1967 Ph.D. in Educational Administration, University, of Minnesota, U.S.A.
1969 Certificate in Higher Education Administration (AACTE Administrative Internship)
Akron University, Ohio, U.S.A.
1977 National Defense College, Thailand

HONORS, AWARDS RECOGNITION:
1981 Ph.D. (Hon.) in Humanities and Social Sciences, Ramkhamhaeng University Thailand
1984 Distinguished Fellow, the International Council on Education for Teaching (ICET)
1985 Ph.D. (Hon.) in Education, Khon Kaen University, Thailand
1986 Honorary Degree of Doctor of the University, the Open University, The United Kingdom
1986 Outstanding Achievement Award, University of Minnesota, U.S.A.
1991 Honorary Degree of Doctor of Letters, Andhra Pradesh Open University, India
1995 Ph.D. (Hon.) in Social Technology, Krirk University, Thailand
1996 Distinguished Fellow, Centre for Educational Innovation, UNESCO
2001 Ph.D. (Hon.) in Management Information System, Suranaree University of Technology, Thailand
2002 Meritorious Service Award, Asian Association of Open Universities
2003 Ph.D.(Hon.) in Distance Education, Sukhothai Thammathirat Open University, Thailand
2004 Ph.D.(Hon.) in Knowledge Management, Walailak University, Thailand
2005 Doctor of Science (Hon.), the Open University of Hong Kong
2007 Doctor of Philosophy (Hon.) Christian University, Thailand
2008 Doctor of Letters, Wawasan Open University, Malaysia
2009 Doctor of Buddhism, Maha Chulalongkorn Ratchawitayalai University, Thailand
2009 Doctor of Philosophy, Chulalongkorn University, Thailand
2009 Doctor of Philosophy, Sripatum University, Thailand
2013 The Darrell Bloom Award, International Council on Education for Teaching (ICET)

2013 The Mr. Donald Maclaren, Jr Academic Award 2013, World Association of Cooperative Education - WACE
2014 Doctor of Philosophy, National Taiwan University of Science and Technology
2016 Chairman Emeritus of AUAP (Association of Universities of Asia and the Pacific)
2016 Lifetime Achievement Award, Southern African Society for Cooperative Education (SASCE)
2017 The University of Cincinnati: Hall of Honor in Cooperative Education
2017 Doctor of Philosophy, Srinakharinwirot University
2019 PRINCIPAL FELLOW of the Higher Education Academy 2019, United Kingdom

PRESENT POSITIONS:

- Chairman, Suranaree University of Technology Council
- Chairman, Walailak University Council
- Chairman, Sukhothai Thammathirat Open University Council

INTERNATIONAL COMMITMENT:

- Member, Board of Governors, World Association on Cooperative Education and National Commission for Cooperative Education
- Honorary Professor, Shanghai TV University, Peoples Republic of China

PREVIOUS POSITIONS

ADMINISTRATIVE:

1969 – 1970 Principal, Secondary Demonstration School, Chulalongkorn University
1972 – 1973 Secretary-General, Chulalongkorn University
1973 – 1975 Vice Rector for Planning and Development, Chulalongkorn University
1974 – 1978 Director, University Development Commission, Office of University Affairs
1974 – 1987 Deputy Permanent Secretary, Ministry of University Affairs
1977 Acting Rector, Thammasat, University
1978 Acting Rector, Khon Kaen University
1978 – 1987 Founding Rector, Sukhothai Thammathirat Open University
1987 – 1994 Permanent Secretary Ministry of University Affairs
1990 – 2000 Founding Rector, Suranaree University of Technology
1991 – 1992 Acting Secretary-General of the Civil Service Commission
1992 – 1998 Founding Rector, Walailak University
2000 – 2001 Chairman, Executive Committee, Office of Educational Reform
2006 – 2007 President, Chulabhorn Research Institute
2006 – 2011 Chairman, Sukhothai Thammathirat Open University Council
2005 – 2012 Committee of Civil Service in Higher Education Institution, Office of Higher Education Commission, Thailand
2001 – 2005 Distinguished Member of Rangsit University Council
2003 – 2016 Chairman, Rajabhat Thepsatri University Council
1999 - 2017 Distinguished Member and Vice Chairman (2010-2017), Srinakharinwirot University
2004 - 2017 Chairman, Chalermkanchana University Council

POLITICAL:

1973 – 1974 Secretary to the Minister of University Affairs
1988 – 2000 Member of the Senate, The National Parliament, Thailand
2001 – 2004 Member of the House of Representatives, and Chairman, House Committee on Education, The National Parliament, Thailand
2006 – 2008 Minister of Education, the Royal Government of Thailand

INTERNATIONAL:

- Member, United Nations University Council
- President, International Council on Education for Teaching (ICET)
- President, University without Walls International Council
- Chairman, Consortium on Innovations in Higher Education for Asia and the Pacific, UNESCO
- Chairman, Regional Institute for Higher Education and Development
- Founding President, Asian Association of Open Universities (AAOU)
- Founding President, Association of Universities of Asia and the Pacific (AUAP)

PUBLIC SERVICES:

1969 – 1971	Founding President, Bovornvithyayon Alumni Association
1973 – 1975	Founding President, Karusartsamphan Association
1978 – present	Charter President, Rotary Club of Khon Kaen
1978 – present	Chairman, Chula Volunteer Foundation
1984 – 1988, 2005 – present	Founding President, Sukhothai Thammathirat Association
1989 – 1994	Founding Chairman, Ministry of University Affairs Foundation
1989 – present	Chairman, Prof. Dr. Wichit Srisa-an’s Foundation
1990 – present	Chairman, University of Minnesota Alumni Thailand
1991 – 1992	President Phi Delta Kappa, Thailand
1993 – 1997	President, Fulbright Alumni Association
1994 – 1996	President, Thai-American Association
1997 – 1999	Founding President, Suranaree University of Technology Alumni Association
1999 – present	Founding President, Institutional Research and Higher Education Development Association
2002 – present	Founding President, Thai Cooperative Education Association

PUBLICATIONS:

(1) 5 research works on higher education and education reform
(2) 10 textbooks on education
(3) Approximately 60 articles on education published in domestic and international journals

New Horizon in Open and Distance Learning

Professor Dr. Paulina Pannen
Senior Expert on Academic Affairs
Ministry of Research, Technology and Higher Education Indonesia

Prof. Dr. Paulina Pannen, M.L.S. is an expert in higher education, e-learning, distance education, educational technology and curriculum development. She earned her Doctoral degree in Educational Technology from Syracuse University, USA. She has over 30 years of experience in national and international education, including her tenure as director of the Regional Open Learning Center of the Southeast Asia Ministers of Education Organization (SEAMEO SEAMOLEC), Vice Rector of Academics and Student Affairs at Universitas Siswa Bangsa International, Dean of Faculty of Education at Universitas Terbuka, chairman of several task forces on higher education quality development and improvement programs under the auspices of DGHE, including the development of the Indonesian MOOCs, writes in scholarly journals, and speaks at national and international education forums. Currently she is working as Senior Adviser on Academics to the Minister of Research, Technology and Higher Education.

Innovations in Online Education

Pioneering developments and current opportunities

Professor Dr. Morten Flate Paulsen
Acting Secretary General
International Council for Open and Distance Education (ICDE)

SUB-THEME 1

TRENDS ANALYSIS IN DISTANCE LEARNING

Retrospective Review of Legislations and Policies on Distance Education in the Philippines

Prof. Dr. Ralph A. Sabio[1], Prof. Dr. Cecilia J. Sabio[2]

[1]St. Scholastica's College Manila
Leon Guinto St., Malate, Manila
alsabio@gmail.com
[2]Asian Institute for Distance Education
vpcfjs@gmail.com

Abstract

Legislation is the act or process of making and enacting laws while educational policies consists of the principles and government policies in the educational sphere as well as the collection of laws and rules that govern the operation of education systems. This research is a retrospective analysis of educational legislation and policies that relates to distance education in the Philippines. The objective is to trace the legal foundation that guides the establishment and operation of distance education in the country and see how these policies are implemented in selected distance education providers. The paper is expected to provide valuable information to school administrators, advocates of open learning and distance education and education students on laws, policies and legislation that was made before and after the promulgation of the 1987 constitution. Findings revealed that it is the 1987 Philippine Constitutions which provides for a concrete legal framework that guides distance education providers in its operation. Specifically, Article XIV Section 1 provides that: "[t]he state shall protect and promote the right of all the citizens to quality education at all levels and shall take appropriate steps to make such education accessible to all." It further revealed that all in all there are a total of 18 policies on DE that comes in the form of Republic Act, Executive and Memorandum Orders from 1908 up to 2016.

Keywords: *Distance Education, Philippines, Laws, Policies, Legislations*

Introduction

In the past decades, distance education has been developed as a viable mode of instruction that targets at connecting many of the educational processes and practices between the formal and unconventional sector. In fact, for the last years, open learning and distance education (OLDE) has attracted educational managers and policy makers to consider OLDE as a new measure of educational provision. Specifically in East Asia, distance education institutions and/or programs have developed promptly and played a very significant role in making education accessible and equitable to many (Sabio, C., 2016).

UNDP in its Sustainable Development Goals (SDGs) in Education recognized the important role of education as a main driver of development and in achieving the other proposed SDGs. The new vision is fully captured by the proposed SDG *4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all'* and its corresponding targets. It recognizes education as key to achieving full employment and poverty eradication. It focuses on access, equity and inclusion, quality and learning outcomes, within a lifelong learning approach. (UNDP, SDGs)

As an archipelago of more than 7,000 islands, the Philippines is an ideal place for the development of DE. Currently, only 17 higher education institutions offer DE programs. Among the existing DE providers are the University of the Philippines Open University (UPOU), which is part of the University of the Philippines System, CAP College, the Asian Institute for Distance Education, and the Southeast Asia Interdisciplinary Development Institute. The rest are conventional universities offering a few of their programs by way of DE. Most of the DE provision is at the graduate level, which would perhaps account for the low DE student enrolments nationwide. (Jung, I. et.al, 2011).

This study is a retrospective review and analysis of legislations and policies that relates to distance education in the Philippines. A documentary and content analysis was made to be able to respond to the objective of this research. Legally, legislation is the act or process of making and enacting laws. Meanwhile, educational policies consists of the principles and government policies in the educational sphere as well as the collection of laws and rules that govern the operation of education systems.

The objective of this research is to trace the legal foundation that guides the establishment and operation of distance education in the country and see how these policies are implemented in selected distance education providers. The paper is expected to provide valuable information to school administrators, advocates of open learning and distance education and education students on laws, policies and legislation that was made before and after the promulgation of the 1987 constitution.

Research Objectives and Methodology

A. Objectives

Generally, this study is a retrospective analysis of educational legislation and policies that relates to distance education in the Philippines. Specifically, this paper sought to find answers to the following questions:

1. What are the educational legislations and policies that relates to non-formal and distance education before and after the promulgation of the 1987 constitution?
2. How can the legislations and policies be summarized according to:
   2.1. Levels of Application
      a. Basic education;

b. Technical-Vocational Education
c. Higher Education

2.2.Types of Legislations/Policies

B. Methodology

This research is a descriptive qualitative research using secondary data. Documentary and content analysis was done to be able to realize the objective of this research. Specifically, the researchers perused various forms of policies that emanates from the Acts of Congress (the legislative) and the Executive. For the purpose of this research, the following forms of policies are herewith legally defined for clarity.

1. Memorandum Orders (M.O.) according to Book III, Title I, Chapter 2, Section 5 of Administrative Code of 1987, M.O. refers to the acts of the President on matters of administrative detail or of subordinate or temporary interest which only concern a particular officer or office of the government.

2. Executive Order (E.O.) according to Book III, Title I, Chapter II, Section 2 of Administrative Code of 1987, EO refers to the acts of the President providing for rules of a general or permanent character in implementation or execution of constitutional or statutory powers.

3. Republic Acts (R,A.) is a piece of legislation used to create policy in order to carry out the principles of the Constitution. It is crafted and passed by the Congress of the Philippines and approved by the President of the Philippines. It can only be repealed by similar act of Congress.

4. Commonwealth Act (C.A.) Legislative acts passed by legislature established by virtue of the 1935 Constitution: first the National Assembly, then the Congress of the Philippines.

5. Constitution – is the supreme law of the land

6. Education for All Plan of 2015 - prescribes urgent tasks that will guide the Department of Education in fulfilling the spirit of RA 9155 and EO 356 and ultimately the vision of the Philippine Constitution. It embodies the various programs, projects and activities necessary to achieve the goal of quality ALS for all marginalized Filipino learners.

Results and discussions

1. Policies and Legislations

Table 1 shows the list of legislations and policies relating to Distance Education in the Philippines. In general, there are a total of 18 policies; 4 of which were issued before the promulgation of the 1987 Constitution while the remaining 14 were issued after.

Table 1. Educational Legislations and Policies on Non-Formal and Distance Education in the Philippines

Legislations/Policies	Title/Details
Act 1829 (1908)	*The law was created to provide for the delivery of civic and educational lectures in towns and barrios*
Commonwealth Act No. 80 (1936)	Legal Foundation of Adult Education (AE) *This law created the Office of Adult Education on October 26, 1936, so as to eliminate illiteracy and to give vocational and citizenship training to adult citizens of the country.*
1973 Philippine Constitution	The Marcos government's Philippine Constitution of 1973 created the position of the Undersecretary of Non-formal Education, after the declaration of Martial Law
Education Act of 1982	The law created the Bureau of Continuing Education from the Office of Non-formal Education
THE 1987 CONSTITUTION Article XIV Sections 1-5(5)	Legal Foundations of Non-Formal Education (NFE) *Section 1. The State shall protect and promote the right of all citizens to quality education at all levels, and shall take appropriate steps to make such education accessible to all.*
	Legal Foundation of Distance Education (DE) *Section 2 (4) "The state shall encourage non-formal, formal, indigenous learning systems, as well as self-learning, independent and out-of-school study programs, particularly those that respond to community needs; and provide adult citizens, the disabled and out-of-school youth training in civics, vocational efficiency and other skills."*
Executive Order No. 117 (1987)	The Aquino government after the People Power Revolution, enacted Executive Order No. 117 in 1987 to create the Bureau of Non-formal Education.
Republic Act 7796 **TESDA Act of 1994**	The law creating TESDA provides its mandate to ensure the delivery of high quality and accessible TVET which led to the creation of the TESDA Online Program (TOP).
CHED MEMO ORDER (CMO) 27 s. 1995 **Policies and Guidelines on Distance Education**	**Defines Philippine Distance Education as:** *"A program is said to be offered on Distance Education mode if at least half of the total number of hours required for degree program is offered outside of the confines of the formal*

Legislations/Policies	Title/Details
	classroom set-up where student-teacher contact is normally required. Distance education may be delivered using printed instructional materials, video, radio or teleconferencing with sufficient provisions for valid and reliable and evaluation procedures." (Section 2) Apart from the definition of DE, the Order also provides for implementing guidelines (Section 3), Graduation credentials and transfer credits (Section 4) and quality audit mechanisms (Section 5).
CHED MEMO ORDER (CMO) 35 s. 2000 **Updated Policies and Guidelines on Open Learning and Distance Education**	The Order provides for the definition of Open Learning and Distance Education (OL/DE) (Art. II), Implementing Guidelines (Art. III), the Role of CHED and the Transitory Provision (Art. V). Under Section 17 of CMO 35 s. 2000 provides that: *"HEIs operating OL/DE programs whose recognition was granted by the DECS prior to the creation of CHED and CHED Order No. 27. s. 1995* ***shall retain their recognition****"*
Republic Act 9155 (2001) **(The Governance Act of Basic Education)**	This law recognized the ALS as a complement of formal education and a major component of basic education
CMO 5 s. 2002 **Moratorium on the Opening of Programs via the Open Learning and Distance Education (OL/DE) both Print and Non-Print Mode and the Monitoring and Evaluation of all Higher Education Institutions offering OL/DE programs**	The order provides that a moratorium in the opening of new programs offered via OLDE be imposed among Higher Education Institutions (HEIs) and that a monitoring and evaluation of these HEIs be made.
CMO 6 s. 2003 **Policies and Guidelines on Transnational Education (TNE)**	The Order define the scope, procedures, the extent of regulation as well as the mechanics of recognizing foreign educational higher education providers and their courses of study/curricular programs offered in the country.
Executive Order 356 (2004) **Renaming the Bureau of Non Formal Education (BNFE) to Bureau of Alternative Learning System (BALS)**	This Order reiterate the Bureau's mandate to address the learning needs of marginalized learners but it also directs BALS to provide a systematic and flexible approach to reach all types of learners outside the school system.
CMO 2 s. 2008 Policies and Standards and Guidelines (PS) on Transnational Education (TNE)	The Order provides for the different categories of transnational education, its scope and coverage, implementing guidelines, registration and procedures, auxiliary services, grounds for the revocation of existing authority to operate as TNE, sanctions and transitory provisions.

Legislations/Policies	Title/Details
CMO 40 s. 2008 Manual of Regulations for Private Higher Education of 2008 (MORPHE)	Defined Alternative Learning Systems (policy, objectives and alternative systems e.g. DE, Expanded Tertiary Education Equivalency and Accreditation Program (ETEEAP), Ladderized Education, e-learning and open learning.
Republic Act 10650 **An Act Expanding Access to Educational Services by Institutionalizing Open Distance Learning in Levels of Tertiary Education and Appropriating Funds Therefor**	The law is otherwise known as: **Open Distance learning Act** It was enacted to expand and further democratize access to quality tertiary education through the promotion and application of open learning as a philosophy of access to educational services and the use of DE as an appropriate, efficient and effective system of delivering quality higher and technical educational services in the country.
Education for All (EFA) Plan for 2015	In this Plan, one of the major goals is "transforming all non-formal and informal education interventions into an ALS to yield more EFA benefits". The objective is to put in place a credible ALS (consisting of NFE and Informal Education) that shall cause to increase functional literacy among the marginalized groups of learners.
CMO 62 S. 2016 Policies, Standards and Guidelines (PSGs) for Transnational Education (TNE) Programs	The Order articulated the PSGs on TNE Program to promote greater access to quality higher education through TNE. It is intended to promote good practice in Philippine TNE Program, safeguard the interests of students in TNE programs offered by Philippine HEIs (PHEIs) and Foreign Higher Education in the Philippines (FHEP), facilitate the operation of HEI offering TNE by articulating procedures for approval, monitoring and evaluation and ensure that TNE programs are attuned with the domestic and international legal and regulatory frameworks.

2. Categories of Policies and Legislations According to the Levels of Application

Table 2 and 3 shows the categories of policies in terms of its application. It could be gleaned that 9 laws/policies applies to distance education, while 4 applies to TVE and another 9 applies to higher education.

Table 2 Categories of Legislations and Policies According to the Level it is applied

Legislations/Policies	Levels
Act 1829 (1908)	**BE**
Commonwealth Act No. 80 (1936)	**BE/TVE**
1973 Philippine Constitution	**BE**
Education Act of 1982	**BE**
Executive Order No. 117 (1987)	**BE**
THE 1987 CONSTITUTION Article XIV Sections 1-5(5)	**BE/TVE/HE**
Republic Act 7796 TESDA Act of 1994	**TVE**
CHED MEMO ORDER (CMO) 27 s. 1995 Policies and Guidelines on Distance Education	**HE**
CHED MEMO ORDER (CMO) 35 s. 2000 Updated Policies and Guidelines on Open Learning and Distance Education	**HE**

Legislations/Policies	Levels
Republic Act 9155 (2001) (The Governance Act of Basic Education)	**BE**
CMO 5 s. 2002 Moratorium on the Opening of Programs via the Open Learning and Distance Education (OL/DE) both Print and Non-Print Mode and the Monitoring and Evaluation of all Higher Education Institutions offering OL/DE programs	**HE**
CMO 6 s. 2003 Policies and Guidelines on Transnational Education (TNE)	**HE**
Executive Order 356 (2004) Renaming the Bureau of Non Formal Education (BNFE) to Bureau of Alternative Learning System (BALS)	**BE**
CMO 2 s. 2008 Policies and Standards and Guidelines (PS) on Transnational Education (TNE)	**HE**
CMO 40 s. 2008 Manual of Regulations for Private Higher Education of 2008 (MORPHE)	**HE**
Republic Act 10650 An Act Expanding Access to Educational Services by Institutionalizing Open Distance Learning in Levels of Tertiary Education and Appropriating Funds Therefor	**HE/TVE**
Education for All (EFA) Plan for 2015	**BE**
CMO 62 S. 2016 Policies, Standards and Guidelines (PSGs) for Transnational Education (TNE) Programs	**HE**

Legend: *Higher Education – HE; Technical/Vocational Education – TVE; Basic Education – BE*

Table 3. Summary of Distance Education Legislations/Polices

Levels	Frequency
Basic Education (BE)	9
Technical Vocational Education (TVET)	4
Higher Education (HE)	9

3. Categories of Legislations/Polices According to Types

If DE policies are to be categorized, table 4 provides the distribution. Majority are in the form of Memorandum Order that emanated from CHED which is applicable for higher education followed by legislative enactment in a form of Republic Act.

Table 4. Categories of Legislations/Polices According to Types

Levels	Frequency
Act	2
Commonwealth Act	1
Republic Act	3
Executive Order	2
Constitution	2
Memorandum Order	7
Plan	1
TOTAL	**18**

Conclusion

Based on the foregoing findings, the policies on DE in the Philippines started in 1908 which spans for more than 100 years. They are in the form of Acts, Executive and Memorandum Orders, Republic Act and Constitutional mandate. Most of the concerns indicated in those policies apart from defining DE and its related terms are operational framework, guidelines, and standards. It is observed that since education in the country is trifocalized, various issuances emanate from the 3 different government agencies in charge of education. Given this, it is recommended that a unified document be issued about the operation of DE regardless of its application.

References

Act 1829 (1908)

CHED MEMO ORDER (CMO) 27 s. 1995, Policies and Guidelines on Distance Education

CHED MEMO ORDER (CMO) 35 s. 2000, Updated Policies and Guidelines on Open Learning and Distance Education

CMO 5 s. 2002, Moratorium on the Opening of Programs via the Open Learning and Distance Education (OL/DE) both Print and Non-Print Mode and the Monitoring and Evaluation of all Higher Education Institutions offering OL/DE programs

CMO 6 s. 2003, Policies and Guidelines on Transnational Education (TNE)

CMO 2 s. 2008 Policies and Standards and Guidelines (PS) on Transnational Education (TNE)

CMO 40 s. 2008 Manual of Regulations for Private Higher Education of 2008 (MORPHE)

Commonwealth Act No. 80 (1936)

Education Act of 1982

Education for All (EFA) Plan for 2015

Executive Order 356 (2004). Renaming the Bureau of Non Formal Education (BNFE) to Bureau of Alternative Learning System (BALS)

Philippine Constitution (1973)

Philippine Constitution (1987), Article XIV Sections 1-5(5)

Republic Act 10650 (2014) “An Act Expanding Access to Educational Services by Institutionalizing Open Distance Learning in Levels of Tertiary Education and Appropriating Funds Therefor,”otherwise known as *Open Distance Learning Act of 2014*

Republic Act 9155 (2001), The Governance Act of Basic Education

Republic Act 10650(2014) An Act Expanding Access to Educational Services by Institutionalizing Open Distance Learning in Levels of Tertiary Education and Appropriating Funds Therefor

Sabio, C.J. (2019). *Gauging the Use and Application of Mobile Open Online Courses (MOOC) in the Philippines,* Asian Journal of Distance Education (on-press)

Sabio, Cecilia J. (2016). **The Growth And Potential Of Distance Education In Asia: Recent Development From The Philippines,** Keynote Speech delivered at theInternational Conference on Distance Education and E-learning (ICDEEL), Quaid-e-Azam Auditorium, Faisal Mosque Campus, International Islamic University, Islamabad, Pakistan, December 19-20, 2016

Sabio C.J. and Sabio R.A. (2013) Current Challenges and Prospects facing Distance Education in the Philippines, Asian Journal of Distance Education, Vol. 11, No. 1, pp 59 – 77, ISSN 1347-9008, available at: http://www.asianjde.org/2013v11.1.Sabio.pdf

UNESCO (2014) Higher education in Asia: Expanding OUT, Expanding Up. THE Rise of Graduate Education and University Research retrieved from http://www.uis.unesco.org/Library/Documents/higher-education-asia-graduate-university-research-2014-en.pdf (28/11/2016)

Open and Distance Learning Program for Secondary Schools in West Java Province, Indonesia

R. Alpha Amirrachman[1], Dona Octanary[2], Arie Susanty[3]

SEAMEO SEAMOLEC, 15418, Indonesia
[1]Alpha.amirrachman@seamolec.org
[2]donaoctanary@seamolec.org
[3]susanty@seamolec.org

Abstract

The advancement of ICT can now offer effective and efficient learning supports at all levels of education and in all fields of knowledge, especially in open and distance learning. Multimedia tools can provide stimulating interactive application for learning at home, in school, and in the workplace.

The current condition of West Java Province Enrolment Numbers is occupying the 2nd lowest after Papua Province. In the year 2013-2014, the achievement of the West Java Province Education Enrolment Number has 10% gap of targeted Middle School Enrolment Number. It is indicated there are 247,067 students not able to continue to high school level. In the year 2014-2015, the data of graduates of Junior High School/Madrasah Tsanawiah (SMP/MTs) showed 703,747 students, and the school capacity only provided for 469,567 students so there is 234,180 students not able to continue education to high school.

To overcome the disparity in school capacity, the Government of West Java Province through the Office of Education has implemented several excellent programs including New Classroom development, new school unit, afternoon school and C Package program, but the result has not be able to meet the target of high school enrolment number achievement.

To accelerate the achievement of Enrolment number of Secondary Education, West Java Provincial Education Office develops models of Open High School and Distance Learning in Vocational School Open High School Model and Distance Learning in Vocational School are developed from the existing High School and Vocational School added with Learning Center in certain areas that cannot be reached by regular Secondary School (SMA/ SMK / MA).

Distance learning is recognized and supported by the Republic of Indonesia and Ministry of Education. Institutes/ Legal Basis Here are the prevailing laws and regulations related to Distance Education in secondary education in Indonesia and West Java Province as a model. This paper will outline government policies that support the implementation of the

---

[1] Director of SEAMEO SEAMOLEC

[2] Research and Development Staff in SEAMEO SEAMOLEC

[3] IT Content and Knowledge Management in SEAMEO SEAMOLEC

Open and Distance Learning Program for Secondary Schools in West Java Province, Indonesia

Keywords: *open and distance learning; secondary school; policies*

Background

Open and distance learning has been the major educational innovation of the 21th century. Open and distance learning has shown its capability to meet a wide variety of learning needs and for all kinds of learners in many countries. From the first conception as a correspondence education, an alternative mode of education which is accommodative to the students' physical and geographical constraints, open and distance learning has grown into its 5th generation, the open and distance learning which is based on information and communication technology (ICT).

Indonesia as an archipelago country with over that 270 million of population spread out all over 17,000 islands will find it quite challenging to realize the idea of enriching the life of the nation as well as to practice the 21st century learning concept. Obstacles arise from the geographic contours, the unsatisfactory statistical data about technology and internet literacy, to the insufficient ICT facilities provided by the Ministry of Education. The advancement of ICT can now offer effective and efficient learning supports at all levels of education and in all fields of knowledge, especially in open and distance learning. Multimedia tools can provide stimulating interactive application for learning at home, in school, and in the workplace.

The current condition of West Java Province Enrolment Numbers is occupying the 2nd lowest after Papua Province. In the year 2013-2014, the achievement of the West Java Province Education Enrolment Number has 10% gap of targeted Middle School Enrolment Number. It is indicated there are 247,067 students not able to continue to high school level. In the year 2014-2015, the data of graduates of Junior High School/Madrasah Tsanawiah (SMP/MTs) showed 703,747 students, and the school capacity only provided for 469,567 students so there is 234,180 students not able to continue education to high school.

To overcome the disparity in school capacity, the Government of West Java Province through the Office of Education has implemented several excellent programs including New Classroom development, new school unit, afternoon school and C Package program, but the result has not be able to meet the target of high school enrolment number achievement.

One of the big reasons is the physical capacity condition of secondary schools in West Java is still unable to accommodate the needs. There are other factors that cause the participation number of secondary schools still less than expectations, for instance the low economic status of parents or community and the remoteness of student residence, social and geographical difficulties to reach regular education services, either through Senior High School/Vocational High School (SMA / SMK) or other level of education.

To accelerate the achievement of Enrolment number of Secondary Education, West Java Provincial Education Office develops models of Open High School (SMA Terbuka) and Distance Learning Vocational School (PJJ pada SMK). Open High School and Distance Learning Vocational School are developed from the existing High School and Vocational School added with Learning Center in certain areas that cannot be reached by regular Secondary School (SMA/ SMK/MA).

Implementation of Open and Distance Learning Program for Secondary Schools in West Java Province

The rapid development of educational science requires a lifelong learning process. Therefore, the creation of a flexible education system and learning environment is highly needed. The distance learning system has become a significant innovation in education in the twenty-first century. The distance learning system has demonstrated its ability to meet a wide range of learning needs and different types of learners.

In 2017, the Governor of West Java was determined to improve access and quality of junior high school (SMP) students to the high school and vocational high school level by providing support for the Open and Distance Learning Program for Secondary Schools in West Java Province, Indonesia. The obstacles faced by West Java Province include; limited capacity of high school and vocational school. As an illustration, in 2017 the number of junior high school graduates was 765,480 people while the number of those who went on to formal school through state and private high school and vocational high schools in West Java were 592,266 people. So that in 2017 there are 173,214 junior high school graduates who do not continue to the high school / vocational level. In terms of economy, Data from the Ministry of Social Affairs (2017) states, the number of poor people aged 16-18 years who do not attend school is 538,431 people (237,620 of whom are junior high school graduates).

ODL has also been supported by the legal system in Indonesia. ODL has been considered one of the national education systems by the National Education Law (20/2003). It is furthered supported by Minister of Education and Culture (MoEC) of Indonesia has created MoEC Regulation no. 72 year 2013, in Chapter II, article no. 2 about Purpose and Scope of Execution. Completing Regulation no. 72, MoEC issued Regulation no. 119 year 2014, which provides guideline on how to run ODL in primary and secondary education.

In the Law of the Republic of Indonesia Number 20 Year 2003 regarding the "National Education System" in Indonesia. The formulation of Distance Education is seen in Chapter VI, Path, Level and Type of Education in the Tenth Section of Distance Education in Article 31 which reads: (1) Distance education is conducted on all paths, levels and types of education; (2) Distance education provides educational services to community groups that unable to attend face to face education or regular education; (3) Distance education is organized in various forms, modes, and scopes supported by learning facilities and services and assessment system that ensures the quality of the graduates meet the national education standard; (4) the Provisions regarding the distance education as referred to in paragraph (1), paragraph (2) and paragraph (3) shall be further regulated under a government regulation.

Therefore, Distance Education has an open characteristic, self-study, complete learning, using information technology for education communication, and/or using other educational technology. Through the Distance Education system, learners can gain access to quality education without having to leave their home and resign from their jobs. In addition of access, to improving the equitable quality of education for each individual learners, the mass nature of Distance Education system is in distributing quality education that is standardized using ICT, learning outcomes standardization, teaching materials, learning process, learning aid, and learning evaluation, quality education can be obtained by various circles through the time. This shows that distance learning is recognized and supported by the Republic of Indonesia and Ministry of Education. Institutes / Legal Basis Here are the prevailing laws and regulations related to Distance Education in secondary education in Indonesia and West Java Province as our models:

1. Law no. 20 of 2003 on National Education System in Indonesia of part 10 of Distance Education and part 11 of Special Education and Special Services Education.
2. Government Regulation no. 17 of 2010 in Indonesia about Management and Implementation of Education, in Chapter VI Implementation of Distance Education and Chapter VII Provision of Special Education and Special Services Education.
3. Regulation of the Minister of Education in Indonesia No. 72 of 2013 on the Implementation of Special Service Education.
4. Regulation of the Minister of Education in Indonesia No. 119 of 2014 on the Implementation of Distance Education at Basic and Secondary Education Level.
5. Regulation of the Director General of Secondary Education in Indonesia No. 1670 / D / LK/ 2014 About the Implementation of Open Schools at Secondary Education Level.
6. West Java Provincial Governor Regulation in Indonesia No. 6 of 2018 on the management and administration of open education and distance education on vocational and high schools.

Regarding the legal and policy basis in implementing distance education in Indonesia, SEAMOLEC cooperate with West Java provincial government to run the policy model as the basic of Open and Distance Education program of West Java and socialize in the province to:

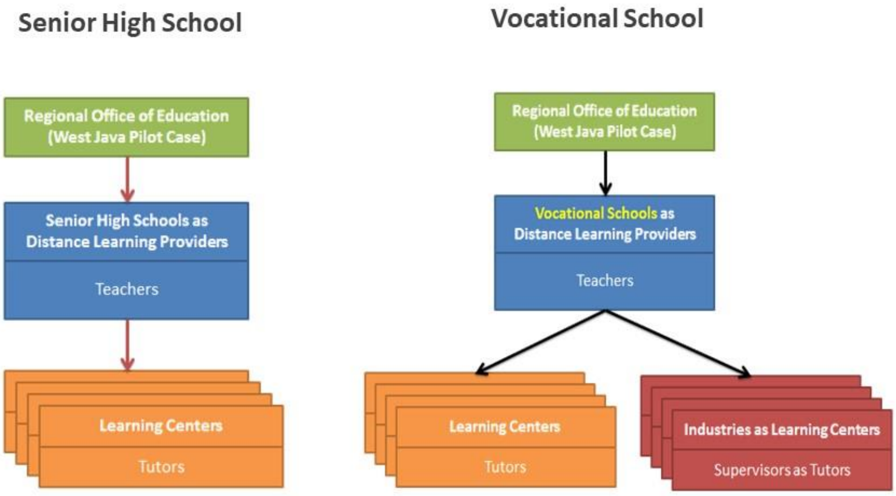
1. Headmaster/Principal of School.
2. Education Supervisor.
3. Branch Office of West Java Education Office.
4. Coordinating Agency for Governance and Regional Development of West Java Province.

The Medium Term Development Plan of West Java Province year 2013-2018, stated a vision "Building a Qualified and Competitiveness Community" and Mission "Improving the Quality and Competitiveness of West Java Community through Excellent, Affordable, Equitable and Open Education". To actualize the vision and mission, the government has launched no tuition fee education from elementary school (SD) to high school (SMA).

Open High School and Distance Learning Vocational School model are new program that require a guideline in implementation as a reference to all involved parties regarding in implementation of Open High School and Distance Learning Vocational School.

SEAMEO Regional Open Learning Center (SEAMOLEC), as the center for open and distance learning in the Southeast Asia, pays a great attention to this advancement. Distance education or Distance learning programs are the solution to many problems regarding access to regular education services. The greatest appeal of distance learning is that one can study without having to leave home or a job to obtain higher education. These programs made it possible for students to complete their education without having to sacrifice their working time.

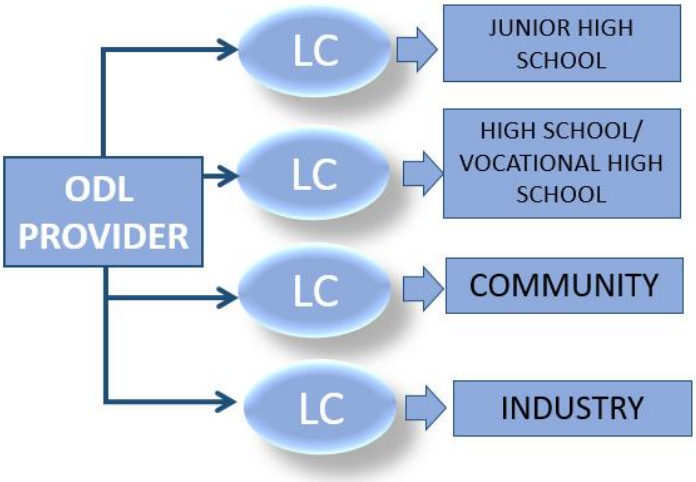
CONCEPT OF DISTANCE LEARNING FOR SECONDARY EDUCATION


Senior High School
Regional Office of Education (West Java Pilot Case)
Senior High Schools as Distance Learning Providers
Teachers
Learning Centers
Tutors
Vocational School
Regional Office of Education (West Java Pilot Case)
Vocational Schools as Distance Learning Providers
Teachers
Learning Centers
Tutors
Industries as Learning Centers
Supervisors as Tutors

In 2017 and 2018, the program to improve access and quality of junior high school students is one of the programs of the Governor of West Java. They are:

1. Distance Learning Provider: 311 Open High School, 181 Distance Learning in Vocational School.
2. Students, year 2017/2018: 34,144 students (Open High School: 22,016 students; Distance Learning in Vocational School: 12,128 students);
3. Students, year 2018/2019: 14,467 students (Open High School and Distance Learning in Vocational School)
4. Learning Center for Open High Schools as many as 788 learning centers, and Distance Learning in Vocational School as many as 469 learning centers.
5. In October 2018, SEAMOLEC conducted a mapping of internships for Distance Learning in Vocational School, there were 1251 Business / Industrial Worlds that could facilitate more than 8700 students scattered throughout West Java.

LEARNING CENTER



Learning System

a. Curriculum and Teaching Materials

The Open and Distance Learning program for Secondary Schools in West Java Province use a national curriculum prepared by the government and used in regular schools. Teaching materials have been prepared by the government in the form of books and digital learning materials that can be accessed online by students and teachers.

b. Learning Center

Learning center is a place to interact between teachers, tutors and students face-to-face in tutorial activities. Tutorials are carried out to provide assistance and student guidance for learning materials.

Learning at the Learning Center is accompanied by a tutor, where the tutor functions as:

a) do tutoring according to the module,
b) guiding practice / practicum according to the module,
c) guiding other academic tasks on behalf of and on the responsibility of the teacher,
d) help learners in accordance with the guiding guidelines for the tutorial,
e) assisting and motivating students to carry out independent learning,

At Open High School Program, Learning centers can be in the form of schools, boarding schools, corporate meeting rooms, village halls, sub-district halls, with conditions that can be used for learning and accommodating 30 students. At Distance Learning in Vocational School Program, Learning centers consist of 2 types, namely: Learning Centers for Practice and Learning Centers for Theory. Learning Center for Theory is the place for implementing knowledgeable learning material tutorials, while the Learning Centers for Practice is a place for the implementation of skillful practice tutorials in accordance with vocational skills competencies (e.g. competency in agribusiness expertise has a practice in the form of fields or plantations).

c. Learning Process

Open and Distance Learning Program students carry out 7 days of learning, which is 5 days students learn independently using books (1 Learning Center is provided 10 books per subject) and supporting material / modules. There are 2 days in a week for face-to-face meetings at

Learning Center between visiting teachers from the Distance Learning Provider with students. It was attended by tutors (from teachers / practitioners located around the Learning Center). Outside of face-to-face meetings with visiting teachers, the learning process can be accompanied and carried out by the tutor according to their duties and functions (for example there are instructional orders from the teacher in modules that are not understood by students.

The learning process is carried out in the form of 2 modes, namely using a Learning Management System (LMS) and using a print module. Ideally distance learning uses Information and Communication Technology (ICT) as a distribution media and delivery media, but in implementation only 10% of the total schools run distance learning that can use ICT as a distance learning service, this is due to the limited fulfillment of ICT access devices or individually (teachers, tutors, students) so that the learning that occurs now mostly uses print modules

For vocational schools, the practice is carried out with industry partners guided by industry practice tutors or practitioners. The learning process of this practice is always in the monitoring of subject teachers from the main school. Practices carried out in accordance with modules compiled by the teacher through worksheets. The achievement of student competency are confirmed in the assessment tool in the form of Skill Passport. Confirmation of the achievement of student skills competencies is carried out by an industrial tutor/practical tutor in the Skill Passport.

d. Assessment System
   Assessment system in the distance learning program still covers 3 aspects, consist of: knowledge, skills and attitudes. Technically, the implementation of learning assessment is carried out in the same way as regular programs, namely end-of-semester assessments and end-of-year assessments conducted at the main school or administering school. Attitude assessment for the students especially those who have worked, attitude assessment is carried out with the involvement of tutors (e.g. company HRD).

e. Supervision
   Supervisors carried out in accordance with the under supervised schools, distance learning supervisors have previously been trained, coordinated and given supervision tools related to distance learning programs. Supervision by the supervisor is ideal 1x / month or at least 2x / semester.

f. Increasing the competence of teachers and tutors
   Increasing the competence of master teachers and tutors is done to strengthen the competence of independent learning and distance learning.

Conclusion

The development of Open and Distance Learning Program for Secondary Schools in West Java Province, Indonesia need a lot effort. According to the Borotis and Angeliki Poulymenkou (2002), there are several components that need to be supported in implementing distance learning. The components are policy, technology, financial, human resources and infrastructures. Indonesia government support the implementation of open distance learning by issuing legal polices. The West Java Government through the governor also provided support by issuing policies supporting the implementation of open and Open and Distance Learning Program for Secondary Schools in West Java Province, Indonesia. Other components will go through the stages of evaluation in their implementation and will continue to be improved for the implementation of Open and Distance Learning Program for Secondary Schools.

References

Report of Implementation Open and Distance Learning Program for Secondary Schools in West Java Province by SEAMEO SEAMOLEC (2018).

SEAMEO SEAMOLEC Annual Report by SEAMEO SEAMOLEC (2018).

E-learning Readiness Components: Key Issues to Consider Before Adopting e-learning Interventions" by Spiros Ap. Borotis and Angeliki Poulymenkou. Rosenberg, M.J. (2000a). elearning: Strategies for Delivering Knowledge in the Digital Age: McGraw-Hill.

Evolution of Distance Education in Bangladesh: A Critical Analysis

Dr. Md. Shafiqul Alam

Registrar
Bangladesh Open University
shafiqul_bou@yahoo.com

Abstract

The history of distance education (DE) in Bangladesh dates back to 1956 through the distribution of 200 radio sets to educational institutions for receiving education programmes. This led to the creation of an Audio-Visual cell and later, an Audio-Visual Education Centre (AVEC) in 1962. In 1978-1980, School Broadcasting Program (SBP) was taken up. In 1983, the SBP and AVEC were merged to form the National Institute of Education Media and Technology (NIEMT). In 1985, Bangladesh Institute of Distance Education (BIDE) was established incorporating NIEMT into it. The success of BIDE encouraged policy makers to take up a major plan for establishing an open university in Bangladesh. This is the early stage of DE. Finally, an Open University called "Bangladesh Open University (BOU)" is established in 1992 and a project (1992-1999) was taken to develop the academic and physical infrastructure. During this period, the university lunches its academic programmes and emerged as a fully-fledged university. This is the growing phase of ODL. During 2000-2014, BOU and some private institutions launched DE programmes using print materials, audio-video, TV, tutorials. The ODL method became familiar and the policy was formed to promote DE in the country. We called this period as the developmental stage of DE. According to the policy, BOU has mandate to deliver education through DE mode using varieties of ICTs and media. BOU now uses TV, Web TV, YouTube, mobile, IVCR, LMS, face-book, SD card including e-learning. This is a paradigm shift of becoming digital university from traditional method of ODL. This is the digitalized phase of DE. This paper will analyze these phases with respect of challenges faces, opportunity avails, technologies use, national demand, access and quality of education, policy concern, autonomy, academic freedom, governance and international perspectives portraying a landscape of DE in Bangladesh.

Keywords*: Distance Education, Landscape, Digitalized Phase, Critical Analysis, Evolution*

Introduction

Bangladesh Open University (BOU) is the only public ODL institution in the country founded in October 1992. It is an exceptional institution in the country that makes an access for common people to education. BOU has a wide network throughout the country consisting of 12 regional centers, 80 sub-regional centers and about 1506 study centers. It has 29,788 part-time tutors who act as local mentors and counselors of learners. The total number of its learners now stands at 5, 40,000. In terms of learners' number, BOU may be considered as a Mega University. However, according to UNESCO (2010), the ultimate success of any education system is not how many learners are in school, but what –and how well they learn. In order to ensure the quality of education, the university uses a blend of media considering the access and affordability of the learners. The choice of media varies from programme to programme. Both synchronous and asynchronous modes are chosen for the effective delivery of the courses. The media used so far in BOU programmes are: print materials, weekly lectures, audio cassettes, video broadcasts, internet, YouTube, email, face-book etc. Recently a huge number of audio and video programs have been uploaded into YouTube. Another innovative media is 'mobile device/set compatible SD card containing e-books and audio-visual materials, which ready to provide learners on demand. Books of all programmes have been uploaded to the BOU's website. Any learner can downloaded these e-books and web-Radio. Thus, the learners can watch the tutorial sessions and other relevant presentations live-streamed directly from the BOU's Media Center's Studios.

According to BOU Act 1992, the objective of the University is to spread quality education, both general and need specific, among all sections of citizens of the country irrespective of their age and gender in a flexible manner by using a suitable mix of educational media and technologies to create human capital of the country (BOU, 2019).In order to achieve the objective, the university has been working since 1992 crossing different stages of its journey. In fact providing education through ODL was introduced by BOU in Bangladesh. Later on, some private universities were also given permission to offer education through distance mode. However; due to misuse of the process, the government has banned these universities from the offering distance education (Islam, 2012). Therefore, BOU is the only institution which has mandate to offer education though ODL in the country. This paper will therefore confine to discuss the evolution of DE offered through BOU in Bangladesh. The description of the evolution of the whole span of the university is divided into 4 (four) phases on the basis of emergence, development, achievement. The literature suggests that there is no such type of article written so far and therefore it is the appropriate stride for depicting the landscape of DE in Bangladesh.

Framework of the Study

The study is carried out based on literature review. The writer himself has been working as a senior administrator (policy maker) at BOU since 1995. Therefore he has vast knowledge and experience on ODL system prevailed in Bangladesh. The paper is written on the knowledge extracted from reports, magazines, books and the knowledge and experience of the researcher.

In this study, interpretive perspective is applied to guide the meaning making process. Denzin and Lincoln (1998) argue that there is no single interpretive truth. Interpretation is an artful political process which is narrative, or storied, accounts. The essence of interpretive research is to understand reality as constructed by the people from a particular context as they engage in interactions (Bogdan&Biklen, 2003). Interpretive research is often referred to as "telling the story" (Denzin& Lincoln, 1998; Marshall &Rossman, 2006) and it brings meaning and coherence to the themes, patterns, categories, developing linkages and a story line that makes sense (Marshall &Rossman, 2006). Patron (as cited in Marshall &Rossman, 2006, p. 162) notes "interpretation means attaching significance to what was found, making sense of the findings, offering explanations, drawing conclusions, extrapolating lessons, making inferences, considering meaning and otherwise imposing order". Marshall &Rossman (2006, p. 162) stated that "the researcher should determine how useful the data segments drawn on to support the emerging story are in illuminating the questions being explored and how they are central to the story that is unfolding about the social phenomenon."

According to Mac Naughton et al. (2001) the interpretivist researcher's task is to "understand socially constructed, negotiated and shared meanings and represent them as theories of human behavior" (P.36). They also mention that interpretivist knowledge is always local and specific to a particular research conducted in particular circumstances with particular informants. Green explains that the role of interpretive researchers is "to gain entry into the conceptual world of their subjects in order to understand how and what meanings they construct around events in their daily life" (as cited in Bogdan&Biklen, 2003, p.23).

The evolution of the DE process in Bangladesh is described in four phases. They are: 1). Early phase, 2) Growing phase, 3) Developmental phase, and 4) Digitalized phase. These phases are categorized and depicted on the reality of DE existed and on the experiences and knowledge of the researchers. Grbich (2007) stated that reality is viewed as being socially embedded and existing within the mind of people, and knowledge is constructed jointly in the interaction between the researchers and researched in the epistemological position of constructivism. Therefore, the epistemological position of this research stands on the principles of constructivism.

Early Phase (1956-1991)

This is the very early stage of Distance education in Bangladesh. This phase may call as rudimentary stage of DE. The distance education in Bangladesh dates back to 1956 when the Education Directorate of erstwhile East Pakistan distributed 200 radio sets to educational institutions for receiving education programmes delivered from a distant centre. This led to the creation of an Audio-Visual cell and later an Audio-Visual Education Centre (AVEC) in 1962. In 1978-1980, a pilot project entitled School Broadcasting Programme (SBP) was taken up. In 1983, however, the SBP and the erstwhile AVEC were merged together to form the National Institute of Education Media and Technology (NIEMT). In 1985, Bangladesh Institute of Distance Education (BIDE) was established incorporating NIEMT into it. It was affiliated with the University of Rajshahi, the second oldest university in the country. Apart from producing print and audio-visual materials, BIDE offered the B.Ed. programme in a distance mode.

The success of BIDE encouraged policy makers to take up a major plan for establishing an open university in Bangladesh. In 1989, at the request of Government of Bangladesh, Asian Development Bank (ADB) Fact Finding Mission on Open University visited Bangladesh. Consequently, with the ADB assistance, a feasibility study on Open University was made under a Technical Assistance Project (TAP). The objective of the TAP was to formulate a comprehensive project proposal for Bangladesh Open University (BOU). Based on the proposal, BOU Scheme was

Figer:1-Audio-visual Van used for Learner's study.

Figer:2- Learner attending in an Examination.

drawn up with the help of foreign and local consultants. An agreement was finally reached between the ADB and the Government of Bangladesh (GOB) in 1992 in this respect. In the meantime, a remarkable coincidence occurred and in October 1992 the Bangladesh National Parliament passed the "BOU Act,1992 (Act No. 38 of 1992)" with a view to ensuring access of people, particularly the deprived and disadvantaged ones, to all levels of education, including science education through distance mode using information technology and other means of mass-communication. The BOU, thus, came into being a university. As per agreement, ADB had committed 34.3 million and the GOB, 8.7 million US dollars for the Scheme (GOB,1997)

Although distance education was available in the country since 1985 for obtaining formal education through Bangladesh Institute of Distance Education (BIDE), the activities of the Institute were confined mainly to production and supply of print and audio-visual materials to educational institutions and to deliver only B.Ed. programme for secondary school teachers' professional development. BIDE's academic programme was constrained much due to lack of regular and trained academic staff, physical facilities and appropriate support services and BIDE was merged into BOU with its manpower in 1992. This is the emergence of ODL in Bangladesh.

Growing Phase (1992-1999)

This is the implementation phase of the project 'the establishment of Bangladesh Open University'. Initiated in 1992, the BOU project continued and was completed in June, 1999 with a total cost of 41.1 million US dollars. During the project period, two international consulting firms and more than a dozen of foreign and domestic consultants worked hard giving a total input of about 67 person-months to make the project a success. On completion, the project was placed under the 'Grant-in-Aid' head of the Government's Revenue Budget in the fiscal year 1999-2000, and BOU became a full-fledged public university in the country.

Figer:3- Physical Infrustracture under Construction.

To look after its academic and administrative affairs, BOU has established 6 academic Schools and 10 administrative Divisions and recruited a total manpower of 838 including teachers (82), officers (240) and subordinate employees (516). Some of the administrative Divisions namely, Student Support Services (SSS) Division; Publishing, Printing and Distribution (PPD) Division; Media Division; Computer Division; Examination Division; and Library and Documentation Division are quasi-academic in nature and function. The quasi-academic Divisions provide necessary support services to, and help coordinate the activities of the academic programmes launched by the Schools through a network of Regional Centres (RCs), Sub-Regional Centres (SRCs) and study Centres (SCs) spread over the country.

The general pattern of administrative and academic structure of the University is somewhat pyramidal converging upward for decision and diverging downward for implementation. The lateral relationship among the administrative divisions is rather weak and needs strengthening to make the system more efficient and effective. Since its inception, BOU has been working for transforming the country's vast human resources into an educated and trained manpower by bringing to the masses a wide range of academic programmes, both formal and non-formal through its different Schools. The Schools are**:** (i) School of Education, (ii) School of Social Science, Humanities and Languages, (iii) Open School, (iv) School of Business, (v) School of Science and Technology, and (vi) School of Agriculture and Rural Development. The Schools develop their own curricula and academic programmes with the help of resource persons drawn from other institutions and universities. The programmes are launched only after the Academic Council has approved them. However; BOU is selective in introducing academic programmes, and every endeavour is made to ensure that the course content of an academic programme is aligned well with emerging economic and occupational demands. Before launching the academic programmes, BOU undertook a nation-wide Need Assessment Survey in 1993. The Survey Team identified 76 education and training programmes of which 33 were listed as priority programmes in consultation with the ADB. Based on this initial need survey, BOU has launched only 37 including 18 formal and 19 non-formal education programmes in this phase. The formal programmes include secondary and higher secondary (SSC and HSC), undergraduate and postgraduate (B.A., B.S.S., B.Ed., B.Ag.Ed., BELT, M.Ed., and M.B.A.) diploma (GDM, DYD and DCA) and certificate (C.Ed., CELP, CALP, CIM, CLP and CPFP) programmes. Non-formal programmes are usually designed to make people aware of how to live a better life. These are mainly community-based programmes and are intended for people who are willing to improve upon the level of their knowledge and understanding of the environmental and socio-cultural aspects of life in general. These include everyday science, agriculture, aquaculture, poultry, livestock, public health, nutrition, drug prevention, disaster management, ethics, environment, etc.BOU has thus far enrolled a cumulative total of 2,49,606 students in its different programmes.

During this phase, Instructional Delivery System was based mainly on print media supported by audio-video programmes transmitted through national broadcasting network (radio and television programmes for a total of 40 minutes daily). Because of poorly developed local technical infra-structure, BOU, despite of its best intention, could not take the full advantage of the Information Technology (IT). However, it has been able to bring its Academic Schools, Administrative Divisions and Regional Centres under computer networking on a limited scale. This networking is being used only for administrative purpose and could not be extended to instructional delivery.

Developmental Phase (2000-2014)

The actual growth and development of the university is occurred in this phase. The staff recruitment of the university, human resource development, budget allocation, physical infrastructure, enrollment of the learners, use of ICTs, lunching of academic programmes are completed with a satisfactory level and the initiatives are taken to ensure good governance, autonomy, research culture and quality education. These are the main attainments of this phase. The university is recognized and flourished during this period nationally and internationally.

The number of manpower recruited, the budget allocated, the learners enrolled and audio and video programmes recorded are furnished below which have given an actual landscape of development of distance education during this period.

Figer: 4-BOU main campus at a glance

During the beginning of this phase, the university has a total number of manpower was 757 whereas at the end of this phase, the number reached at 1538. The number of the manpower is significantly increased. It indicates that significant development of the university was happened during this period.

Table 1: Number of Teachers, Officers, and Supporting Staff Recruited

Year	Number of Teachers	Number of Officers	Number of Staff	Total
2000	82	239	436	757
2001	82	239	436	787
2002	82	239	439	790
2003	82	239	489	810
2004	131	289	543	963
2005	131	289	569	989
2006	131	297	761	1189
2007	131	298	781	1210
2008	131	331	769	1231
2009	131	331	762	1224
2010	131	346	762	1239
2011	131	371	818	1320
2012	131	347	825	1303
2013	165	556	821	1542
2014	165	556	817	1538

BOU has enrolled a cumulative total of 5, 70,000 learners in its 31 different programmes under 1381 study centers located throughout the country at the end of this page in year 2014. The number of learners and programmes has significantly increased whereas the number of learners was only 58,000 in 17 academic programmes in 553 study centers at the end of growing phase in year 2000. This indicates the major academic development of the university.

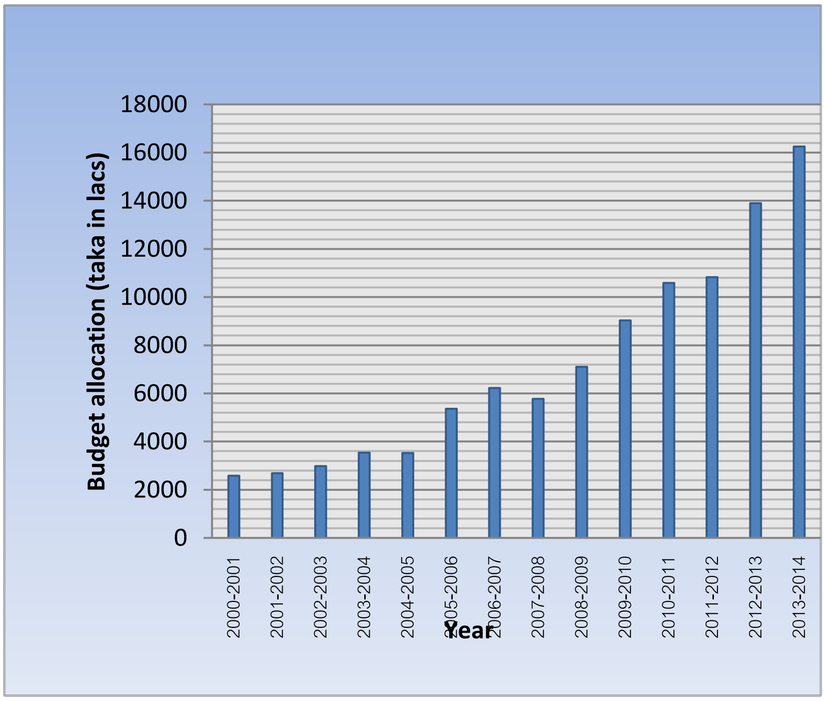
Table 2: Number of Learners, Academic Programmes and Study Centers

Year	Number of Total Students	Number of Programmes	Number of Study Centres
2000	58807	17	553
2001	64354	17	569
2002	82762	21	579
2003	80132	21	688
2004	118572	21	750
2005	98036	21	807
2006	132861	21	932
2007	248514	23	1080
2008	265274	23	1103
2009	310474	23	1122
2010	370526	23	1224
2011	379407	29	1334
2012	424067	29	1341
2013	486195	29	1381
2014	570201	31	1381

After completion of the growing phase (Project Phase), the project was placed under the 'Grant-in-Aid' head of the Government's Revenue Budget in the fiscal year 1999-2000, and BOU became a full-fledged public university in the country.

Table 3: BUDGET (2000-2014)

Year	Original Budget (Lacs)
2000-2001	2,581.91
2001-2002	2,694.54
2002-2003	2,980.27
2003-2004	3,546.09
2004-2005	3,532.83
2005-2006	5,364.99
2006-2007	6,219.47
2007-2008	5,770.00
2008-2009	7,109.21
2009-2010	9,028.66
2010-2011	10,588.84
2011-2012	10,824.17
2012-2013	13,899.30
2013-2014	16,252.13



The first budget (2000-2001) of the university was taka 258,191000 and at the end of developmental phase (2013-2014) that stands at taka 1625,21,3000. The data shows that the budget at the end of developmental phase has been increased 520 times than the same of growing phase of the university. This also indicates the financial strength of the university and development as well.

Table: 4-Audio and Video Programmes of BOU

Year	Audio Programmes	Video Programmes
2000	1165	821
2001	01	12
2002	06	11
2003	16	39
2004	12	27
2005	04	80
2006	04	91
2007	07	42
2008	00	62
2009	01	65
2010	06	15
2011	00	07
2012	01	08
2013	00	12
2014	28	88
Total	**1223**	**1292**

Digitalized Phase (2015- onward)

During this phase the university has a paradigm shift from conventional system of DE to elearning towards making a paperless university i.e., Virtual University. This is the beginning for achieving the target of virtual university. Where the university achieves this dream-this is the question. However, it has achieved many aspects of digital university.

BANGLADESH OPEN UNIVERSITY

Figer: 5- Full view of BOU main Campus

The university is now using varieties of learning technologies to reach its learners with a quality education. The purpose of using technologies is not just achieving the target of access to higher education rather to ensure the quality of education. This phase also belong to internationalization of education through the use of educational technologies. BOU has already opened its study center in South Korea to deliver its programme among the stakeholders residing in South Korea. The internationalization includes delivering programmes in abroad. BOU has established an Elearning center with virtual class-room facilities. The technologies are used at BOU is furnished below:

- BOU website-based uploading of information
- E-Books [over 450 text books/study guides downloadable from BOU website]
- Video and Audio Lectures uploaded in BOUTube, YouTube, Facebook and Twitter
- Mobile technology (micro SD card embedded with mobile phone sets loaded with audio/video lectures, learners can use without internet)
- Education Apps for BOU information and academic programmes
- Interactive Virtual Classrooms (IVCR)
- E-Learning Platform/ Learning Management Systems
- Dedicated e-Platform for online training (for third parties as well as BOU field staff).
- Video conferencing (by using Skype and UGC's BdREN infrastructures)
- Video streaming/online classes from the main Campus and Dhaka Regional Center.
- Internet-based webTV and web Radio (Live classes in "OpenBanglaWebTV" and "OpenBanglaWebRadio")
- Complete ONLINE PROGRAMS initially designed for MEd and MBS.
- Online degree programs for Bangladeshi Diaspora (Bangladeshis living in other countries)
- ICT-based English Learning (Secondary Curriculum-linked video presentations)
- University-wide Technology
- ERP (Comprehensive university management software)
- OSAPS (Online Service and Payment System)
- OER Repository of BOU
- Online eLT Program
- Online Admission & Result Management Systems

BOU has established an elearning center for offering its all programmes via online and the modern studio set has been re-designed for interactive video academic sessions for broadcasting.

Figer:6- Virtual Classroom of at BOU E-Learning Centre

Open School
BANGLADESH OPEN UNIVERSITY

Figer:7- Modern Media Studio of BOU Media Centre

ICT is introduced in teaching and learning system at BOU. Some survey shows that there is an improvement on learning outcomes in use of ICT in administrative and academic management. But the significant level of improvement on learning outcomes can be found after a few years. However; it can be said that learners can now easily get access to learning materials, getting student support services and tutoring and counseling, getting exams results and other feedback within the shortest time. As a result, both quality and quantity in BOU education has been increased.

During this phase, higher education programmes such MPH, MPhil, PhD is being offered. Institutional Quality Assurance Cell (IQAC), International Academic Programme Wing (IAPW), Higher Degree Unit (HDU), Editing and Proof-Reading Wing (EPW), Room Management Unit (RMU) and a number of units for ensuring quality service and ensuring good governance. The emphases were given on research, training, use of ICTs, and elearning in order to transform the university to a "Digital University".

Analysis and Discussion

Bangladesh got independence in 1971 after a 9 months liberation war. Before, it was East Pakistan. As BOU is the only institution and which has mandate to cater distance education in Bangladesh, therefore evolution of distance education in the country considered to education provided by BOU. The different stages of distance education of the country (East Pakistan& Bangladesh, 1956-2018) are divided into four phases for the nature of the status of distance education. The phases are: Early, growing, developmental and digital phases.

In the first phase, different concepts are piloted and on the basis of these findings and experience, distance education strategies suitable for Bangladesh are conceptualized and as a result, the birth of an open university becomes a reality. This paper therefore attempts to discuss analyze other 3 phases (growing, developmental and digitalized phases) in terms of their academic programmes, learners, staff, study center and budget. The following table shows the same data on these indicators.

Table: the number of different Indicators of DE

Sl. No	Indicators (Number)	At the end of			Remarks
		Growing Phase (Year 2000)	Developmental Phase (Year 2014)	Digitalized Phase (Year 2018)	
01	Programme	18	27	53	
02	Learner	58807	486195	540733	
03	Staff	757	1381	1441	
04	Study Centre	635	1451	1506	
05	Tutors	7950	24755	29788	
06	Budget (Taka)	25,81,91,000	162,52,13,000	256,20,10,000	

The above data shows the growth of the university from 2000 to 2018. The budget has been enhanced with the increased number of programmes, learners, staff, study centers and tutors for gradual development of the university. According to above data, the major development happened in the development phase (2001 to 2014). The university has been transformed into the door of digitalization. But when the complete digitization will be completed –this is a valid question. It depends on the leadership, commitment, policy, budget of the university and political will of the government.

Recommendations

BOU has emerged as a mega university but in terms of quality education, it didn’t reach to its target. It has a very strong linkage with IGNOU, MOU, OUSL, STOU, UKOU, and UPOU for academic and administrative collaboration in many areas of development. BOU is now considered as one of the emerging ODL institutions in Asia.

Based on the aspirations quoted by Mannan (2017) on the occasion of BOU Silver Jubilee and analysis of the paper, the following recommendations are placed here for further development of distance education (elearning or Digital University) in order to achieve the quality education for creating skilled human resources of the country.

- The university should establish Interactive Virtual Classrooms (IVCRs) as early as possible. Coverage will be given to all the regional and sub-regional centers with a view to bringing under the coverage of all the learners of the country. The main objective is to maintain equity and inclusiveness in delivering education to each and every one who have the urge to have further education staying at home. The learners in all corners of the country would be connected with the renowned teachers and professionals who have already got specialized skills on handing and conducting local IVCRs.

- BOU should give top priority as part of development-initiative would be the establishment of an independent Education TV Channel at the BOU campus. Expectedly, this channel would be specifically devoted to broadcasting of education content and information for facilitating continuous learning of not only the BOU learners but also the student community of the country at large. The plan would be to facilitate regional broadcasting facilities as well as region-level live demonstration of classes that would be stored just-on-time in the cloud server from where the learners would be able to download the content that they might miss during the live sessions, at anytime from anywhere. Other universities and educational institutions would be allowed utilize the facilities of the channel for their desired education objectives, in addition to disseminating education related information and regular advancements in the education sector.

- The university should implement fully online academic programmes and online examination system.

- The plan and strategy needs to be development for the establishment of International Study Centers. The target would be those countries where there is concentration of Bangladeshi migrant workers.

- BOU should launch skill development programs for housewives and widows.

- The BOU has to take the initiative for live streaming of practical classes/lab work from main campus of the university.

- The university should ensure research and ICT culture.

References

Bogdan, R., &Biklen, S. K. (2003). *Qualitative research for education: an introduction totheory and methods* (4th ed.). Boston, Mass.: Allyn and Bacon.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (1998). *Collecting and interpreting qualitativematerials.* Thousand Oaks: Sage Publications.

BOU. (2019). *BOU Diary 2019*,Banglabazar Press and Publication, Dhaka

Grbich, C. (2007). *Qualitative data analysis : an introduction. London ; Thousand Oaks,* Calif. SAGE Publications.

Islam, F.(2012).*Higher Education in Bangladesh: Prospects and Challenges,*Desh Publications Limited, Dhaka, Bangladesh

MacNaughoton, G., Rolfe, S. A., &Siraj-Blatchford, I. (Eds.). (2001). *Doing early childhood research : international perspectives on theory and practice.* Buckingham; Phildelphia: Open University Press.

Marshall, C., &Rossman, G. B. (2006). *Designing qualitative research* (4th ed. ed.). Thousands Oaks, Calif. Sage Publications.

Mannan. (2017). *Bangladesh Open University: The Path-Provider for Open and Distance Learning in a Deltaic Nation*. Magazine published on the Occasion of Silver Jubilee 2017 of the Bangladesh Open University, Monirampur Printing press, Dhaka.

GOB, (1997).*Proforma (PP) : Revised Scheme for Establishment of Bangladesh Open University 1991-1999,* Planing Commission, Ministry of Planning, Government of the People's Republic of Bangladesh.

UNESCO.(2010). *EFA Global Monitoring Report 2010: Education for All.*Paris: UNESCO

Design of a Students' Learning Web Site using AI Chat Bot Based on FAQ data for Enhancing Remedial Education at the Open University of Japan

Yasuhiko Tsuji

Faculty of Liberal Arts, The Open University of Japan
2-11 Wakaba, Mihama-ku, Chiba-shi, Chiba, Japan
tsuji@ouj.ac.jp

Abstract

Under the action plan proposed in 2017, the Open University of Japan (OUJ) has been required to enhance remedial education and students' learning from each other. From the results of the questionnaire survey targeting Study Centers throughout Japan and the interview survey targeting meet-up representatives who have advanced activities about students' learning from each other, it was found that it is necessary to construct an effective mechanism from the both viewpoints of online and offline (face-to-face) environment. In this proceeding, the author designed a students' learning website using AI chat bot Based on FAQ data to support students' learning among the students. This system has the following 3 purposes: (1) To promote remedial education by exchanging information among students on science and mathematics subjects, language subjects, and how to learn, which are the premise of university education, (2) To provide a communication platform for teaching and learning among students, especially for students who cannot come directly to the Study Center, (3) To give the role of an online tutor to leader-type students who can also teach other students. Using this system, the author examined the support environment to be targeted in the future at OUJ from the viewpoint of online and face-to-face environment.

Keywords: *Remedial Education, AI Chat Bot, Students' Learning from Each Other, Community of Students*

Backgrounds

The Central Education Council (2008) of the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in Japan advocates differentiation of universities by function. Specifically, it states that it is important that universities, junior colleges and technical colleges develop education and research that fully reflect the respective positions and expected roles and functions of each school type, and that it is important for each institution to clarify the personality and feature and make use of its characteristics to ensure further diversity.

Under such circumstances, the Open University of Japan (OUJ) enhances remedial education and promotes students' learning from each other as important tasks in the action plan [1] presented by the new president in 2017

As of the second semester of 2018, OUJ has 89,615 students, including both undergraduate and graduate master's and doctoral programs, and each student belongs to one of 50 Study Centers across the country. There is at least one learning center in each prefecture. As mentioned above, because students are dispersed throughout Japan, it seems necessary to explore appropriate support methods from both on-line and off-line face-to-face environments in order to promote students' learning from each other.

With regard to "students 'learning among each other" at OUJ, OUJ has not officially supported such efforts so far, and has been left to the students' voluntary activities. The current status of the OUJ mechanism that enhances students to learn from each other is organized as follows from the perspectives of offline and online.

As an online mechanism that enhances students to learn from each other, there is a group discussion function (called a "talking room") of "System WAKABA", a student portal site that handles academic affairs and learning information for formal course subjects, and there is a forum of "System WAKABA" for postgraduate seminars. However, other than that, the current situation is that information exchange takes place in the informal online community. Examples of these are the "OUJ Thread" of 5 channels (https://www.5ch.net/) which is an anonymous bulletin board community, the "Virtual Campus of OUJ" of Facebook group (https://www.facebook.com/groups/OpenUnivJapan/), other SNS groups and threads specialized for specific subjects, and twitter etc. In these informal communities, there are lively conversations with not only information related to learning, but also matters that are not related at all.

On the other hand, as efforts to enhance students to learn from each other at off-line (face-to-face) environment of OUJ, there are meetups and volunteer groups of students at Study Centers, student unions and reunions, seminars by visiting professors, and research presentations on graduation thesis and master's thesis. In such a meetup or group, students can learn together the contents equivalent to remedial education, such as science and mathematics subjects and English, and can help other students learn how to learn. Such distinctive meetups and efforts are introduced in our public relations magazine.

So far, the author conducted a questionnaire survey of Study Centers throughout Japan in order to clarify the situation of learning among students with a bird's-eye view of how many centers there are such meetups in all the Study Centers, and the actual situation of activities such as the specific activities of those meetups. As a result, it was found that there are meetups or volunteer groups where students learn and support each other in 35.1% of the answered Study Centers[2]. Furthermore, interview surveys by visiting 4 Study Centers selected among them were conducted. Subsequently, the characteristics of the meetups or volunteer groups were clarified that in a meetup where they learn the contents of remedial education, a small number of leader-type students who can also teach are contributing significantly, and that students who support other students want to have a chance to meet and talk to each other for information sharing etc.

From the above background, it is considered that the support to students in the remedial education at OUJ is not enough.

As an example of this, there is the problem of responding to inquiries. At OUJ, students and outsiders can contact the university using e-mail or telephone. On the website about inquiries, "Frequently Asked Questions (FAQ)" from students are posted. The FAQs consist of 13 categories, with a total of 194 questions and answers. However, these FAQs have a lot of information about academic affairs such as method of registration, curriculums, and graduation requirements, and about contents related to the information environment such as lecture videos distributed on the Internet, viewing methods of online lessons, and compatible devices. On the other hand, there is not much content on remedial education such as whether it is good to re-learn and how to learn. Therefore, it is thought that the information required for the students who study at the place of lifelong education is not enough.

In addition, OUJ has a support center that answers inquiries by phone. However, the response time is fixed to the daytime hours only on weekdays and Saturdays, and the center cannot respond to inquiries at night, Sundays and holidays. Although the center can respond to administrative procedures such as course registration procedures and address changes as the content of the inquiry, there are cases where questions about how to learn itself and questions about how to use the learning system cannot be answered sufficiently.

On the other hand, there is an AI chatbot as a mechanism that automatically responds to such queries using artificial intelligence such as natural language processing and machine learning. AI chat bots are generally used to respond to inquiries on specific services and appliances, but in recent years there are also cases where AI chat bots have been used to respond to inquiries on open campuses and to support learning in classes.

Purposes of this research

Based on these backgrounds, in this research, the author builds a learning website using AI chatbots for student support in remedial education. There are the following 3 objectives of this research.

(1) To promote remedial education by exchanging information among students on science and mathematics subjects, language subjects, and how to learn, which are the premise of university education, (2) To provide a communication platform for teaching and learning among students, especially for students who cannot come directly to the Study Center, (3) To give the role of an online tutor to leader-type students who can also teach other students.

For this purpose, in this paper, the author defines requirements for required functions for AI chat bots to respond to the student's inquiry and the students’ learning site for mutual communication and learning among students.

Methods

AI chat bot system for inquiry

In this section, the author defines requirements for required functions for the AI chat bot system to streamline the task of responding to inquiries from students.

Figure 1 shows the configuration of the AI chatbot system proposed in this research. As a user of this system, it is assumed that a case where a learner makes a direct inquiry and a case where a staff member of a support center corresponding to a telephone inquiry becomes a user. In either case, the user inputs in the form of a natural sentence, and after morphological analysis, it is digitized in the form of a vector.

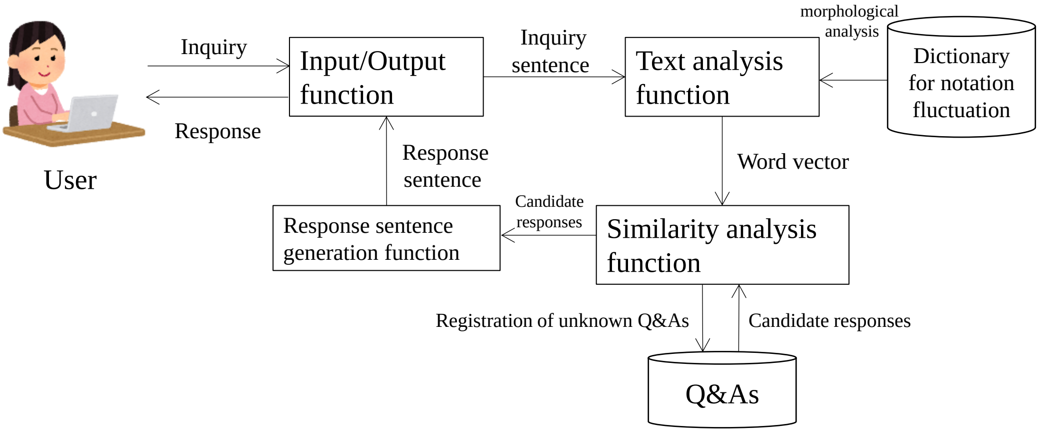

Inquiry
Response
User
Input/Output function
Inquiry sentence
Text analysis function
morphological analysis
Dictionary for notation fluctuation
Response sentence
Word vector
Candidate responses
Response sentence generation function
Similarity analysis function
Registration of unknown Q&As
Candidate responses
Q&As

Figure. 1 System configuration overview

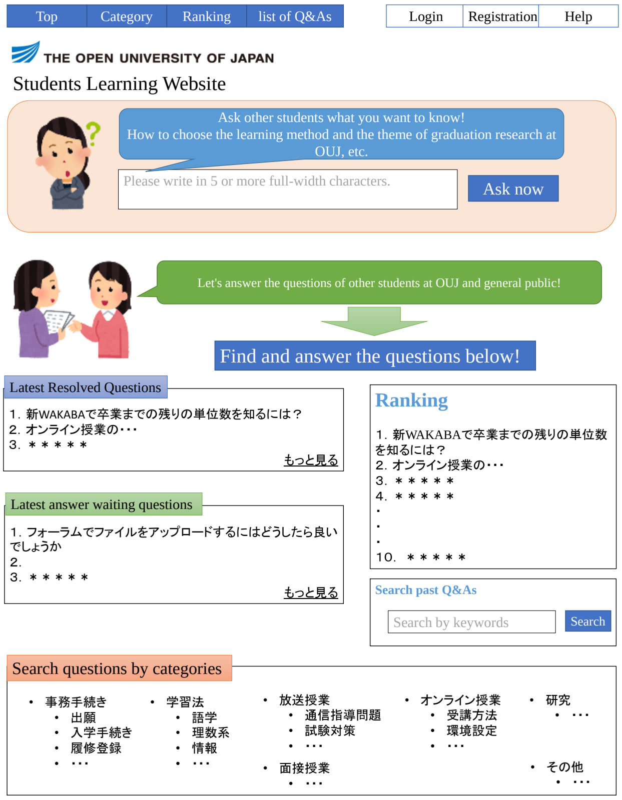
Here, at the time of morphological analysis, it is possible to absorb the fluctuation of the notation by using the fluctuation dictionary. The vectorized input document performs similarity calculation with the vector of the question sentence registered in advance, and the answer of the question sentence whose similarity degree is higher than a predetermined value is returned to the user. The author use 194 Q&As published on the website and another Q&As accumulated by the support center and office departments by telephone as questions and answers to be registered in advance.

A method may also be considered in which these questions and answer data are automatically answered by a machine learning algorithm that has been learned in advance. In the method using machine learning, high accuracy can be expected by learning with sufficient data. Furthermore, further improvement in accuracy can be expected by re-learning even when a new question comes out during actual operation. However, there are cases where it is difficult to apply a machine learning algorithm when there are not enough questions and answer data to be learned. Therefore, it may be necessary to consider which approach to select depending on the volume of initial data.

Students' learning and teaching websites

It is generally said that the AI chat bots introduced in the previous section are suitable for administrative inquiries such as course registration methods, and inquiries regarding the content in which the answers are fixed. Therefore, in this research, we propose the construction of a website of information exchange and learning among students as a means to respond to students' inquiries regarding matters that are difficult to deal with in the previous section, such as how to learn in remedial education.

Figure 2 shows the interface of the learning website among students that we proposed. This tool is an image of a so-called Q & A website, and assumes students at OUJ as main users. Users can ask a question about learning including informal content, such as how to learn at OUJ and how to proceed with graduation research, and other users can answer the question.



Students Learning Website

Ask other students what you want to know!
How to choose the learning method and the theme of graduation research at OUJ, etc.

Please write in 5 or more full-width characters.

Let's answer the questions of other students at OUJ and general public!

Find and answer the questions below!

Latest Resolved Questions

1. 新WAKABAで卒業までの残りの単位数を知るには？
2. オンライン授業の･･･
3. ＊＊＊＊＊

Latest answer waiting questions

1. フォーラムでファイルをアップロードするにはどうしたら良いでしょうか
2.
3. ＊＊＊＊＊

Ranking

1. 新WAKABAで卒業までの残りの単位数を知るには？
2. オンライン授業の･･･
3. ＊＊＊＊＊
4. ＊＊＊＊＊
・
・
・
10. ＊＊＊＊＊

Search past Q&As

Search by keywords

Search questions by categories

- 事務手続き
  - 出願
  - 入学手続き
  - 履修登録
  - ･･･
- 学習法
  - 語学
  - 理数系
  - 情報
  - ･･･
- 放送授業
  - 通信指導問題
  - 試験対策
  - ･･･
- 面接授業
  - ･･･
- オンライン授業
  - 受講方法
  - 環境設定
  - ･･･
- 研究
  - ･･･
- その他
  - ･･･

Figure. 2 The Image of Students' Learning Website

Moreover, in order to improve the quality of interaction, the author will consider using this system as a tutor for the learning support meetups in each Study Center, the OBs and OGs of OUJ, and the leader type students in the learning meetups. Through the use of this website, students can obtain informal information on learning. In addition, it is thought that it will become possible for the answering user to obtain information of the other supporting students and meetups through browsing of other Q&As. In addition, for the user on the answering side, it is thought that a community such as an SNS group is separately constructed to support horizontal connection.

Conclusion and Future Works

In this proceeding, based on the current state of efforts to remedial education at OUJ, the author proposes the design of AI chat bots for the purpose of work saving of inquiries and the learning websites among students in remedial education.

Future issues include the implementation, operation, and practical issues of the proposed system.

References

[1] The Open University of Japan: "Vision '17", http://www.ouj.ac.jp/hp/gaiyo/action_plan.html (Acquisition date: June 10, 2018), 2017 (in Japanese)

[2] Yasuhiko Tsuji, Junji Shibasaki, A survey on university students' learning from each other at all study centers nationwide at the Open University of Japan, Proceeding of The 32nd Annual Conference of the Asian Association of Open Universities(AAOU 2018), pp. 1540-1543, 2018

Correspondence to Intelligent Flexible Learning Model: Challenges and Implications at the Open University of Sri Lanka

Buddhini Gayathri Jayatilleke[1] and Geetha Udayangani Kulasekara[2]

[1] Centre for Educational Technology and Media, The Open University of Sri Lanka, Sri Lanka
bgjay@ou.ac.lk
[2] Centre for Educational Technology and Media, The Open University of Sri Lanka, Sri Lanka
dgkul@ou.ac.lk

Abstract

The purpose of this study is to assess the current status of the Open University of Sri Lanka (OUSL) based on the Taylor's conceptual framework of Generations of Distance Education (GDE). The OUSL as a single-mode national Open and Distance Learning university, began as a national initiative to provide an alternative learning pathway to working adults. It commenced its activities in 1980 using print as the main mode of course delivery. The OUSL has expanded over the years embracing emerging technologies from time to time, and undergone series of technological adoptions gradually through GDE with many challenges and frustrations. This study employs a qualitative research design using reflective practices of the researchers, narrative accounts of past decision makers, interviews with senior academics, and administrators and cross-referenced with documentary evidences. The researchers of this study have been involved actively in the course design and development process throughout as master trainers, educational technologists and reviewers of the OUSL learning materials including print, audio-visual, online and Open Educational Resources (OER). The findings show that the OUSL has advanced towards the fifth GDE; Intelligent Flexible Learning Model demonstrating certain automation with regard to learner and staff administration using automated system. Having these automated systems enabled the OUSL to expand and improve the efficiency of its services and connected to both staff and diverse learners who are scattered across the country through one common platform enabling social equity.

Keywords: *Generations of Distance education, Open and Distance Learning, Open University of Sri Lanka, Flexible learning*

Rationale and objectives of the study

In 1980, the Open University of Sri Lanka (OUSL) commenced its activities as a national single mode university absorbing two institutions; External Services Agency (ESA) and the Sri Lanka Institute of Distance Education (SLIDE) - (Kotelawele, 1987, Raheem, 2010). External Services Agency (ESA) was established in 1972 under the purview of then University of Sri Lanka, and was registering candidates for external examinations for the courses conducted by the University of Sri Lanka.

Distance education was systematically started in Sri Lanka with the establishment of the SLIDE in 1976. Its objective was to provide tertiary education in the fields of mathematics, science, management and technical studies for those who were unable to continue higher education in conventional universities. Print course materials were the main delivery mechanism and were supported with limited face-to-face sessions to discuss the course materials and for practical and laboratory work.

Same model was adopted in the OUSL and was responsible for delivering programmes already offered by the SLIDE and ESA through two Boards of Studies; Board of Study for Management, Science and Technology (MST) and the Board of Study for Humanities and Social Sciences, till they phase out with the OUSL study programmes. The OUSL showed the characteristics of the first Generation of Distance Education (GDE) - Correspondence Model at that time as identified by Taylor (2001).

The OUSL has expanded over the years embracing emerging technologies from time to time, and undergone series of technological adoptions gradually through the GDE with amidst challenges. The purpose of this study is to assess the current status of the OUSL with respect to the Taylor’s conceptual framework of GDE (2001). The following two research questions will be investigated:

- How the OUSL has progressed with respect to the GDE for the past four decades? and
- What were the challenges faced when progressing through the GDE?

This study will explore how the OUSL has transformed through the development of these technologies over the period of nearly 40 years, starting with the conceptual framework used for this study, followed by the methods used for this exploration, results and discussion and finally the conclusion.

Conceptual framework

Many researchers have classified Distance Education (DE) into generations in many ways and one such way is based on technologies used at a particular time period (Caladine, 2008). The first such study was reported by Nipper in 1989 where he identified three GDE with respect to the technologies available at that time; Correspondence teaching based on print technology, Multimedia teaching based on the integration of print with broadcast media, audio, video cassettes and computers, and Computer conferencing with synchronous communication. Later, Taylor investigated in this area and he referred to Nipper’s third generation as the Telelearning Model and identified the fourth as the Flexible Learning Model (Taylor, 1995) and the fifth as the Intelligent Flexible Learning Model (Taylor, 2001). His fifth generation is the expansion of the fourth generation having conceptualized in terms of three fundamental foci based on their experience with the University of Southern Queensland (USQ)’s e-University Project (Taylor, 2001). The characteristics of this conceptual framework is given in Table 1.

Table 1: Models of Distance Education - A Conceptual Framework (Taylor 2001, pg.3)

	Characteristics of Delivery Technologies					
Models of Distance Education and Associated Delivery Technologies	**Flexibility**			**Highly Refined Materials**	**Advanced Interactive Delivery**	**Institutional Variable Costs Approaching Zero**
	Time	**Place**	**Pace**			
FIRST GENERATION - The Correspondence Model						
▪ Print	Yes	Yes	Yes	Yes	No	No
SECOND GENERATION - The Multimedia Model						
▪ Print	Yes	Yes	Yes	Yes	No	No
▪ Audiotape	Yes	Yes	Yes	Yes	No	No
▪ Videotape	Yes	Yes	Yes	Yes	No	No
▪ Computer-based learning (e.g. CML/CAL/IMM)	Yes	Yes	Yes	Yes	Yes	No
▪ Interactive video (disk and tape)	Yes	Yes	Yes	Yes	Yes	No
THIRD GENERATION - The Telelearning Model						
▪ Audio tele-conferencing	No	No	No	No	Yes	No
▪ Video-conferencing	No	No	No	No	Yes	No
▪ Audiographic Communication	No	No	No	Yes	Yes	No
▪ Broadcast TV/Radio and audio-teleconferencing	No	No	No	Yes	Yes	No
FOURTH GENERATION - The Flexible Learning Model						
▪ Interactive multimedia (IMM) online	Yes	Yes	Yes	Yes	Yes	Yes
▪ Internet-based access to WWW resources	Yes	Yes	Yes	Yes	Yes	Yes
▪ Computer-mediated communication	Yes	Yes	Yes	Yes	Yes	No
FIFTH GENERATION - The Intelligent Flexible Learning Model						
▪ Interactive multimedia (IMM) online	Yes	Yes	Yes	Yes	Yes	Yes
▪ Internet-based access to WWW resources	Yes	Yes	Yes	Yes	Yes	Yes
▪ Computer-mediated communication using automated response systems	Yes	Yes	Yes	Yes	Yes	Yes
▪ Campus portal access to institutional processes and resources	Yes	Yes	Yes	Yes	Yes	Yes

Modes of Inquiry

This study mainly employs a qualitative research design as the principal mode of inquiry and focusing on the reflective practices of the researchers, senior academics and administrators, and narrative accounts of past decision makers.

Reflective practice, reflexivity and first person inquiry are extensively used in research to know the process of "*learning through*" and "*learning from experience*" towards attaining new insights of self and/or practice (Boyd & Fales, 1983; Jarvis, 1992). The concept of 'reflective practice' was initially put forward by Dewey (1933) and subsequently strengthened by Schon (1983) in order to facilitate the development of reflective practitioners through "reflection-on-action" (after-the-event thinking) and "reflection-in-action" (thinking while doing). In this study, researchers as reflective practitioners used the "reflection-on-action" to think back to the past events in order to explore this investigation. Data were collected from the following:

- reflections of two researchers who have been actively involved in the course design and development process throughout as master trainers, educational technologists and reviewers of the OUSL learning materials including print, audio-visual, online and Open Educational Resources (OER). Their reflections when moving from one generation to another provided in-depth analysis to this study as pragmatists (Creswell, 2014).
- Interviews of ten senior academics and three administrators who have been directly involved in these technological transformations
- narrative accounts of four former decision makers. These reflective practices were triangulated with documentary evidences.

Results and Discussion

This section focuses on how the OUSL has progressed through the GDE for the nearly four decades with respect to the GDE and reports on the challenges when moving from one generation to another. The following research question will be explored first, using Taylor's (2001) conceptual framework illustrated in Table 1.

1. *How the OUSL has progressed with respect to GDE for the past four decades?*

First generation of Distance Education – The Correspondence Model

The OUSL showed characteristics of first GDE when it was established in 1980, showing characteristics of correspondence teaching using single technology, slow and sparsely feedback and lack of direct learner interactions with the institution (Bates, 2005; Nipper, 1989).

Upon reflecting on the commencement of its first degree programme; Bachelors of Science (BSc), one senior academic commented that *I was involved in the launch of the first ever degree programme at the OUSL; BSc degree programme offered by the Board of Study in Management, Science and Technology (at that time); from the enrolment of students in 1983 and launching the first Degree Programme at the OUSL in 1984. Considerable efforts were taken to initiate the programme as one of the first members of the staff with limited infrastructure facilities and human resources. There were no established mechanisms and the processes were not streamlined for registration and other administrative activities. We were like "Jack-of all trades" attending to all the chores.*

The course materials were written by Professors from conventional universities who were recruited as consultants at the OUSL. They were the subject experts and developed hand-written copies of the content (Coomaraswamy, 1999).

I used to take hand written copies to the data processing unit (now Information Technology Division) at Nawala premises to computerize the documents. The data entry operators typed the copies using mainframe computers leaving spaces for figures. These computers didn't have many functions like the current ones. We couldn't change the fonts; even into italics. So the scientific terms had to be re-typed using electric typewriters (One of the senior academics).

She further elaborated on the process and indicated that they had to proof-read the typed drafts several times before printing the final manuscript. The figures/illustrations were drawn by the draftsman using tracing papers and these drawings were pasted onto the blank spaces of the final manuscript. The 1/3rd of blank space was kept as a margin as the intention of these course materials was to use as workbooks to write student notes. English manuscripts in the first year courses were translated either to Sinhala or Tamil by the academic support staff and were typed by the typists in the typing pool of the OUSL using traditional typewriters.

So the whole process was a tedious task with involvement of several personnel at different intervals; doing manual tasks mostly. Hence, the initial delivery of the course materials took almost one year after the registration of students (One of the senior academics).

The Bachelor of Laws was the second undergraduate programme offered by the OUSL in 1984. Professor Sawithree Goonesekere, second Professor of Law in the country, founder professor of law and the former Head of the Department of Legal Studies of the OUSL, was reflecting her early days at the OUSL at the convocation held in 13.9.2001.

The Board of Studies of Humanities and Social Sciences, as the faculty was called then, did not have a single computer. We considered ourselves as extremely advanced in technology when we could prepare our manuscripts on an electric typewriter. Professors at that time were lesson writers, translators, copy editors, and proof-readers. When we detected that last typographical error, as we scrutinized a manuscript for the last time, we had to find instant solutions. We would type the correct word and paste the corrected cut out carefully on the typed page. And so we produced manuscript after manuscript in a range of subjects hot off the press for the often faceless mass of students, who intern accepted our inadequacies with tolerance, friendship and understanding (Goonesekere, 2001, pg. 133).

Providing quality learning materials to distance learners is the prime function of an ODL university. Thus, the Educational Technology (ET) Division (now Centre for Educational Technology and Media - CETMe) has been set up in the OUSL from its inception and is the only division of this nature in the national university system in the country. In order to facilitate the course writing process and producing audio-visual learning materials, the ET division, commenced staff training; initially by foreign consultants and subsequently by trained in-house master trainers. It also commenced formulating guidelines for quality assurance of OUSL learning material. The division further expanded in 1994 by adding a research ‘cell’ and initiated collecting student profiles (Weerasinghe, 1999) and had originated and maintained a simple database in the division.

The existing practices in course design and development at the OUSL was strengthened drastically and streamlined the processes and mechanisms under the ODA - Overseas Development Assistance (now DfID, Department for International Development) for a period of three years from December 1995 to December 1998 (Weerasinghe, 1999).

Second generation of Distance Education – The Multimedia Model

The second GDE is characterised by multimedia delivery with highly-developed and refined teaching-learning resources including print course material with broadcast media, audio-video cassettes and early computer based learning (Taylor, 2001). The OUSL has used multi-mode delivery using audio cassettes in English language teaching and Bachelor of Law, and video cassettes in BSc programme. The access to these audio-visual resources are through the audio-visual resource centres located at the main regional centres (Jayatilleke & Dassanayake, 2005).

The first course which used the integrated approach was the Environmental and Applied Microbiology, a level 5 course of the B.Sc degree programme which was based on the curriculum in conventional universities. This course was further enriched with videos and was enhanced extensively with the experience of the consultants of the OUUK, under the DfID project. Having undergone the process of course development, the course team chair identified the main components necessary for the production of quality course materials.

Quality in the development of instructional material can be assured through the following stages: training of a course team, adherence to instructional design principles and norms, regular course team meetings, and review of progress according to the schedule, developmental testing of course materials, initial revision, evaluation of the course while or after being offered in the first year, final revision if required (Coomaraswamy, 1999, pg.63).

Third generation of Distance Education - The Telelearning Model

According to Taylor (2001), the third generation is the ‘Telelearning Model based on applications of telecommunication technologies to provide opportunities for synchronous communication such as audio teleconferencing, videoconferencing, audio-graphic communication (simultaneous voice and graphic communication), broadcast TV/ Radio and audio tele conferencing. In this context, the OUSL has not tapped the full potential of these highly interactive communication technologies for teaching and learning purposes other than a few TV programmes used for general public as a promotional strategy. Some of the video programmes produced were later televised in the National TV channel Rupavahini in 1990s under the "*Open University in Focus*".

According to a former Director of Regional Educational Services (RES), audio conferencing facility was used to connect four regional centres; Colomo, Kandy, Matara and Jaffna with the members of the Faculty Boards during the civil war period where communication was a challenging task with no telephone facilities connected to the main cities. This was used for a limited time period but could not sustained due to technical difficulties and poor knowledge on the usage of the new technology by the staff.

Fourth generation of Distance Education - The Flexible Learning Model

The fourth GDE is the Flexible Learning Model based on high quality CD-ROM based interactive multimedia (IMM), with enhanced interactivity and access to an extensive range of teaching-learning resources through World Wide Web and Computer-mediated communication.

The Commonwealth Educational Media Centre for Asia (CEMCA) conducted several capacity building workshops on multimedia, and a few have incorporated interactive multimedia (IMM) into the learning package. Microbiology course was one such course.

> *... learners' feedback evaluations carried out in 2003, still indicated learners' difficulty in comprehending abstract bacterial genetic processes, which are lengthy explanations in print course material. In addition, these bacterial processes were represented using series of graphics, illustrating the temporal change. These graphics portrayed a more cluttered visual display, with added symbols……Therefore, with the purpose of explaining dynamic abstract concepts in microbiology, an interactive multimedia (IMM) was developed as a supplement to the print course material, to support undergraduates who are following this course (Kulasekara, Jayatilleke, & Coomarawamy, 2011, pg. 114).*

Online learning was first introduced in 2003 with collaboration of CEMCA using an open source software; "Manhatton" as the Learning Management System (LMS) with 6 online courses (Jayatilleke, 2005; 2010). Later, this initiative was extensively developed through Capacity Enhancement (OUSL-CE) component of the Distance Education Modernization Project (DEMP) during 2003-2009. One of its primary aim was to establish structures and mechanisms to develop and deliver online courses through the expansion of the outreach across the country. Facilitating a gradual move from basic supplemental courses through blended courses to exclusively online courses (Liyanagama, Kulasekara & Vidanapathirana, 2015). Starting from 33 online courses in 2007/08 academic year and reaching 303 by the end of 2017/18 academic year, though a majority of these courses are supplemental in nature.

Fifth generation of Distance Education – The Intelligent Flexible Learning Model

The emergence of fifth GDE is an extension of the fourth GDE with automated functionalities. This model aims at establishing an 'e-University' concept, based on high degree of automation and learner control to asynchronous online learning capitalizing the potential of internet and interactive multimedia. It has conceptualized in terms of three fundamental foci:

- e-Information repositories
- e-Applications (e-enrolment, e-administration, e-commerce, e-publishing, e-teaching-learning) and
- e-Interface (Taylor, 2001).

With respect to e-Information repositories, the OUSL has commenced computerizing its student records partially by the Data Processing Unit using mainframe computers in 1983 with the launching of the first OUSL degree programme. Basic processing system was operational such as creation of a simple transaction with details of students' course choices, marks and grades and was exclusively focused on student data. *The OUSL was the first university in Sri Lanka to develop an* *electronic database system to manage its large volume of student records. This was a simple transaction processing system, developed in the late 1980s to handle academic programme applications, course registrations and examination mark processing* (Johnson & Johnson, 1999, p. 27).

Even though the OUSL had a vision to develop a Knowledge Based System (KBS) in 1996, well before the introduction of the fifth GDE, it had to abandon the idea and had to go for the traditional Management Information System (MIS).

The OUSL aspired for a Knowledge Based System (KBS). It was initially thought to be feasible. However, halfway through the project period, the focus was re-directed to a traditional MIS while allowing parallel development of a proto-type KBS (Weerasinghe, 1999, p. 7). Even though the prototype of the MIS was designed within the project period but never materialized due to the re-allocation of funds to other priority areas as a cost saving strategy (Weerasinghe, 1999).

According to a former Director/IT, the abandoned MIS was recommenced under the OUSL-CE project of the DEMP and developed extensively with different functional models under the Open University MIS (OMIS) during the project period (2003-2009).

- a new financial management system, including General Ledger, Accounts Payable and Purchase Orders, Human Resources and Pay Roll modules
- student administration - developed a student portal (MyOUSL) enabling students to access their records and general information
- document management system and human resource system.

The OUSL LMS (e-teaching and learning) also undergone several transformations and successfully integrated into the OMIS MyOUSL module with identical user control credentials since 2018. Initiative has been taken to conduct online assessments across all regional centres since 2008. In addition, commencement of a cross-border exclusively online course with international e-mentors from University of New Mexico was conducted in 2014 with many challenges and frustrations (Jayatilleke, Kulasekara, Kumarasinha & Gunawardena 2017). A Massive Open Online Courses (MOOCS) has been initiated through the collaboration with Commonwealth of Learning (COL) in 2018.

The OUSL Library also developed a computerized record system of its holdings, and maintains dynamic records of students borrowing in 1990s (Johnson & Johnson, 1999, pg. 31). It has expanded and developed its own content management system using open source software; KOHA and automated most of its functions.

According to one of the senior academics, the OUSL has initiated e-applications where potential students can download the e-application from the web since 2009. In 2017, students were directly registered to the online system via the Internet replacing manual entries. With respect to e-administration, most of the OUSL documents such as circulars, notices, minutes of the meetings etc. are available in the digitized versions through the OUSL Intranet. The OUSL extensively use OUSL email (AllOU) for communication.

Having reflecting on the transformation for nearly 40 years, some of the functions of the fifth GDE was initiated and operational as single entities, however, not fully integrated with all the operations. E-commerce and E-publishing are possible to a limited extent, however, need to be developed further and integrated to other sub-systems.

2. What were the challenges faced when progressing from one generation to another?

The OUSL has faced many challenges when going through these GDE over the past years. Some technological innovations could not be materialized in the first place, some were piloted and never institutionalized, some were achieved to a lesser extent and subsequently expanded after a gap of several years. The following section highlights the main challenges faced at different stages of the GDE:

- availability of staff time to achieve required performance through project-type assignments and other innovative practices. *Staff time in the OUSL has been fashioned under the role model of conventional universities and there seems to be a mismatch between demand for* *staff time and the use pattern of time. It has become mandatory that a time management profile for a distance teacher be developed at OUSL. This has to take into account realistic time schedules for media integrated material development (Weerasinghe, 1999, pg. 13).*

- challenges faced during the development of the initial MIS and those challenges are still persists when expanding and strengthening e-activities in the OUSL
  - difficulty in encouraging young inexperienced temporary programmers to adopt appropriate team working practices
  - regular departure of team members to better paid jobs in the private sector
  - delays in necessary equipment acquisitions, particularly with local development network infrastructure (Johnson & Johnson, 1999).
- complexity of e-interface of the document management system of the OMIS was never materialized as the interface was too complex and was not user-friendly.
- sustainability of the innovative practices and institutionalization of these is a challenge due to lack of funds and limited technical capacity within the OUSL.
- "diffusion of technology" is not so pronounced over the years; from six online courses in 2003 to 303 online courses in 2018, implying staff reluctance to change with emerging technologies

Conclusion

The findings show that the OUSL has advanced towards the fifth GDE; Intelligent Flexible Learning Model demonstrating certain automation with e-Information repositories, e-Applications and e-Interface. Having these automated systems enabled the OUSL to expand and improve the efficiency of its services and connected to both staff and diverse learners who are scattered across the country through one common platform enabling social equity. However, the integration of all the e-systems and reaching towards an 'e-university' with complete automation is still a dream.

References

Bates, W. T. (2005). *Technology, E learning and Distance Education* (2nd ed.). London: Routledge.

Boyd, D. and Fales, A. (1983). Reflective learning: key to learning from experience. *Journal of Humanistic Psychology*, 23(2), 99–117.

Caladine, R. (2008). E*nhancing E-learning with Media-Rich Content and Interaction.* UK & USA: IGI Global.

Dewey, J. (1933). *How We Think*. New York: Heath & Co.

Goonesekere, S. (2001). Convocation Address I. *OUSL Journal*, 3, 132–142.

Jarvis, P. (1992). Reflective practice and nursing. *Nurse Education Today*, 12(3), 174–181.

Jayatilleke, B. G. (2005). *A preliminary study on the initial experience of Teachers' using On-line Learning Environment at the OUSL*. In the Proceedings of the OUSL Silver Jubilee Academic Sessions, Open University of Sri Lanka, Colombo, November 24-25, 2005.

Jayatilleke, B G (2010). Communication model to knowledge construction model: OUSL Teachers' experience of Online Education. In Ranasinghe S. (2010). *Open and Distance Learning in the 21^st^ Century: Challenges and Possibilities.* (Pg. 27-38). The Open University of Sri Lanka: Colombo.

Jayatilleke, B. G. and Dassanayake, N. (2005). *A Study of Students' Use of existing AV materials in the Audio-visual Resource Centres of the OUSL*. In the Proceedings of the OUSL Silver Jubilee Academic Sessions, Open University of Sri Lanka, Colombo, November 24-25, 2005, (79-83).

Jayatilleke, B. G.; Kulasekara, G. U.; Kumarasinha, M. B. and Gunawardena, C. N. (2017). Implementing the First Cross-border Professional Development Online Course through International E-mentoring: Reflections and Perspectives. *Open Praxis*, 9(1), 31–44.

Johnson, R. L. and Johnson, S. (1999). Potential MIS contribution to Institutional strengthening at the Open University of Sri Lanka. *OUSL Journal*, 2,26-43.

Kotelawele, D. A. (1987). *Training Needs in the use of Media for Distance Education in Sri Lanka.* Presented at CIDA-AMIC Seminar on Training Needs in the use of Media for Distance Education in Asia. Singapore, June 8-11, 1987.

Kulasekara,G. U., Jayatillake, B.G. and Coomaraswamy, U. (2011). Learner perceptions on instructional design of multimedia in learning abstract concepts in science at a distance. Open Learning: *The Journal of Open and Distance Learning*. 26(2), 113-26

Liyanagama, J., Kulasekara, G. U. and Vidanapathirana, U. (2015). *The effectiveness of the online conversion strategy of the Open University of Sri Lanka; what, how and why*? In the Proceedings of the 29 Annual Conference of the Asian Association of Open Universities, Kuala Lumpur, Malaysia, 30 November – 2 December 2015.

Nipper, S. (1989). Third generation distance learning and computer conferencing. In R. Mason, & A. Kaye (eds.). *Mindweave. Communications, Computers and Distance Education.* London: Pergamon.

Raheem, R. (2010). Open University of Sri Lanka: 1980-2010, from experience to excellence. In Raheem, R and Vidanapathirana (2010). *Open University of Sri Lanka 1980-2010.* Open University of Sri Lanka. Nawala.

Schon, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.

Taylor, J. C. (1995). Distance education technologies: The fourth generation. *Australian Journal of Educational Technology*. 11(2), 1-7.

Taylor, J. C. (2001). Fifth generation Distance Education. *Higher Education*, Series No. 40.

Weerasinghe, B. (1999). Project for enhancement of Distance Education of the Open University of Sri Lanka with British Overseas Development Assistance – An Overview. *OUSL Journal*, 2, 3-25.

Online Learning Community Model to Enhance Knowledge Management in Research: Challenges in Distance Education

Chutiwat Suwatthipong[1], Chalabhorn Suwansumrit[2]

[1] Office of Educational Technology, Sukhothai Thammathirat Open University, Thailand
Chutiwat.suw@stou.ac.th
[2] Office of Educational Technology, Sukhothai Thammathirat Open University, Thailand
Chalabhorn@gmail.com

Abstract

Knowledge is essential to the development of education. Systematic knowledge management with technology can help stimulating knowledge and experience transfer processes more conveniently. Not only does this encourage lifelong learning, but this also can expand opportunities, and reduce educational disparity. Knowledge in research is one of the tools that can create new knowledge that can solve problems and promote progresses in various areas. Online learning community is a gathering of people who share some interests, do the activity and has interacted with each other, which creates the exchange of ideas and new knowledge. Distance education is another learning platform that allows lifelong learning to increase educational equality and encourage mass education. The purpose of this research was to develop an online learning community model to enhance knowledge management in research for distance education. The proposed online learning community model was evaluated by 5 experts in instructional designers and data were analyzed using content analysis and descriptive statistics. It was found that: 1) There are 5 elements of community namely people, activity, supporting, tools on web and knowledge, and 2) The online learning community model consists of 6 steps including create, select, adapt, keep, manage and publish.

Keywords: *Online Learning Community Model, Elements of Community,*
Knowledge Management in Research, Distance Education

Rationale and objectives of the study

Humans create knowledge by using complex brain mechanisms. Knowledge created is stored in a person. Only a fragment of knowledge is disseminated to others. The shared knowledge is collected in various types of media or is in the form of innovations or services. Therefore, knowledge can be divided into two types: tacit knowledge and explicit knowledge. The two types of knowledge interact in a cycle of four stages: 1) externalization of a person's tactic knowledge, 2) combination with explicit knowledge, 3) internalization of explicit knowledge into a person, and 4) synthetizing of a person's tactic knowledge (Nonaka and Takeuchi, 1995).

Hongto and Thammetar (2012) conducted the research on the development of online learning community by using the process of creating instructional innovation for computer teachers. It was found that the online learning community model consisted of 4 elements: 1) resources in the online learning community, 2) online learning groups, 3) tools used to exchange knowledge in the online learning communities, and 4) technology supporting collaboration on the online community. In addition, it was found that the learning process of the online learning community model consisted of 8 steps: 1) planning and setting a learning direction, 2) leading to participation in the online learning community, 3) finding problems or setting missions, 4) collecting information and applying the results from the finding, 5) planning to create instructional innovation, 6) creating instructional innovation, 7) presenting instructional innovation, and 8) evaluation. Netwong (2010) have studied about the development of online community and learning achievement in Information Technology. It was found that the mainstreaming model is consisted of 5 components as followed: 1) mainstreaming management 2) technology 3) community 4) activity of online learning community and 5) community network. The model included 3 phases: 1) providing mainstreaming to develop online learning community 2) processing the learning activities that are divided into 4 process: provided learning, offered knowledge and group activity, reviewed knowledge and group mainstreaming activity to develop online learning community and knowledge application, and 3) the learner evaluation. The post-test score of undergraduate students for characteristic of online learning community and learning achievement were significantly higher than pre-test scores at .05 significant level.

Sukhothai Thammathirat Open University has focused on student-centered instruction by reforming learning processes and approaches. Also, instruction approach has been set to be consistent with nature to fully develop the potential of students. The University has adopted the learning process that allows learners to use computers and the internet as tools to seek knowledge, leading to self-directed learning. However, there are few problems such as learners lacking of communication skills, the preparation and providing of various learning resources, the lack of guidelines for group activities of learners, and the lack of related technology. The research found that an online learning community for student teachers help facilitate the searching of information and create a process of learning and systematic problem solving (Judge, Osman and Yassin, 2011). Also, information and communication technology has an important role as a tool in the online learning community (Yu Chu Yeh, 2010).

The development of an online learning community model employed additional knowledge-building processes such as further learning from websites and exchanging knowledge to enhance instruction and research skills. It was found that the method to develop and improve learning activities was to allow learners to participate in learning activities as much as possible. It should focus on organizing collaborative group activities to exchange knowledge. The process of creating knowledge enables learners to interact with others. The interaction will help develop thinking skills and skills in presenting opinions, understand the individual differences regarding ideas and experiences, build good relationships with others, and develop willingness to help others and accept help from others, as well as, to work together with others, resulting in a learning community such as a chat rooms, discussion board, and webboard. Also, learners will develop a habit of searching for knowledge on the internet regularly.

Therefore, the researcher is interested in studying the use of the online learning community model by using the research knowledge creation process with the above mentioned steps and activities. This will help students to develop the behavior of knowledge management in research. Technology innovation is needed to enhance the quality of knowledge management in research. It is necessary to develop the online learning community model to enhance knowledge management in research to enable undergraduate students of Sukhothai Thammathirat Open University to develop effective research skills, leading to the creating of instructional innovation of the University.

Research objective

To develop an online learning community model to enhance knowledge management in research of students of Sukhothai Thammathirat Open University

Definitions

Online learning community means a gathering of people to exchange learning and experiences with the goal of acquiring knowledge on the similar or same subject by using tools to create and use knowledge through technology and online environments together (Nasongkhla, 2007; Galbraith, 1995; Tu and Corry, 2002).

Knowledge management is a collection of practices of an organization and process related to the creation, use, and dissemination of knowledge and contexts. It is a process and system management of data, information, knowledge, as well as, a person's experience in order to create knowledge. The information must be stored in a manner that users can access via convenient channels to enable them to apply knowledge, resulting in knowledge transfer and dissemination in the organization (Kucza, 2001; Wichienphanya, 2004; Panich, 2006).

Research is a reliable method of searching for truth. Knowledge obtained from the research can be used to create rules and theories to be used as reference and explain the phenomenon. The results can also predict and control the occurrence of the phenomenon. Important characteristics of research are the search for facts, systematic and regulated process or action, and action that has a definite purpose (Fuman, 1999).

Methods and Data Collection

The researcher divided the research process into 3 phases as follows: 1) Phase 1: study the related concepts, theories, principles, and research as well as the needs of the online learning community model to enhance knowledge management in research, 2) Phase 2: draft the online learning community model to enhance knowledge management in research, and 3) Phase 3: certify the online learning community model to enhance knowledge management in research. The sample group in Phase 1 consisted of 74 instructors and 151 students from Sukhothai Thammathirat Open University. Data was collected by using a 5-level scale questionnaire on the needs of the online learning community (17 items), knowledge and understanding in knowledge management (14 items), and knowledge in research (18 items) and knowledge in instructional innovation (7 items). The sample group in Phase 3 consisted of 5 experts in educational technology. Data was collected by a certification assessment form on the online learning community model. Data analysis was done by mean and standard deviation (SD).

Results

The researcher divided the results of the research into 3 parts as follows: 1) The results of the analysis of the needs of the online learning community model to enhance knowledge management in research, 2) The results of the creation of the (draft) online learning community model to enhance knowledge management in research, and 3) The results of the certification of the online learning community model to enhance knowledge management in research.

1) The results of the analysis of the needs of the online learning community model to enhance knowledge management in research

Table 1: The results of the analysis of the needs of the online learning community model to enhance knowledge management in research.

Item	Mean	SD
Instructor (N=74)		
1. The needs of online learning community model	3.73	0.76
2. Knowledge in knowledge management	3.66	0.58
3. Knowledge in research	4.36	0.53
4. Knowledge in instructional innovation	3.85	0.55
Student (N=151)		
1. The needs of online learning community model	4.46	0.48
2. Knowledge in knowledge management	4.15	0.51
3. Knowledge in research	3.97	0.72
4. Knowledge in instructional innovation	3.95	0.74

Table 1 shows that when considering each item, instructors had knowledge in research most which was more than students' knowledge in research. It was also found that students needed the online learning community most, followed by knowledge in knowledge management and knowledge in research.

2) The results of the creation of the (draft) online learning community model to enhance knowledge management in research

The researcher used data obtained from study the related concepts, theories, principles, and research as well as the needs of the online learning community model to enhance knowledge management in research in Phase 1 to draft the online learning community model to enhance knowledge management in research for undergraduate students of Sukhothai Thammathirat Open University. The results of are shown in Figure 1.

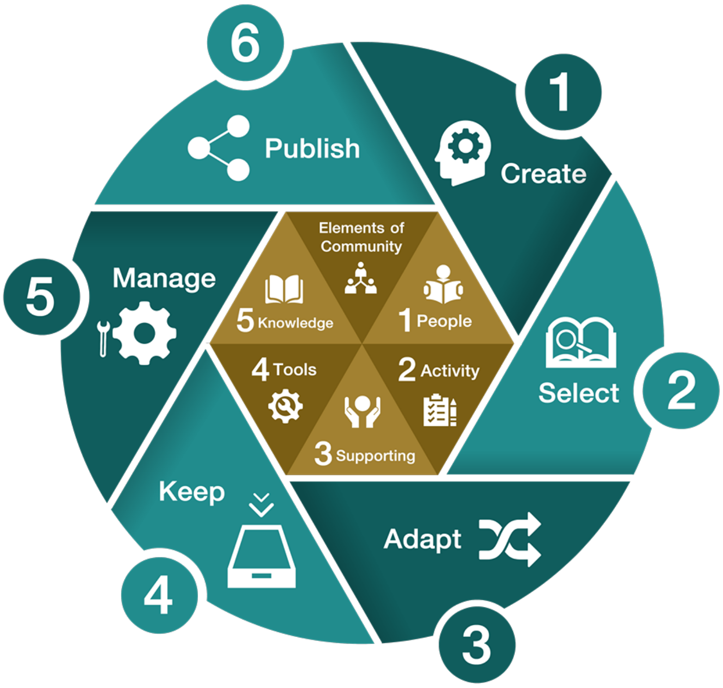


Fig 1. The Online Learning Community Model to Enhance Knowledge Management in Research

Elements of the community

Elements of the online learning community model to enhance knowledge management in research for students of Sukhothai Thammathirat Open University consists of 5 elements: people, activity, supporting, tools on web, and knowledge. The details are as follows.

Element 1: People. People in an online community include instructors and learners.

Element 2: Activity. There must be cooperation of people in the community. Instructors have teaching strategies. Learners and instructors can brainstorm to create new knowledge and innovation. Relationships between instructors and learners, instructor and instructor, and learners and learners will be created. Learners can study conveniently. There is a transfer of knowledge, examination, and evaluation together.

Element 3: Supporting. Supporting is required from various departments. For example, the university promotes a learning community to create a corporate culture. Staff can formulate a guideline together. An interaction and group power are encouraged to create cooperation. Group discussions provide an opportunity to discuss, organize the system, and share resources together.

Element 4: Tools on web. Technology and tools used in an online community include social media such as Line, Youtube Facebook etc. Online teaching and learning management systems include Learning Management System, Content Management System, etc.

Element 5: Knowledge. Knowledge consists of knowledge, knowledge management, basic knowledge in research, and knowledge in instructional innovation.

Process

The process of the online learning community model to enhance knowledge management in research for students of Sukhothai Thammathirat Open University consists of 6 steps: 1) create knowledge, 2) select knowledge, 3) adapt knowledge, 4) keep knowledge, 5) manage knowledge, and 6) publish knowledge. The details are as follows.

1. Create knowledge is a step and method for creating deep and clear knowledge and understanding. This is done by searching for knowledge in the organization: What knowledge does the organization have? What is the form of knowledge? Who possess knowledge? What knowledge is needed to enable the organization to manage knowledge resources effectively? Knowledge needs are identified. Knowledge is explored and collected.

2. Select knowledge is a step which people in the community jointly select good, valuable, reasonable, and appropriate knowledge for further use.

3. Adapt knowledge is a step which a person adjusts existing knowledge in accordance with changes and manages the context of knowledge to be implemented.

4. Keep knowledge is a step which people in the community jointly structure and store useful information in the knowledge base system to allow users to access and find information accurately and quickly.

5. Manage knowledge is a step for checking and reviewing important issues to be updated. There is always an examination of knowledge and a review of the issues or knowledge.

6. Publish knowledge is a step for presenting knowledge that is arranged in a format that people can access anywhere and anytime by using technology to help disseminate knowledge and bring that knowledge to use for maximum benefit.

3) The results of the certification of the online learning community model to enhance knowledge management in research.

From the results of the research Phase 2, the researcher presented the (draft) online learning community to experts in educational technology to assess and certify the online learning community model. The results of the analysis are shown in Table 2.

Table 2: Mean and standard deviation of the evaluation of the appropriateness of the draft of the online learning community model to enhance knowledge management in research for students of Sukhothai Thammathirat Open University.

No	Item	Statistics		Level
		Mean	SD	
1	Model Design	4.60	0.89	Most Suitable
2	Elements of Community	4.64	0.61	Most Suitable
	1. People	4.20	1.10	Very Suitable
	2. Activity	4.60	0.89	Most Suitable
	3. Supporting	4.80	0.45	Most Suitable
	4. Tools on Web	4.80	0.45	Most Suitable
	5. Knowledge	4.80	0.45	Most Suitable
3	Process	4.70	0.45	Most Suitable
	1. Create	4.60	0.55	Most Suitable

No	Item	Statistics		Level
		Mean	SD	
	2. Select	4.60	0.55	Most Suitable
	3. Adapt	4.80	0.45	Most Suitable
	4. Keep	4.60	0.55	Most Suitable
	5. Manage	4.80	0.45	Most Suitable
	6. Publish	4.80	0.45	Most Suitable
4	Appropriateness of use	4.60	0.55	Most Suitable
	Total	4.66	0.45	Most Suitable

Table 2 shows that the overall appropriateness of the (draft) online learning community model to enhance knowledge management in research for students of Sukhothai Thammathirat Open University is at the highest level (Mean=4.66, SD=0.45). Mean of supporting, tools on web, and knowledge elements has the appropriateness at the highest level (Mean=4.80, SD=0.45). Mean of the process of adapt, manage, and publish has the appropriateness at the highest level (Mean=4.80, SD=0.45).

In addition, experts provided additional suggestions about the (draft) online learning community model to enhance knowledge management in research for students of Sukhothai Thammathirat Open University. In terms of people elements, the role of a person should be clearly identified because it affects other elements and processes. There should be the addition of system administrators, online community managers, and expert or external advisors. As for activity element, because this element links to the 6 steps, there should be the details to link and adjust the model of the community. As for tools on web element, the name of the tools should be specified and the tools should be clearly organized into categories, such as data management tools and communication tools. This will make the explanation of the process more clear. The process of create knowledge is the step which any person in the organization creates knowledge. There should be an explanation to link with people element and the role should be identified more clearly.

Conclusion and discussion

The online learning community model to enhance knowledge management in research consists of 1) elements of community and 2) online learning community model. There are 5 elements of community namely people, activity, supporting, tools on web and knowledge. This is in accordance with Panich (2004) stating that the elements of knowledge management consisted of people, technology, and knowledge process and the research of Bunlikhitsiri (2010) which found that the elements consisted of members and roles, activity, community knowledge, technology, motivation, and evaluation. The online learning community model consists of 6 steps, including create, select, adapt, keep, manage and publish. This is in accordance with the concept of Leibowitz (1998), referred in Jindawong (2006) Natarajan and Shekhar (2000) Kucza (2001) Chandavimol (2556) stating about steps and process of knowledge management in the community as mentioned above.

Recommendations

This research has designed the Online Learning Community Model to Enhance Knowledge Management in Research used in distance education and data collection with graduate students. Before being used in other work contexts, Users should study the guidelines for various actions. First, the knowledge management operation was proceed as planned. Especially if it is applied to general education, Users should adjust the various steps to suit the user context again, such as introducing the concept of game applications to create motivation and engagement in managing knowledge together.

References

Bunlikhitsiri, B. (2010). *Development of a Knowledge Creation Process in Virtual Learning Communities for a Academic in Higher Education Institutions*. Retrieved May 17. 2019, from http://cuir.car.chula.ac.th/handle/123456789/32882.

Chandavimol (2556). *Development of A Blended Training Model with Knowledge Management and Action Learning Principles to Develop Training Program Design Competencies of Personnel Development Staff*. Retrieved May 17. 2019, from http://cuir.car.chula.ac.th/handle/123456789/42764

Fuman, U. 1999). *A study of faculty team research : a case study research of Rajabhat Institute Suandusit.* Retrieved May 17. 2019, from http://cuir.car.chula.ac.th/handle/123456789/9257

Galbraith, J. R. (1995). *The Jossey-Bass management series. Designing organizations: An executive briefing on strategy, structure, and process*. San Francisco, CA, US: Jossey-Bass.

Hongto, W.,Thapanee, T. 2012. *The Development of an Online Learning Community Model Using Knowledge Creation Process to Create Instructional Innovation of Computer Teachers*. Retrieved May 17. 2019, from https://www.tci-thaijo.org/index.php/suedureasearchjournal/article/view/6954/5997.

Jindawong, P. (2006). *Knowledge Management: Knowledge Management The Experience*. Pathum Thani: Paragon Management.

Judge, S. K, Osman, K., & Yassin, S. F. M. (2011). *Cultivating communication through PBL with ICT*. Procedia Social and Behavioral Sciences, 15, 1546–1550.

Kucza. T. (2001). *Knowledge Management Process Model*. Retrieved May 17. 2019, from https://www.vtt.fi/inf/pdf/publications/2001/P455.pdf

Natarajan. G. & Shekhar. S. (2000*). Knowledge Management Enabling Business growth*. New Delhi: Tata McGraw-Hill Publishing Company Limited.

Netwong, T.(2010*). Development of a Mainstreaming Model to Develop Online Learning Community and Learning Achievement in Information Technology For Undergraduate Students*. Retrieved June 30. 2019, from http://cuir.car.chula.ac.th/handle/123456789/19408.

Na-songkhla, J. 2007. *E-Instruction Design*. Bangkok: ChulaPress.

Nonaka, I. Takeuchi., H. 1995. *The knowledge-creating company*. New York: Oxford University Press.

Panich, T. (2006). *Knowledge Managemen*t. Bangkok: Health Heart Printed.

Panich, T. (2008*). Knowledge Management: Practice Edition*. The Knowledge Management Institute Foundation. Bangkok Tu, C., & Corry, M. (2002). A paradigm shift for online community research. Distance Education: AnInternational Journal, 22(2)

Wichienphanya, P. (2004). *Knowledge Management: Basics and Applications*. Bangkok: Thangamol Printed.

Yu Chu Yeh, (2010). *Knowledge management in blended learning: Effects on professional development in creativity instruction.Article* (PDF Available) in Computers & Education 56(1):146-156 · January 2010.

Teacher's Attitude towards OER: A Comparative Study of Uttarakhand Open University, India and Sukhothai Thammathirat Open University, Thailand

Jeetendra Pande[1], Kamolrat Intaratat[2], G. Mythili[3], Alka Singh[4]

[1]Assistant Professor, School of Computer Science & IT
Uttarakhand Open University, India
jpande@uou.ac.in
[2]Associate Professor, School of Communication Arts,
Sukhothai Thammathirat Open University, Thailand
kamolratchim@gmail.com
[3]Depty Direcotor- Staff Training and Research Institute of Distance Education,
Indira Gandhi National Open University
Maidan Garhi, New Delhi, India
gmythili@ignou.ac.in
[4]Assistant Professor, Central Institute of Educational Technology
National Council for Educational Research and Training
Sri Aurobindo Marg, New Delhi, India
edu.alkasingh@gmail.com

Abstract

The Open Educational Resource (OER) is based on culture of sharing and learning, encouraging the teachers to adopt existing OER, adapt and share with others to keep up the cycle of collaboration and continuous improvement. Understanding teachers' attitude towards the use of OER and comparing data across institutions may help to recognize the issues that impact OER take-up. The major objectives of the paper were to study the teacher's attitude towards OER and to find any significant relationship between Uttarakhand Open University (UOU) and Sukhothai Thammathirat Open University (STOU), Thailand.

The teachers' attitude towards OER scale with a five-point scale from strongly disagree to strongly agree was used in this study. Based on the scale, adaptation & use of OER and sharing of OER can be identified. The questionnaire was distributed to the faculty of UOU and STOU. There were 26 respondents of UOU and 32 respondents of STOU considered for analysis. The data have been analyzed quantitatively by implying statistical measures. The frequency measures were used to present the demographic as well as other data along with chi-square test. The analysis was done in PSPP, an open source software.

The analysis revealed that faculty of both the universities agreed that sharing of OER helps to get feedback; enhances their personal and organizational reputation; increases network and sphere of influence; and improves recognition at a global level. Similarly, faculty of both universities agreed that competencies and knowledge towards OER helps in adopting OER in teaching learning process. It has been concluded that faculty of UOU and STOU have positive attitude towards OER which can be shared and adapted for teaching learning process in their respective institutions to facilitate the students for their betterment of learning.

Keywords: *Open Educational Resources (OER), Attitude, Adaptation, Sharing resources*

Introduction

OER has become a core component of open education in higher educational settings (Mulder, 2015). To begin with, we need to understand the concept of OER. According to (UNESCO, 2012), OER are digital or any other form of resources for teaching, learning and research available in public domain with an open license which authorize the users or creators to freely use, adapt, redistribute with no or limited restrictions. The open licensing has been defined by pertinent international conventions within the system of intellectual property rights which respect the authorship of the creator.

It is of particular interest in developing countries if OER can be utilized to improve the quality of higher education and give more people opportunity to receive a higher education while keeping the total cost for education down (Sikwibele & Mungoo, 2009) (Caswell, Henson, Jensen, & Wiley, 2008). In addition, awareness of OER among teaching staff is an important in order to make higher education accessible with growing number of teachers. Apart from awareness, the attitude of teachers is also important for utilization of available resources (Jurado & Pettersson, 2015). Several studies reported positive attitude of teachers towards OER. It was found in one of the studies by (Kanwar, Kodhandaraman, & Umar, 2010) that utilising OER purportedly reduces the time associated with developing courses and programmes, facilitates sharing of knowledge, preserves and disseminates indigenous knowledge, and improves educational quality at all levels. Similarly, (Butcher, 2011) revealed that OER provide access to global online content that can be localised without legal restriction, introduce greater choice in terms of available learning resources and create inclusive learning communities for teachers as well as students.

To recommend OER uptake in Indian higher education institutions for promoting it in a sustainable manner, (Mishra & Singh, 2017) endorsed a comprehensive strategy at the institutional level. In terms of distance education institutions, digital technologies, coupled with OER could enable to serve the educational needs of diverse communities, provided the learners have easy access to open technologies (Panda & Santosh, 2017). Moreover, the OER movement has gained much momentum recently as a relatively new global phenomenon which is capable of bridging the knowledge divide (Abeywardena, Dhanarajan, & Chan, 2012) (Ozdemir & Bonk, 2017). Keeping in mind the above aspects of OER, the researchers decided to explore the attitude of open universities teachers' attitude towards OER with respect to sharing, adaptation & use and organizational facets. The methodology and findings are presented further.

Methodology

The present study operated a quantitative approach to investigate the attitude of higher education teachers towards OER. The sample of teachers were randomly selected from two different open universities i.e. Uttarakhand Open University (UOU), India and Sukhothai Thammathirat Open University (STOU), Thailand. A questionnaire including five-point scale was used for data collection through google form. It included statements related to adaptation & use, sharing, and organizational aspects of OER. Overall, 58 responses including 26 from UOU and 32 from STOU were considered for data analysis. The data was analyzed quantitatively through PSPP implying statistical measures, an open source software for data analysis.

Questionnaire

Based on review of literature, the research team adapted an attitude scale for OER (ATOER) developed and standardized by Mishra et.al (2016). The questionnaire included demographic details, 5-point ATOER scale catering to teachers' sharing, adaptation & use, and organizational aspects of OER. The adapted attitude scale had 0.897 reliability co-efficient Cronbach's α with two sub-scales having 0.893 and 0.715 reliability co-efficient for Sharing and Adaptation& use respectively (Mishra, Sharma, Sharma, Singh, & Thakur, 2016)

Findings

There were total 58 teachers responded on the questionnaire including 26 (44.83%) from UOU and 32 (55.17%) from STOU. Moreover, the majority (54.24%) of university teachers were within the age group of 35-50. It indicates that more than half of the teachers were in the middle of their career. Similarly, more than half number (55.93 %) of the teachers were female, while 42.37 % were male. Besides, the majority of teachers (37.29%) were assistant professor in their respective open universities.

Attitude of teachers towards Sharing of OER

Table 1 presents the frequency percentage of 13 items' sub-scale for sharing of OER by teachers of UOU and STOU. It indicated that, overall, open university teachers are positive about sharing of OER. It was found that 100 % teachers agreed to consider that sharing of their own educational resources is their responsibility. About 96% of them felt pleasure if someone adopts/adapts their created educational resources. In addition, 93% teachers reflected that sharing improve their professional respect. Moreover, teachers' attitude indicated that sharing also encourages others to create and share resources as OER (93.09 %).

Interestingly, all26 teachers from UOU found that use of their OER by others bring pleasure and being a teacher, it is their responsibility to share all educational resources created by them. On the other hand, 15 % and 43 % of UOU and STOU teachers respectively agreed that others use of OER improves their sense of achievement, while more than one-third of them (37.93 %) reported moderate and neutral response.

Similarly, two third of teachers accepted that sharing educational resources help them to get feedback and therefore personal and organizational reputation enhanced through it (82.75 %). However, it also promotes collaboration and consortia as agreed by 84.49 % teachers of UOU and STOU. In addition, 81.02 % teachers indicated that sharing of resources also disseminate their ideas which enhance their confidence and make them an important part of larger community(89.65 %) increasing their network and sphere of influence and give them recognition at global level (82.75 %). Interestingly, teachers have shown moderate to neutral attitude between 0 to 37.93 % on various sharing related statements than opposing (0 to 5.17 %) that support the positive attitude towards sharing of OER and its potential.

Table 1: Attitude of UOU & STOU teachers on Sharing of OER

Items	**UOU Teachers Responses**					**STOU Teachers Responses**					**Total**		
	DA	**M**	**N**	**A**	**SA**	**DA**	**M**	**N**	**A**	**SA**	**A +SA**	**M+N**	**DA**
Sharing of educational resources improves my professional respect	0.00	0.00	5.17	25.86	13.79	0.00	1.72	0.00	27.59	25.86	**93.1**	**6.89**	**0.00**
It gives me pleasure if someone adopts/adapts my educational resources	0.00	0.00	0.00	20.69	24.14	0.00	3.45	0.00	18.97	32.76	**96.56**	**3.45**	**0.00**
Sharing helps me to get Feedback	1.72	0.00	10.34	29.31	3.45	3.45	18.97	0.00	24.14	8.62	**65.52**	**29.31**	**5.17**
Sharing enhances my personal and organizational reputation	1.72	0.00	1.72	31.03	10.34	3.45	10.34	0.00	20.69	20.69	**82.75**	**12.06**	**5.17**
Sharing of educational resources increases my profile amongst peers and others	0.00	0.00	10.34	25.86	8.62	0.00	6.90	0.00	25.86	22.41	**82.75**	**17.24**	**0.00**
OER increases my network and sphere of influence	0.00	0.00	10.34	25.86	8.62	0.00	6.90	0.00	25.86	22.41	**82.75**	**17.24**	**0.00**
As a teacher, it is my responsibility to share all educational resources created by me	0.00	0.00	0.00	20.69	24.14	0.00	0.00	0.00	22.41	32.76	**100**	**0.00**	**0.00**
OER improves my chance of recognition at a global level	1.72	0.00	1.72	31.03	10.34	3.45	10.34	0.00	20.69	20.69	**82.75**	**12.06**	**5.17**
I believe that sharing educational materials as OER will encourage others to do so as well	0.00	0.00	5.17	29.31	10.34	0.00	1.72	0.00	22.41	31.03	**93.09**	**6.89**	**0.00**
Sharing enhances my confidence as I see myself in part of larger community	0.00	0.00	5.17	29.31	10.34	0.00	5.17	0.00	31.03	18.97	**89.65**	**10.34**	**0.00**
When others use my OER, it improves my sense of achievement	1.72	0.00	27.59	15.52	0.00	1.72	10.34	0.00	27.59	15.52	**58.63**	**37.93**	**3.44**
OER helps to disseminate my ideas	1.72	0.00	10.34	31.03	1.72	0.00	6.90	0.00	37.93	10.34	**81.02**	**17.24**	**1.72**
OER promotes collaboration and consortia	0.00	0.00	6.90	29.31	8.62	0.00	8.62	0.00	27.59	18.97	**84.49**	**15.52**	**0.00**

DA=Disagree, M=Moderate, N=Neutral, A=Agree, SA=Strongly Agree

Sharing of OER: Difference between teachers of UoU and STOU

The Pearson Chi-square test (table 2) revealed that 9 statements (out of 13) presented significant difference about attitude of sharing OER ($p<.05$) between UoU and STOU teachers. They had different attitude about sharing with regards to getting feedback while sharing, enhancing their personal and organizational reputation, increasing their profile amongst peers and others, their network and sphere of influence, improving their chance of recognition at a global level, encouraging others to share educational resources, improving their sense of achievement when others use their OER, help to disseminate their ideas and, promoting collaboration and consortia. On the other hand, they presented no significant difference (p>.05) in their attitude towards improving professional respect through sharing, feeling pleasure if someone adopts/adapts their educational resources, taking sharing as a responsibility, and enhancing confidence as to be a part of larger community.

Table 2: Chi-square test of sharing of OER between UOU & STOU teachers

Items	Pearson Chi-Square	df	Asymp. Sig. (2-tailed)
Sharing of educational resources improves my professional respect	5.60	3	.133
It gives me pleasure if someone adopts/adapts my educational resources	2.20	2	.332
Sharing helps me to get feedback	18.49	4	.001
Sharing enhances my personal and organizational reputation	10.02	4	.040
Sharing of educational resources increases my profile amongst peers and others	13.07	3	.004
OER increases my network and sphere of influence	13.07	3	.004
As a teacher, it is my responsibility to share all educational resources created by me	.18	1	.672
OER improves my chance of recognition at a global level	10.02	4	.040
I believe that sharing educational materials as OER will encourage others to do so as well	10.02	3	.018
Sharing enhances my confidence as I see myself in part of larger community	6.95	3	.073
When others use my OER, it improves my sense of achievement	32.69	4	.000
OER helps to disseminate my ideas	14.51	4	.006
OER promotes collaboration and consortia	10.77	3	.013

Attitude of teachers towards Adaptation of OER

The analyses of teachers' attitude towards adaptation and use of OER (table 3) showed that all the participating teachers have positive attitudes towards adaptation and use of OER with frequency percentage ranged from 37.93 % to 62.06 %. Most of the teachers (62.06 %) agreed that they are having knowledge of intellectual property rights to understand OER, while one third of them presented moderate and neutral response towards it. More than half of them approved that they have efficient ICT skills that are important to adopt and use OER (58.62 %) and the importance of their competencies and knowledge towards OER help them to participate or adopt it (55.17 %). Notably, about one third of teachers reported moderate to neutral responses towards adaptation and use of OER. On the other hand, it was found that 20.69 % teachers did not adopt OER for teaching as they disagreed that it fulfill any academic requirement.

Table 3: Attitude of UOU & STOU teachers on Adaptation & Use of OER

Items	UOU Teachers' Responses					STOU Teachers' Responses					Total		
	DA	M	N	A	SA	DA	M	N	A	SA	A+SA	M+N	DA
I have knowledge of Intellectual Property Rights to understand OER	3.45	0.00	17.24	22.41	1.72	0.00	17.24	0.00	27.59	10.34	**62.06**	**34.48**	**3.45**
I am efficient in Information Communication Technology (ICT) skills to adopt and use OER	5.17	0.00	17.24	17.24	5.17	5.17	13.79	0.00	20.69	15.52	**58.62**	**31.03**	**10.34**
My own competencies and	1.72	0.00	13.79	17.24	12.07	6.90	22.41	0.00	17.24	8.62	**55.17**	**36.20**	**8.62**

Items	UOU Teachers’ Responses					STOU Teachers’ Responses					Total		
	DA	M	N	A	SA	DA	M	N	A	SA	A+SA	M+N	DA
knowledge towards OER helps me to participate or adopt OER													
I adopt OER for my teaching as they fulfill academic requirement of my studentsreputation	12.07	0.00	12.07	17.24	3.45	8.62	29.31	0.00	12.07	5.17	**37.93**	**41.38**	**20.69**

DA=Disagree, M=Moderate, N=Neutral, A=Agree, SA=Strongly Agree

Adaptation & Use of OER: Difference between teachers of UoU and STOU

The present study revealed that all the statements related to adaptation and use of OER presented significant difference ($p<.05$) between teachers of UoU and STOU (table 4). There is a relationship between UoU and STOU teachers about use and adaptation of OER. They believed that their own competencies and knowledge of OER support the adoption to OER. It was found that they have knowledge of Intellectual Property Rights to understand OER. Therefore, they are efficient enough in Information Communication Technology (ICT) skills to adopt and use OER, and adopting OER for teaching fulfill their academic requirements.

Table 4: Chi-square test of Adaptation of OER between UOU & STOU teachers

Items	Pearson Chi-Square	df	Asymp. Sig. (2-tailed)
Q1: I have knowledge of Intellectual Property Rights to understand OER	25.53	4	.000
Q2: I am efficient in Information Communication Technology (ICT) skills to adopt and use OER	20.78	4	.000
Q3: My own competencies and knowledge towards OER helps me to participate or adopt OER	22.76	4	.000
Q4: I adopt OER for my teaching as they fulfill academic requirement of my studentsreputation	24.71	4	.000

Attitude of teachers towards Organizational aspects of OER

Table 5 indicated UOU and STOU teachers attitude towards organizational aspects of OER. Majority of teachers highlighted positive response towards organizational benefits of OER with frequency percentage ranged from 34.48 % to 94.83 %. Most of them (94.83 %) responded that OER can meet the needs of diverse learners. On the other hand, about one third of teachers felt it difficult to use OER to develop a learning package (34.98 %) and use OER in higher education (36.21 %), while almost same number of teachers (34.48 % and 41.38 % respectively) reported moderate to neutral response towards the same. Teachers indicated that OER can be customized to suit different needs and enrich the learning curve (89.65%). In addition, 86.20 % of them indicated that it helps to meet the learning needs of children with different abilities (82.75 %). Similarly, 79.30 % teachers found OER catering to different learners' learning styles and 70.69 % indicated that it supports students to remember content for longer time. Mostly representing positive attitude towards organization of teaching and learning through OER, some of the teachers reflected moderately and neutral way, while less of them disagreed on affirmative statements.

Table 5: Attitude of UOU & STOU teachers on Organizational aspects of OER

Items	UOU Teachers' Responses					STOU Teachers' Responses					Total		
	DA	M	N	A	SA	DA	M	N	A	SA	A +SA	M+N	DA
OER helps meet the learning needs of children with different abilities	1.72	0.00	12.07	25.86	5.17	0.00	3.45	0.00	31.03	20.69	**82.75**	**15.52**	**1.72**
OER can be customized to suit different needs	0.00	0.00	8.62	25.86	10.34	0.00	1.72	0.00	32.76	20.69	**89.65**	**10.34**	**0**
OER can meet the needs of diverse learners	0.00	0.00	3.45	25.86	15.52	0.00	1.72	0.00	32.76	20.69	**94.83**	**5.17**	**0**
It is difficult to use OER in higher education using OER	13.79	0.00	13.79	17.24	0.00	15.52	20.69	0.00	15.52	3.45	**36.21**	**34.48**	**29.31**
It is difficult to use OER to develop a learning package	8.62	0.00	15.52	18.97	1.72	15.52	25.86	0.00	10.34	3.45	**34.48**	**41.38**	**24.14**
I want to use OER to teach higher education	1.72	0.00	8.62	25.86	8.62	0.00	3.45	0.00	31.03	20.69	**86.2**	**12.07**	**1.72**
OER helps to enrich the learning curve	1.72	0.00	6.90	25.86	10.34	0.00	1.72	0.00	32.76	20.69	**89.65**	**8.62**	**1.72**
Learning through OER helps students to remember content longer	1.72	0.00	13.79	22.41	6.90	1.72	12.07	0.00	25.86	15.52	**70.69**	**25.86**	**3.44**
OER can respond to different learners' learning styles	0.00	0.00	13.79	25.86	5.17	1.72	5.17	0.00	25.86	22.41	**79.3**	**18.96**	**1.72**

DA=Disagree, M=Moderate, N=Neutral, A=Agree, SA=Strongly Agree

Organizational aspects of OER: Difference between teachers of UoU and STOU

For testing organizational issues of OER, chi square test was applied to identify the significance difference of attitude of UOU and STOU teachers (table 6).It was found that 7 statements related to organizational issues of OER were having significant relationship ($p<0.05$).These statements were related to use of OER for fulfilling the learning needs of children with different abilities through customized resources, difficulty to use OER in higher education and develop learning packages, use of OER for teaching purposes as it helps students to remember content longer and able to respond to different learners' learning styles. Apart from that, meeting the needs of diverse learners and enhancing the learning curve through OER were two of the organizational issues that displayed no significant relationship ($p>0.05$ between teachers of UOU and STOU.

Table 6: Chi-square test of organizational aspects of OER between UOU & STOU teachers

Items	Pearson Chi-Square	df	Asymp. Sig. (2-tailed)
OER helps meet the learning needs of children with different abilities.	15.21	4	.004
OER can be customized to suit different needs	7.93	3	.047
OER can meet the needs of diverse learners	3.31	3	.346
It is difficult to use OER in higher education using OER	21.72	4	.000
It is difficult to use OER to develop a learning package	26.61	4	.000
I want to use OER to teach higher education	10.65	4	.031
OER helps to enrich the learning curve	7.93	4	.094
Learning through OER helps students to remember content longer	16.62	4	.002
OER can respond to different learners' learning styles	17.82	4	.001

Conclusion

It can be concluded that teachers of UOU and STOU have positive attitude towards sharing, adaptation & use, and organizational aspects of OER. Being teachers of open universities, OER can a useful source for enhancing the teaching learning as well as research components of higher education. Students can also get benefitted from the positive attitude of teachers. The organizational benefits of OER can serve students of diverse backgrounds including students with learning difficulties as well as specially abled.

Apart from teachers and students, the policy makers also get an idea to bridge the digital divide and make education accessible and flexible so as to touch each and every nook and corner of the country through OER. Both India and Thailand, can create, share,adopt, andadapt the OERs for teaching learning process in their respective institutions to facilitate the students for their betterment of learning.

References

Abeywardena, I. S., Dhanarajan, G., & Chan, C. S. (2012). Searching and Locating OER: Barriers to he Wider Adoption of OER for Teaching in Asia. *Proceedings of the Regional Symposium on Open Educational Resources: An Asian Perspective on Policies and Practice.* Penang, Malaysia.

Butcher, N. (2011). *A basic guide to Open Educational Resources*. Retrieved March 11, 2019, from https://unesdoc.unesco.org/images/0021/002158/: http://unesdoc.unesco.org/images/0021/002158/215804e.pdf

Caswell, T., Henson, S., Jensen, M., & Wiley, D. (2008). Open content and open educational resources:Enabling universal education. *International Review of Research in Open and Distance Learning*.

Dierking, D. (1992). The Family Museum Experience: Implications from Research. In N. S. (ed.), *Patterns in Practice: Selections from the Journal of Museum Education* (pp. 215 – 221). Washington: Museum Education Roundtable.

Hein, G. (1996). Constructivist Learning Theory. In D. G. (ed.), *Developing Museum Exhibitions for Lifelong Learning,* , (pp. 29-34). London: The Stationary Office.

Hooper-Greenhill, E. (1999). Education, communication and interpretation: towards a critical pedagogy in museums. In E. Hooper-Greenhill, *The educational Role of the Museum* (pp. 3-27). London: Routledge.

Jurado, R. G., & Pettersson, T. (2015). Attitude and Utilization of Open Educational Resources. *8th International Conference of Education, Research and Innovation,* (pp. 16-18). Seville, Spain.

Kanwar, A., Kodhandaraman, B., & Umar, A. (2010). Toward sustainable Open Education Resources: A perspective from the Global South. *The American Journal of Distance Education, 24*(2), 65-80.

Mishra, S., & Singh, A. (2017). Higher education faculty attitude, motivation, perception of quality and barriers towards OER in India. In C. Hodgkinson-Williams, & P. B. Arinto (Eds.), *Adoption and impact of OER in the Global South.* Advance Publication.

Mishra, S., Sharma, M., Sharma, R. C., Singh, A., & Thakur, A. (2016). Development of a Scale to Measure Faculty Attitude towards Open Educational Resources. *Open Praxis, 8*(1), 55-69.

Mulder, F. (2015). Foreword 2: Open(ing up) education for all… Boosted by MOOCs? In F. Mulder, C. J. Bonk, M. M. Lee, T. C. Reeves, & T. H. Reynolds (Eds.), *MOOCs and open education around the world* (pp. XVIII-XXVII). New York: NY: Routledge.

Ozdemir, O., & Bonk, C. (2017). Turkish Teachers’ Awareness and Perceptions of Open Educational Resources. *Journal of Learning for Development, 4*(3), 307-321.

Panda, S., & Santosh, S. (2017). Faculty Perception of Openness and Attitude to Open Sharing at the Indian National Open University. *International Review of Research in Open and Distributed Learning, 18*(7).

Sikwibele, A. L., & Mungoo, J. K. (2009). Distance Learning and Teacher Education in Botswana: Opportunities and Challenges. *International Review of Research in Open and Distance Education*.

UNESCO. (2012). *2012 OER Paris declaration. Paris: United Nations Educational, Scientific and Cultural Organization.* Paris: UNESCO (United Nations Educational, Scientific and Cultural Organization).

Factors Affecting Students' Academic Performance during Examinations: A Study of Live Helpline

Rajendra Pal[1], Alka Singh[2]

[1]Head, Media Production Division, Central Institute of Educational Technology, National Council for Educational Research and Training, New Delhi, India, Email: rajendrapal2009@gmail.com
[2]Assistant Professor, Central Institute of Educational Technology, National Council for Educational Research and Training, New Delhi, India, Email: alkasingh.edu@gmail.com

Abstract

Applying an accessible and easy to use platform such as DTH-TV network to provide guidance on various factors affecting academic performance during examinations is one of the ways to help students through distance mode. This was an effort of Central Institute of Educational Technology (CIET), National Council for Educational Research and Training (NCERT), New Delhi, India through its educational telecast on SWAYAM Prabha Channel. Examinations, specially board examinations in India is one of the challenges that students have to face. In order to guide students during examination to reduce the effect of factors affecting academic performance, NCERT provided a platform of exam helpline. The objective of the present study was to enquire about the factors affecting students' academic performance during examinations. The sample for the present investigation consists of 424 viewers (360 males and 64 females) of exam helpline who asked their queries during the one hour live telecast for 29 working days. These queries raised through calls, social media platforms and emails were considered as the central data of the study. Therefore, no specific tool was developed to collect data from these respondents. Content analysis was used for data analysis. The findings reveal that students were more stressed due to worries about low performance in specific subjects, career selection, memorization of facts and time management. The study will provide direction to the stakeholders to understand the identified issues faced by students during exam and strategies to deal with them.

***Keywords**: Academic performance, Exam helpline, Stress, Academic guidance*

Introduction

Examination is an integral part of educational process. It is inevitable for measuring the amount of knowledge acquired or the degree of skill achieved. The term "examination" can be explained as a test knowledge acquired, more generally a means of accessing intellectual capacity or ability. In other words, the purpose of examination is to evaluate the achievement of students.

To be specific, the key characteristics of board examinations are that, it is controlled by an agency external to the schools from which candidates come and the administration authority is usually a national or state government agency. In India, different national and states boards are constituted for examination and evaluation purposes. The major objective of these boards is to prescribe condition of examination and conduct public examination at the end of class/grade 10th & 12th, and to grant qualifying certificates to successful candidate of the affiliated schools.

It is expressed by various research findings from time to time that examinations are one of the causes of stress and anxiety among students across the world (Deb, Strodl & Sun, 2015; Sarita, 2015; Banu, Deb, Vardhan & Rao, 2015; Sun, Dunne & Hou, 2012; Hughes, 2005). The expectations of parents and society towards the students to be an all-round topper continues the stress and can lead to mental breakdown in extreme cases (India Today, March 13, 2019). It was found by Sandel et al. (2017) that the stress and anxiety among students are due to overburdened test schedules. Statistics from the National Crime Records Bureau (NCRB) reveal that about 40,000 students in India committed suicide from 2011 to 2015, with 8,934 cases in 2015 alone due to various reasons including exam stress (Hindustan Times, May 5, 2017). Therefore, it is essential that parents, teachers and counsellors should identify the students who are struggling with exam stress and help them through different means and ways. One of these steps may be providing guidance through various helplines.

To unravel this problem, NCERT produced a position paper on National Focus Group on Examination Reform in 2006 and emphasized on reduction of examination stress and anxiety. It stated that:

"…examinations are artificial situation created for the convinced of the system and not the individual learner"

Apart from above position paper, various researches have been conducted to investigate the factors which affect the students' performance due to examination. One of the studies by Malhotra (2015) on senior secondary school students revealed that most of these students have relatively moderate level of exam nervousness. Similar study by Zeidner (1998), reveal that psychological over-arousal, strain, somatic symptoms, apprehension and fear of failure are all blended in examination anxiety. Similarly, Deb et al. (2015) found that parental pressure for better academic performance is the main reason of academic stress among higher secondary students. Another study by Banerjee (2011) reported that the academic factors that ascends academic stress are burdened school schedule, low academic performance, parents' and teachers' idealistic expectation, and improper study habits.

Although, exam stress is usually taken as a negative impact on students' performance, but it can mark positive outcomes through applying the stress level appropriately. This was supported by the study of Salend (2011) that appropriate levels of stress can enrich student's attention, retention, reinforcement, and can lead to upgraded test performance. In addition, Faqih (2011) indicated that there was positive correlation between stress and academic achievement with highest correlation between cognitive factor and academic achievement among students sampled at Pondok Modern Darussalam Gontor. Similarly, Erzen (2017) found that the random effect model showed that anxiety has a small-level positive effect on student achievement. In another study, Rana & Mahmood (2010) concluded that test anxiety is one of the factors which are responsible for student's underachievement and low performance but it can be managed by appropriate training of students in dealing with factors causing test anxiety. Das, Halder & Mishra (2014) found that there is significant negative correlation between academic anxiety and academic achievement According to Sreekanth (2006), examinations are focused on academic subjects only, ignoring the co-scholastic component of learning.

In relations to examinations, several agencies provide guidance to students, through various ways including the opening of helplines. One of these types of helpline was started in 2013 by National Health Mission's Direct Intervention System for Health Awareness (Disha) for Kerala state aimed to relieve any anxiety or stress experienced by students or parents ahead of announcement of results (The Hindu, 6 May, 2019). Also, Madhya Pradesh Board initiated counselling through telephonic helpline. At national level, Central Board of Secondary Education (CBSE) also provides counselling to students and parents through their toll-free telephonic helplines.

The Central Institute of Educational Technology (CIET), a constituent unit of NCERT, New Delhi, has full-fledged facility for media production and telecast decided to initiate a live interactive programme on its 24 x 7 educational TV Channel 'Kishore Manch' as exam helpline. The programme was conducted between February 20 to April 3rd 2019 for the purpose to identify and resolve the issues, problems and challenges of students and other stakeholders related to examinations. Apart from the, broadcast live on TV Channel, the helpline also simulcasts on NCERT Official Youtube channel. The live telecast was not limited to students only but extended to teachers, parents and the general audience. During these 29 days programs, 6 faculty members of NCERT and 24 school counsellors provided their expertise during the live exam helpline to solve the queries and concerns of viewers. These counsellors were from 19 different schools and non-governmental organizations.

The Objectives of the study

The objective of the study was to examine the factors affecting students' academic performance during examinations on the basis of queries received from students, teachers and parents.

The Process

The Panel

The panel of experts for exam helpline was constituted involving two school counsellors, one faculty from Department of Educational Psychology and Foundations of Education (DEPFE), NCERT and an anchor person to initiate and coordinate the discussion and interaction. The DEPFE, a unit of NCERT work towards strengthening psychological bases of school and teacher education. The counsellors, faculty members and anchors were being changed on day to day basis. The planning-cum-production meetings were held every day before live telecast.

The Publicity Mechanism

The information about the Exam Helpline were shared well in advance on various social media platforms (Facebook, WhatsApp, Twitter, Telegram, YouTube etc.) of NCERT. The publicity was also made through TV Channel website (https://swayamprabha.gov.in).

The process of solving issues

In the control room of CIET studio, after receiving queries through viewers, the genuineness, relevance and appropriateness of the questions were checked before switching to the anchor person.

In addition, anchor took up the issues raised by the students, teacher and parents through YouTube and mails. Most of the times, the counsellors gave the solution of the problem with the real-life instances happened during their practice and this was supported by the faculty member of NCERT.

Methodology

The sample for the present investigation consists of the students, parents and teachers who had voluntarily participated through calls, social media platforms and emails during the helpline. These queries were considered as central data of the present study. As a matter of fact, no specific tool was used to collect data from the students, teachers, and parents. Thus, 424 viewers (360 males and 64 females) of exam helpline were the sample of the study. For analyzing data, content analysis, frequency distribution and percentage techniques were used.

Questions received through various ways

Table 1: Number and percentage of questions received through TV, YouTube, Email

Questions asked via:	Number	Percentage
TV	218	51.41
YouTube	174	41.03
Email	32	07.54
Total	424	100

It was found that among these 424 queries received through synchronous as well as asynchronous ways, more than half number (51.41%) of the participants were connected with exam helpline live interaction through television. On the other hand, 41.03% respondents asked queries through YouTube comments during the live streaming. In addition, 7.54% of the issues of students, parents and teachers were received through Email. It indicates that live telecasts were being watched largely on television.

State wise representation of respondent's queries

Table 2: State wise representation of respondent's queries

States	No. of queries received	% of queries received
Uttar Pradesh	81	34
Bihar	35	14.7
Madhya Pradesh	28	11.8
Delhi	22	9.2
Rajasthan	14	5.9
Maharashtra	11	4.7
Haryana	7	2.9
Jharkhand	7	2.9
Chhattisgarh	6	2.5
West Bengal	6	2.5
Uttarakhand	5	2.2
Gujarat	4	1.7
Assam	3	1.3
Jammu & Kashmir	3	1.3
Orissa	2	0.8
Punjab	2	0.8
Karnataka	1	0.4
Tripura	1	0.4
Total	**238**	**100**

India is a vast country comprising of 29 states and 7 union territories (UTs). The above table 2 represent that among 36 states and UTs, respondents from 17 states and 1 UT have participated in the exam helpline to resolve their queries. It also discloses that most of the phone calls (60%) were received from the three states i.e. Uttar Pradesh (34%), Bihar (14.7%) and Madhya Pradesh (11.8 %). Interestingly, these states have a large geographic area as compared to other states. It is also to be pointed out that these states come under Hindi speaking regions. Thus, it can be stated that the exam helpline was most popular among Hindi Speaking students.

The Findings

Factors affecting students' performance during Exams

All the 424 issues raised during the live exam helpline were categorized based on their themes and areas to understand in the various strata of challenges during the examination. Based on this categorization, 12 factors were identified and these factors were emerged at 544 times through content analysis. Therefore, following factors from queries have been emerged:

Table 3: category-wise number and percentage of queries

Categorization of queries	Number	Percentage
Subject specific questions	130	23.9
Career & Competitive exams	101	18.6
Memory related	62	11.4
Time Management	45	8.3
Pattern of Exam and Attempting it	45	8.3
Stress and Anxiety	38	7
Resources for Exams	26	4.8
Learning/study styles	26	4.8
Concentration related	21	3.9
Better performance	14	2.6
Use of Mobile/Internet	7	1.3
Health related	4	0.7
Others	25	4.6
Total	**544**	**100.2**

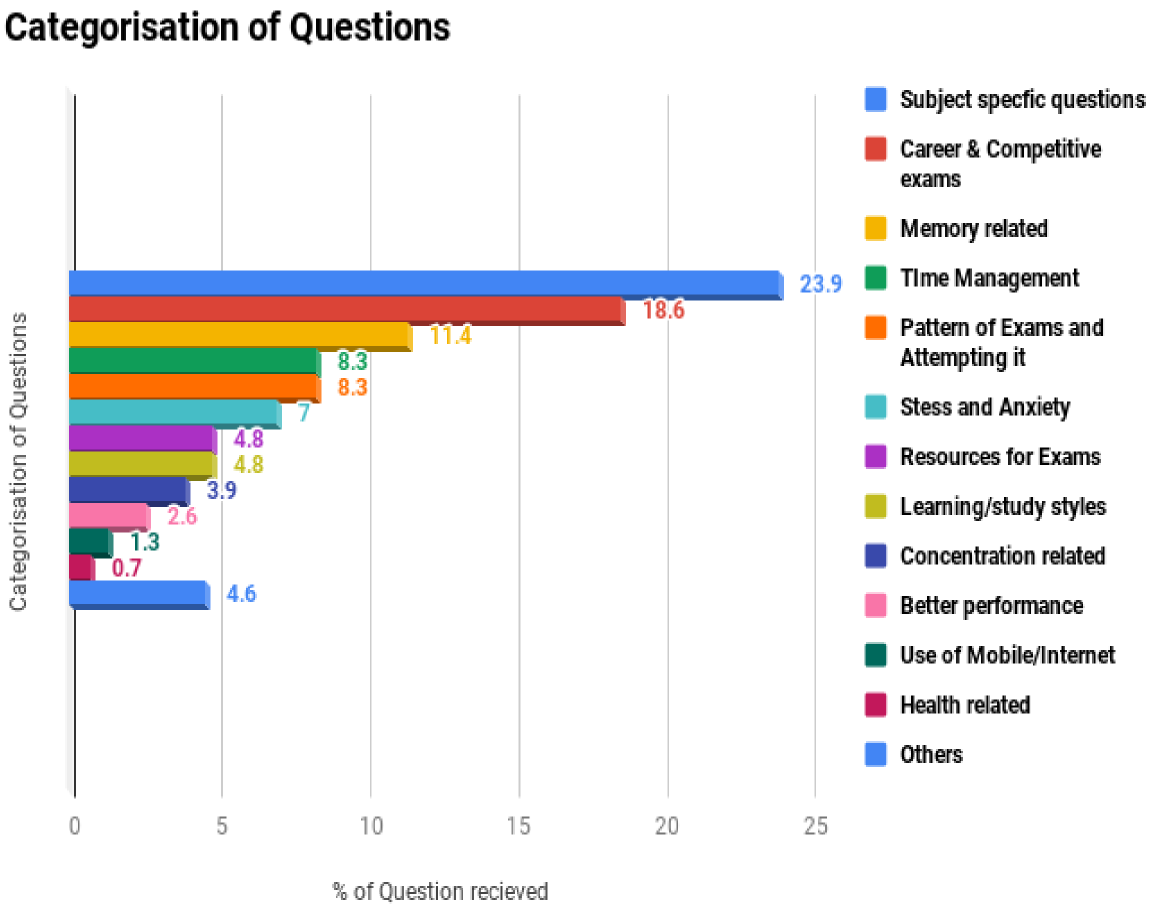


Figure 1: Graphical presentation of categorisation of queries received

As shown in above table 3 and figure 1, students were more stressed due to worries about low performance in specific subjects, career selection, memorization of facts, time management, exam pattern and ways to attempt it, stress and anxiety, selecting appropriate resources for exam, adopting proper study styles, concentration issues, better academic performance, use of technological gadgets, health related issues and others. These factors affecting students' academic performance during examination are discussed below:

Performance in Specific Subjects

The most of the queries received (23.9%) were related to different subject areas viz. Mathematics, Science, Social Science, Languages etc. Thus, majority of the respondents were worried about the content related doubts and pedagogical applications of these subjects. Some of the subject related queries of students are presented below:

"How to do case study in business studies?".

"I am facing problems in History subject, specially problem is memorising facts in History"

"I have some problems in reading English literature, I have no teacher for that so how to understand literature stuff"

Career and Competitive Exam

Second factor which affect the students' performance was their career path and various competitive exams (18.6%) such as Union Public Service Commission, National Eligibility cum Entrance Test, National Eligibility Test, Graduate Aptitude Test in Engineering, Indian Institute of Technology etc. Students were anxious about their career even during their exam time because they were at the terminal stage of school education. After this stage, they are supposed to enter into higher education. It is obvious that they will have to choose a profession for their future. Even, parents also expressed their anxiety towards the same. Some queries of respondents related to this factor is presented below:

"*Can we prepare for competitive exams along with boards? How to prepare for it as there is lot more asked than NCERT. Guide for this.*"

"*English Translation: How to study Biology for doing MBBS, How to revise it.*"

Memorization

Third factor was related to memorizing the concepts to be learned for examinations (11.4%). It is due to memorizing the concepts by the students without understanding which may not be remembered during examination. It becomes one of the causes of exam stress leading to low academic achievement.

Time Management

The next factor which influence students' performance is found to be time management during exam preparation and attempting it as expressed by 8.3% of viewers. The equal percentage of viewers requested to seek help regarding the pattern of exam and dealing with questions during examinations. In fact, students do not estimate the speed of solving exam paper in the given time framework and they may not be able to solve all the questions in time. This leads to one of the aspects of low academic achievement.

Stress and Anxiety

One of the factors which is popular among students, teachers and parents affecting achievement of students is stress and anxiety (7%). It is obvious that everyone who appear for any kind of examination will have some kind of stress on it. If students are appearing for board exams the stress and anxiety is obvious. It has been pointed out through previous studies that the stress has to be appropriate for good results.

Other Factors

Another factor found out through this study was related to find adequate study resources and learning styles (4.8%). Besides, 2.6 % of students wanted to perform better in their examinations. Only, 0.7 % viewers raised the challenges of using internet and mobile phones during the examinations.

Conclusion

The findings revealed that students are mostly stressed due to worries about low performance in specific subject areas viz Science, Mathematics. Social Science and Languages etc.

It means concepts of various subjects need to be cleared before examination. The second factor which affect students' performance is Career and competitive examinations. It is obvious that after senior secondary classes students have to go for higher studies or opt for a professional career. The competitive exams are one of the steps for this. So proper guidance needs to be provided for career and competitive examinations.

The third area which revealed through this study as one of the factors affecting performance in exam is Memory related. Mostly students do not remember what they learn in class. In fact, students should understand all the concept and need not to memorize without understanding it. The next factor which affect most to students is time management. Students do not know how to solve all the questions during specific time limit. It indicates that students need to practice solving question paper keeping in mind the time limit.

The findings also revealed that one of the factors which bothered students is exam pattern. Many times, they are not able to solve question paper due to different pattern. It means pattern or style of exam should be explained to the students before they appear for it. Other factor is stress and anxiety as an element which affect the achievement of students. Strategies for coping with stress and anxiety should be taught to the students during examinations.

Furthermore, some of the factors which have moderate or mild effect on academic performance of students are finding adequate study resources for exam, learning style, concentration, better performance, proper use of mobile and internet and health issues.

The teacher has crucial role to teach the subject-specific concepts to the students with real-life examples to understand and retain for exams. Apart from teachers, parents should also guide students for identifying and selecting proper career options and prepare for it further. The selection of appropriate resources, learning styles, study habits, time management, concentration techniques etc. are the major part to be incorporated in daily routine of students with the help of teachers and elders. It can be concluded that students, teachers, parents, policy makers and other stakeholders should take appropriate steps for managing and resolving issues related to these factors so that it will enhance the performance of students during examination.

References

Baijal, J. (2016). A study of the effect of creativity and academic achievement on examination stress. *The International Journal of Humanities & Social Studies*, 4 (2), 220-222.

Banu, P., Deb, S., Vardhan, V., & Rao, T. (2015). Perceived academic stress of university students across gender, academic streams, semesters, and academic performance. *Indian Journal of Health and Wellbeing*, *6*(3), 412-416.

Das, S. K., Halder, U. K., & Mishra, B. (2014). A study on academic anxiety and academic achievement on secondary level school students. *Indian Streams Research Journal*, *4*(6), 1-5.

Erzen E. (2017) The Effect of Anxiety on Student Achievement. In Karadag E. (eds) *The Factors Effecting Student Achievement* (pp. 75-94). Springer, Cham

Deb, S., Strodl, E., & Sun, J. (2015). Academic stress, parental pressure, anxiety and mental health among Indian high school students. *International Journal of Psychology and Behavioral Sciences*, 5(1), 26-34.

Faqih, A. (2011). *The Relationship Between Stress and Student's Academic Achievement at Pondok Modern Darussalam Gontor, Ponorogo, East Java, Indonesia* (Doctoral dissertation, Institute of Education, International Islamic University Malaysia). Retrieved April 15, 2019, from http://lib.iium.edu.my/mom2/cm/content/view/view.jsp?key=SVBYBnL7y3RjxJgdUveOjVJvhcuMtlvY20130625120313288

Hindustan Times (May 5, 2017) *Red Alert — Rising cases of student suicides sound alarm bells across India*. Retrieved April 21, 2019, from https://www.hindustantimes.com/brandstories/tatateajaagore/rising-cases-of-student-suicides-sound-alarm-bells-across-India.html

India Today (March 13, 2019). *Beat exam stress with these stress-buster tips by Apollo's expert.* Retrieved March 13, 2019, from https://www.indiatoday.in/education-today/featurephilia/story/bust-your-exam-stress-and-anxiety-with-these-tips-from-apollo-expert-1477174-2019-03-13

Malhotra, T (2014). Exam anxiety among senior secondary school students. *Scholarly Research Journal for Interdisciplinary Studies*, Vol. III/XVII, 3089 - 3097

NCERT (2005). *National Curriculum Framework*. Position Paper. National Focus Group on Examination Reforms, New Delhi.

Rana, A. & Mahmood, N. (2010). The relationship between test anxiety and academic achievement. *Bulletin of Education and Research*, 32(2), 63-74.

Salend, S. (2011). Creating student-friendly tests. *Educational leadership*, 69(3), 52-58.

Sandal, R. K., Goel, N. K., Sharma, M. K., Bakshi, R. K., Singh, N., & Kumar, D. (2017). Prevalence of depression, anxiety and stress among school going adolescent in Chandigarh. *Journal of family medicine and primary care*, 6(2), 405-410.

Sarita, S. (2015). Academic stress among students: role and responsibilities of parents. *International Journal of Applied Research*, 1(10), 385-388.

Sreekanth, Y. (2006). *Public Examination- Means or Ends of Evaluation*. Paper presented at the APERA Conference, Hong Kong.

Sun, J., Dunne, M. P., & Hou, X. Y. (2012). Academic stress among adolescents in China. *Australasian Epidemiologist*, 19(1), 9-12.

The Hindu (6 May, 2019). *Helpline to beat Result worries.* Retrieved May 6, 2019 from https://www.thehindu.com/news/national/kerala/helpline-to-beat-result-worries/article27041883.ece

Zeidner M. (1998). *Test anxiety: The state of the art*. New York, NY: Plenum

The Introduction of a Double-Layered Community of Practice Model: A New Conceptualisation of Online Learning

Kyungmee Lee

Department of Educational Research, Lancaster University
County South, Lancaster University, Lancaster, United Kingdom, LA1 4YD
Email: k.lee23@lancaster.ac.uk

Abstract

The authenticity is a required condition for learning. However, the design of an authentic online learning environment, which is ultimately separate from learners' real-life environments, is inevitably challenging. This presentation will propose an alternative way of conceptualising online learning and its boundaries, based on a double-layered Community of Practice model as a means to facilitate constructivist online learning. The model conceptualises online learning as interlinked processes of participation and socialisation in multiple communities across online- and offline-"layers" of learners' everyday lives. The model guides online course designers in expanding the perceived boundaries of the course environments they design to include learners' offline learning contexts and local living conditions. Instead of having an exclusive focus on providing learners with constructivist learning opportunities within a non-authentic course environment, the model suggests helping learners to engage in more personalised social learning activities situated in their everyday lives. The presentation will draw on a large set of qualitative data collected from a series of case studies that have examined adult students' distance learning experiences in different kinds of online courses. In doing so, the presentation will effectively demonstrate how difficult it is to develop a strong CoP nested and sustained within online learning environments, which usually have a close finish. The author will further argue that it may be useful for instructional designers to expend their view on learning environment to include distance learners' life situations beyond their computer screens. Everyone has their own community in which they naturally learn, develop, and live with other members outside the courses. Thus, rather than putting so much effort to form a community inside online learning environment, we may want to think about more effectively support students to form a stronger and more sustainable community in their lives through being engaged in learning activities in our course.

***Keywords**: Online distance learning, authentic learning, Community of Practice*

Introduction

Under a prominent recent regime of online education, often represented in the scholarship as a "social constructive learning paradigm" (Anderson & Dron, 2011; Harasim, 2012), learning is defined as a social practice that involves a group of students actively participating in collaborative knowledge construction processes (Scardamalia & Bereiter, 1994; Stahl, Koschmann, & Suthers, 2006). Pedagogical theories and strategies developed and utilised in that regime focus extensively on enabling student-to-student interaction and building communities of learners in online learning environments (Garrison & Arbaugh, 2007; Weller, 2007). However, as I demonstrate elsewhere (Lee, 2018), it is not at all difficult to notice a gap between the accepted theoretical ideas of effective online learning and actual pedagogical practices in most online education institutions, including many open universities.

Here, I aim to reduce that theory-practice gap by reconceptualising online learning using a double-layered Community of Practice (CoP) model. That model was originally developed through incorporating CoP principles into an online teacher education course design in order to address a teacher learning-teaching divide (Lee & Brett, 2013; 2015a). That module conceptualises teachers' online learning as interlinked processes of participation and socialisation in multiple communities across internal and external or online and offline "layers" of teachers' lives. During a course period, participant teachers interact with other members *at least* in two different communities, the first community is internal, being newly built by their participation within the course environment and the second one is external, usually pre-existing outside the course environment in each teacher's professional context. The fact that teachers are active members of school communities is not something new or surprising. However, from the perspectives of course designers or instructors, it can be challenging to expand the boundaries of their course environments or designs to reach out to teachers' personal and professional lives and to make sense of teachers' learning experiences that are shaped by their interactions with other members of different communities outside the course environments. Thus, the model proposes pedagogical strategies to support participant teachers' simultaneous presence across internal and external communities and provides a holistic view on teacher learning situated in multiple communities.

In the next section, I will present a brief discussion about the concept of CoP and difficulties with developing a sustainable CoP online – much of this discussion is contextualised in the topic of teacher education. I will then present some data from a series of case studies on students learning experiences in different kinds of online courses that illustrates central ideas in this article.

Communities of Practice

The concept of CoP is fundamentally based on situated learning theories that describe learning through active participation in shared practices of social communities (Lave & Wenger, 1991). Their original anthropological monograph did not provide a clear definition of CoP but rather focused on describing how newcomers are socialised in existing communities through a process of 'legitimate peripheral participation'. This new approach to understanding professional learning was further developed through Wenger's later work (1998). His basic argument in this second book was that CoPs consist of groups of people who share a common interest and a desire to participate in and contribute to the practices of their communities and that all individuals are involved in multiple CoPs at work, school or even at home. All CoPs have a shared domain of knowledge, which creates common ground, inspires members to participate and guides their learning (Wenger, McDermott, and Snyder, 2002). In pursuing their interest in the domain, members engage in joint activities and interactions to share ideas, and build relationships that enable them to learn from each other. In this sense, CoP is distinguished from communities of interest or communities of learning that do not require the 'practice' element.

Previous studies: developing a sustainable online teacher CoP

With a shared understanding that building a quality CoP is a complex task, there have been various studies to investigate the design principles effective for online teacher communities (Lee, 2013, 2015a; Liu, 2012; Lloyd & Cochrane, 2006; Wood, 2007). Even though theoretically, teacher CoPs are often understood to be 'open and voluntary gatherings of individuals concerned with the general practice of teaching or specialist disciplines or areas of interest' (Lloyd & Duncan-Howell, 2010, p. 61), building a quality CoP can be highly demanding for teachers who are already busy with their heavy teaching load and different responsibilities (Chai & Merry, 2014). In particular, if the development of an online teacher CoP is aiming at the advancement of teachers' technological knowledge and the educational use of technologies, which require the transformation of their pedagogical beliefs (Lee & Brett, 2015b; Schibeci et al., 2008), one would hardly expect such a CoP to be naturally and voluntarily formed by teachers. Therefore, careful and deliberate design efforts may be required for developing a CoP supportive enough for teachers' transformative learning.

One of the first large-scale research projects to build an online teacher education environment incorporating CoP principles was *TAPPED IN* (see Farooq et al, 2007; Schlager, Fusco, & Schank, 2002; Schlager & Fusco, 2004). The project focused on developing an environment that enables i) teachers to participate in self-motivated development activities from their professional contexts, ii) educational organizations to cooperate with each other and develop larger CoPs, and iii) education agencies to organize and host online CoP activities including online seminars or courses. Much effort was made to sustain and maintain teachers' and educational organizations' active participation in their CoPs built in the environment. Although it was a successful project that produced a great deal of knowledge, the research team announced its closing in March, 2013 due to a shortage of research funding and a lack of continuing participation.

There are also a few studies focusing on developing teacher communities nesting inside online teacher education courses. For example, Slaouti (2007) attempts to build a CoP in the course environment through facilitating teachers' interactive learning and reflective teaching and Hramiak (2010) has a similar emphasis on developing a course CoP into which teachers can bring their teaching practices and share those with their peers. However both studies were unable to provide useful strategies to sustain the CoPs after the course period. Tsai's (2011) study exclusively focuses on how to sustain inservice teachers' participation in online CoPs, built through their preservice teacher education courses. Tsai suggests computer-mediated communication tools facilitate teachers' ongoing discussions and online CoPs have great potential to connect teachers' formal educational experiences and their teaching practices. Nevertheless, participant teachers' participation tends to be mainly shaped by course activities and requirements so the sustainability of the CoP becomes questionable.

Case studies: learners' experiences in different online courses

This section is written based on narratives of three distance learners and each from a different online programme. The three learners are purposely selected from three different case studies conducted by the author in order to effectively demonstrate the usefulness of the double-layered CoP model not only to improve online learning experiences but also better conceptualise online learning.

i) The first learner, Sumi is a recent graduate from online management programme at an open university. 10 adult students who successfully completed an online programme at an open university (including Sumi) were interviewed towards the end of their study. Those online courses they completed did not offer any structured collaborative learning opportunities although each course environment has a built-in discussion forum space in which some discussion topics and resources were listed. Contribution to the discussions was not carefully facilitated and so unsurprisingly, an average rate of online discussion participation was very low across those courses. The interview results suggest that all of those 10 students, at the beginning of their study, experienced an enormous struggle to understand what to do in such a new "online" learning environment where they had never been in before entering the open university. Sumi said "my first semester was a real struggle with a massive level of uncertainty and anxiety – so I had to take time off from my study and many of us in my cohort did anyway." Fortunately, she was able to return to her programme after a couple of years and pursued her study to the completion at the second time: she recalled "the second time was so much easier because I learnt from the previous failure." Through various processes of "trial and error" in their first year, those students established certain lifestyles to balance their work, family, and study responsibilities.

In Sumi's case, she set her study pattern of waking up in the early morning and watching an online lecture and writing a learning note to which she would revisit during exam periods for about an hour every day. Once she successfully set up the habit and completed the second semester, her study pattern remained the same throughout the next five years of her study. For her and many other students in the first case study, online discussions or any other social interactions within the programme became considered "distractions" that may disturb their properly set-up study pattern. Sumi said:

> There is enough knowledge in textbooks and I can read them alone. Listening to professors' explanations based on good examples in those online lectures help me better understand knowledge – once I understand some challenging concepts through repeating the process, then it is really fun to learn... Of course, if I cannot understand something, then I can ask a question on the course website and I know some of my classmates or tutors may answer – but, it is not really necessary. I can just google it and search for other materials online – then there are tons of good quality materials developed by experts anyway. This is quicker.

Just like that, as an independent learner, Sumi earned her university degree and started her graduate study in the following year. She repeatedly emphasised how much she likes to learn new knowledge and to use them in her professional context where she was an educational programme coordinator and where she met close colleagues who were also doing a degree at the open university. However, this should be noted here: although social interactions she had had in those "formal" learning environments seem extremely limited, she had established a strong community working, learning, and living together outside her programme. Each of her "friends" in the "study group" was in different online programmes but in the same work place and they had provided each other with endless emotional and social support. Sometimes, Sumi found listening to what they studied was helpful for her to understand her things clearer. She continued: "in reality, open university degrees tend to be recognised as something inferior to the ones of traditional universities, however, the best value of being an open university student is to learn how to be an independent and self-regulated learner. I am very proud of myself now and my degree from open university." She believes being able to learn in totally "her way" enabled her to complete this challenging learning process while working and raising her child.

ii) The second learner, Oliver is a recent graduate from online doctoral programme in educational research. Oliver is an educational developer planning and organising faculty development programmes in one university in UK. When being interviewed, he had just finished his thesis viva. The online doctoral programme in which he was trained to be an educational researcher is offered by a research-intensive university in UK and it is, in its essence, collaborative and community-oriented. The programme consists of two academic phases: in the first phase (Part one), approximately 25 doctoral students as a cohort (all inservice educational professionals) enter the programme at the same time and take six courses together for the first two years. All of the six courses are very carefully designed to increase a strong sense of social presence among participant students and tutors and to build a supportive learning community among the cohort. This social learning process is effectively facilitated by a range of collaborative activities (e.g., group discussions, group presentations, peer-reviews) and two annual residential meetings during which all cohort members come to the university and participate in face-to-face group learning activities. Then they move to the second phase (Part two), in which each student as an independent researcher works on their thesis project with some guidance from their supervisors for the next two or three years. In this case study, 22 doctoral students who were close to the completion of their thesis project from four doctoral programmes of the similar nature were interviewed to understand their learning experiences in the two different phases. Oliver describes his experiences in Part one as:

> [T]he sense of community aspect was great. I think we all benefited from learning as a group and we had a lot of conversations around the value of learning together in a group, because it really helped to keep you focused, keep you engaged. So that was a real bonus, and let's be honest, that's one of the key aspects of what I was looking for in a doctoral programme... we had the residential in the first year and after the residential I think we all really bonded as a group, and that was a really pivotal moment, going through module one. But then my subsequent modules were… you would go into the next module and you kind of knew who everyone was so you could just get straight on with answering the discussions and the content and that kind of thing… I started to feel more confident with what I was dealing and was making more informed decisions.

It can be argued that during Part one, Oliver and his cohort had effectively formed a learning community in which they could learn together and "get through" this challenging path of doing a doctoral study as part-timers. Similar to Sumi in some sense, Oliver also suggests that he established or became used to the particular way of learning (very different one from Sumi's though) in the programme, which made him feel more confident in the subsequent courses in Part one. However, Oliver's experiences in Part two seem quite different:

> It's definitely a very different experience I think… because our group really enjoyed both residentials, we organised a residential earlier on in the third year. So during the transition to part two, about six of us went to [the university], some of us are from overseas. We sort of self-organised a little programme … Because we felt that we really wanted to maintain that sense of community and it was actually really important to us. So we tried to extend it as long as we could, and then we all went off after the residential… the community aspect just sort of dissipated really… As soon as you get into Part two, it's really difficult to maintain those community ties. We'd set up a little sort of learning group… A lot of people had used Facebook in the past and we tried to keep it going and it just died really as everyone gets immersed in their Part two… we had a really strong sense of community in part one but we couldn't find a way.

The stressed usefulness of residentials for increasing a sense of community in Oliver's excerpt also suggests, conversely, the challenging nature of having that sense of community without having those face-to-face interactions, which may be too costly for some students to voluntarily carry on. In addition, Oliver found it very challenging to maintain the frequent contacts with his cohort members during Part two – the cohort community, which had been carefully built throughout the Part one with lots of pedagogical efforts of tutors, students, and programme administrators, was just dismantled as soon as there was no "imposed" shared practices or collaborative activities in Part two. More importantly, it is not that Oliver and other students do not need that community support anymore. A sense of the absent of community and support system, which had existed before, was certainly not helpful to smooth out the challenging process of becoming an independent researcher who is expected to manage a large scale thesis project independently or alone.

iii) The third learner, Jane, has earned her Master's degree in education from a traditional research-extensive university offering a great number of online courses. Jane was a MA student and a secondary teacher teaching ESL in a private school to immigrant girls when the third case study was conducted in three graduate courses designed using the double-layered CoP (see Lee & Brett, 2015a for a detailed description of the study). The online course, in which Jane was one of the 17 student-teacher participants, is different from those courses in the online doctoral programme described above in terms of the nature of the participation and participants. The notion of cohort is not salient in the Master's programme to which hundreds of students are admitted each year and there are a large number of courses offered that each student can freely navigate and choose from. Thus, those 17 participants all voluntarily selected and signed up for this online course for the specific term. Although some of them had previously met in other courses, it is fair to say that most of them did not know each other at all when the course started. The course is fully online and only 12-weeks long, after which all participants would be dispersed into other courses: that is, the course does not provide optimal conditions for forming a strong learning community within the course. The course instead provides guided activities for student-teachers to search for an existing community in their professional context that they are already a member of and nurture that community to become a good CoP meeting the three structural characteristics of CoP: domain, community, and practice.

The course description explicitly states "bring your external CoP stories into your online course CoP and bring your course knowledge back to your external CoP" and specifically asks each participant to write CoP journal entries during the course period reflecting on their experiences with nurturing the chosen community and connecting course ideas to the practices in the community. This is to encourage each student to take the lead in building a supportive learning community in their own professional context, which will certainly last longer than the course environment. The main subject areas of the course discussions are the various characteristics of computer-mediated communication (CMC) and its educational applications and pedagogical considerations for using CMC tools in classrooms. During the course period, Jane continued to speak of her colleagues who could be her external CoP members as an inspiring group of teachers and expressed her desire to develop this group into a good CoP. Then, Jane initiated a series of afterschool conversations aiming to exchange useful teaching ideas and tips with her colleagues as the first step to nurture the pre-existing collegial relationships into a CoP with shared purposes and projects. In her final CoP journal entry, she says:

> So, now that my [course] journey is ending, it has provided a perfect starting point to re-pay the [external] CoP I began to speak about in this course – the faculty I work very closely with at my school… I enjoyed the rich conversations, inspirational ideas and stimulating environment [in the afterschool conversations]. I like that belonging to CoPs. This [course] has inspired me to embrace more technology in my classroom… Now it is my turn to take on more of a leadership role within my faculty and bring some of the ideas we have discussed (and that I have tried in my classes) to them in a way that inspires them to join me on the journey to masterful teaching!

When I followed up with the course participants several months after the course was completed to ask whether they are continuing with participating in their professional CoPs. Several teachers responded yes they were including Jane. She said:

> Definitely, I have been participating in my CoP at school (after school) and continue to do so because I find it extremely helpful to collaborate with other members on certain tasks. The question we continue to address is how we can incorporate technology effectively into our classes... I love being part of my CoP and I think everyone should participate in one, especially if they are educators.

Conclusion

Petraglia (1998) earlier argued that educational technologies (or instructional designers) had tended to overlook the original, fundamental, epistemological ideas of constructivism by "pre-authenticating" learning environments, that is, by creating environments that are predetermined to reflect the real world and knowledge in a very specific way even though constructivist theory contraindicates precisely this pre-authentication or pre-determination (p. 53). This article echoes that argument by demonstrating how difficult it is to develop a strong CoP nested and sustained in online learning environments, which have a close finish. Thus, it may be useful for instructional designers to expend their view on learning environment to include distance learners' life situations beyond their computer screens. Everyone has their own community in which they naturally learn, develop, and live with other members outside the courses as Sumi's case demonstrates. Rather than putting so much effort to form a community inside our learning environment, we can support them to form a stronger and more sustainable community in their lives through being engaged in learning activities in our course as Jane did.

References

Anderson, T., & Dron, J. (2011). Three generations of distance education pedagogy. *International Review of Research in Open and Distance Learning, 12*(3).

Barab, S. A., & Duffy, T. (2000). From practice fields to communities of practice. In D. Jonassen & S. M. Land (Eds.), *Theoretical foundations of learning environments* (pp. 25-56). Mahwah, NJ: Lawrence Erlbaum Associates.

Chai, C. S., & Merry, R. (2006). Teachers' perceptions of teaching and learning in a knowledge-building community: An exploratory case study. *Learning, Media and Technology, 31*(2), 133-148.

Cox, A. (2005). What are communities of practice? A comparative review of four seminal works. *Journal of Information Science, 31*(6), 527-540.

Farooq, U., Schank, P., Harris, A., Fusco, J. & Schlager, M. (2007). Sustaining a community computing infrastructure for online teacher professional development: A case study of designing Tapped In. *Journal of Computer Supported Cooperative Work, 16*(4-5), 397-429.

Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education, 10*, 157–172.

Grossman, P., Wineburg, S., & Woolworth, S. (2001). Toward a theory of teacher community. *Teachers College Record, 103*(6), 942-1012.

Harasim, L. (2012). *Learning Theory and Online Technology: How New Technologies are Transforming Learning Opportunities.* New York, NY: Routledge Press.

Lave, J. & Wenger, E. (1991). *Situated learning. Legitimate peripheral participation.* Cambridge, UK: Cambridge University Press.

Lee, K., & Brett, C. (2015a). Dialogic understanding of teachers' online transformative learning: A qualitative case study of teacher discussions in a graduate-level online course. *Teaching and Teacher Education, 46*, 72-83.

Lee, K., & Brett, C. (2015b). An online course design for inservice teacher professional development in a Digital Age: The effectiveness of the Double-layered CoP model. In M. L. Niess & H. Gillow-Wiles (Eds.), *Handbook of Research on Teacher Education in the Digital Age*. Hershey, PA: IGI Global.

Lee, K., & Brett, C. (2013). What are student inservice teachers talking about in their online Communities of Practice? Investigating student inservice teachers' experiences in a double-layered CoP. *Journal of Technology and Teacher Education, 21*(1), 89-118.

Liu, K. Y. (2012). A design framework for online teacher professional development communities. *Asia Pacific Educational Reviews, 13*, 701-711.

Lloyd M., & Cochrane J. (2006). Celtic knots: Interweaving the elements of effective teacher professional development in ICT. *Australian Educational Computing, 21*(2), 16–19.

Lloyd, M., & Duncan-Howell, J. (2010). Changing the metaphor: The potential of online communities in teacher professional development. In J. Lindberg & A. D. Olofsson (Eds.), *Online learning communities and teacher professional development: Methods for improved education delivery* (pp. 60-76). Hershey, PA: IGI Global.

Scardamalia, M., & Bereiter, C. (1994). Computer support for knowledge-building communities. *Journal of the Learning Sciences, 3*(3), 265-283.

Schlager, M. S., Fusco, J., & Schank, P. (2002). Evolution of an on-line education community of practice. In K. A. Renniger & W. Schumar (Eds.), *Building virtual communities: Learning and change in cyberspace* (pp. 112-145). New York, NY: Cambridge University Press.

Slaouti, D. (2007). Teacher learning about online learning: Experiences of a situated approach. *European Journal of Teacher Education, 30*(3), 285-304.

Stahl, G., Koschmann, T., & Suthers, D. (2006). Computer-supported collaborative learning: An historical perspective. In R. K. Sawyer (Ed.), *Cambridge handbook of the learning sciences* (pp. 409-426). Cambridge, UK: Cambridge University Press.

Tsai, I. (2011). Levels and patterns of participation and social interaction in an online learning community for learning to teach. *Journal of Interactive Learning Research, 22*(2), 191-239.

Wenger, E. (1998). *Communities of practice*. New York, NY: Cambridge University Press.

Wenger, E., McDermott, R., & Snyder, W. (2002) *Cultivating communities of practice: A guide to managing knowledge*. Cambridge, MA: Harvard Business School Press.

Zygouris-Coe, V. & Swan, B. (2010). Challenges of online teacher professional development communities: A statewide case study in the United States. In J. Lindberg & A. D. Olofsson (Eds.), *Online learning communities and teacher professional development: Methods for improved education delivery* (pp. 114-133). Hershey, PA: IGI Global.

The Role of Smart Media in Enhancing the Distance Learning Capability: Teacher's Motivation, Grades, and Preferences

Muhammad Awais[1], Farahat Ali[2]

[1]Lecturer - Media and Communication - University of Management and Technology Sialkot Campus, 21-A,
Small Industrial Estate, Shahabpura Road Sialkot, Pakistan,
muhammad.awais@skt.umt.edu.pk

[2]Lecturer – Media and Communication - University of Central Punjab, Avenue 1, Khayaban-e-Jinnah Road,
Pir Mansur Johar Town, Lahore, Pakistan,
farahatali08@gmail.com

Abstract

The mode of distance learning can result in isolation in learning with respect to students which can also affect their learning outcomes. The same type of problem can be faced by the students who are also doing jobs during their studies because of the fact that they usually cannot get much time to sit and discuss the class work with their classmates. Here comes the smart media into the picture. For that purpose, the role of teachers will also have a significant impact in encouraging their students to make use of the smart media. Because media is considered to be an important factor in distance learning. The sample (n=200) was drawn from the students of leading distance learning universities of Pakistan named as Allama Iqbal Open University and Virtual University. The results help to identify the connection between social networks and the students of the following universities. This paper also explores the preference connection between smart media and learning management system (LMS). The empirical evidence of the study suggests that the students prefer to have related material on digital media platforms than on LMS. Moreover, the teacher should motivate the students to use new technologies because the use of these technologies has a positive and strong connection with the grades.

***Keywords**: Smart Media, Distance Learning, E-Learning, Survey*

Introduction

The recent past has seen a revolutionary update in education (Moore, Dickson-Deane and Galen, 2011). The trend in tertiary education is evidently becoming visible among the students of the contemporary era (Perryton, 2012). The students in the present era are more technical in terms of operating the computer-mediated communication mediums, more advanced in searching and sharpening the content online (p. 7). The pace of this change is still accelerating with entering into the advanced format of the technology, touching the new horizon of artificial intelligence. A few months past, Google introduced a feature named talk to books which could answer your questions beyond the keyword searches by using the artificial intelligence it is coded (Green, Markey, and Kreider, 2013). This revolution was also brought into distance learning. While defining what is distance learning, Sheery (1995) argued that it is “the educational process between student and teacher separated by physical distance (p. 32). This new way of pedagogy has also affected the traditional way of pedagogy. Although the teachers are engaged with the students in workshops and training etc. but the courses required practical skills like media studies need more interaction between students and the teachers (tutors).

It is also evident that smart media has changed the course of study even of the distance learning students. Facebook groups, WhatsApp groups, and google groups are the famous platforms which are being used by the students of these universities (Dabbagh and Kitsantas, 2012).

Stern & Willits, (2011) also discussed that the use of Facebook as an alternative to LMS boosts the academic performance of the students because the students of contemporary eras are spent more time on smart media including social media platforms. Therefore there are more chances of checking their daily student activities while living on smart media platforms.

There was a time when smart media was conquered as a threat to the students but within no time this threat became the opportunity. Trajkovic, Jankova, Karbeva, and Videnovic (2012) found a strong relationship between the student’s motivation and the use of smart media applications. Another study found that the teacher’s motivation to ask their students the use of smart media platforms also enhances the productive use of smart media applications.

Based on the empirical evidence collected from the college students, Wang, Chen, and Liang, 2011) found the negative relationship between the use of social media and the student's performance. Moreover, Stellar, Vandenberg, Berglund, and Weiss (2011) found that the students having high grades tend to spend less time on social media as compared to the students who had lower grades but they spent significant time on social media.

As far as Pakistan is concerned, there are main two universities which are offering tertiary education to the students of Pakistan. The two universities are the Allama Iqbal Open University of Pakistan and the Virtual University of Pakistan. Usually, the job holders seek to get admission into these universities which couldn’t find themselves able to attend the regular classes.

Allama Iqbal Open University (AIOU)

Allama Iqbal Open University was established in 1974 in Pakistan. Since then, the main objectives have been achieved which are to provide the opportunity of education especially to those who cannot join the classic model of education due to their household chores or job (AIOU, n.d). The hallmark of the following university was that it was the second of its nature in the world and first in Asia and Africa (para. 4). The admissions are intake in both fall and spring. The format of the education is to send handwritten assignments back to the tutors. Different workshops are conducted by the tutors of the relevant subjects frequents, upon the need of the students. It also claims that more than 70% of students are working in different organizations (Masaud, Awan, and Ali, 2018).). In short, the format of education is “correspondence”. This university also got the awards of Raja Roy Singh and UNESCO ROMA for excellent work done it its field.

Virtual University

The Virtual University (VU) was established in 2002 (HEC, n.d.). It was the very first university that offered quality distance education which was mainly computer oriented. It is widely spread all over the country in more than 100 cities. It also got over one hundred and ninety affiliated institutions with it. Moreover, the foreigner students are also enrolled in VU because the nature of their education system permits them to do so. The format of the education is all based on ICTs whether it is the matter of sending quizzes, assignments or attempting papers. VU is very first of its kind to operate in Pakistan. It is still operational at its full potential (VU, n.d.).

Objectives

1. To gauge the frequency of usage of digital media by the students of leading distance learning universities of Pakistan.
2. To explore the relationship between the use of digital media by the students of the leading distance learning universities and teacher’s motivation and achieved grades.
3. To explore the preference patterns of the students of distance learning universities of Pakistan regarding LMS and the digital media.

Research Questions

1. Which university students (AIOU and VU) use the more digital media for study purpose?
2. What kind of relationship exists between the use of digital media by the students of distance learning universities of Pakistan and teachers motivation?
3. What kind of relationship exists between the use of digital media by the students of distance learning universities (AIOU or VU) and achieved grades by those students?
4. Whether the students of the distance learning universities of Pakistan prefer to use LMS or the digital media as the alternative?

Sample

The sample was chosen from the two leading distance learning universities of Pakistan which are Allah Iqbal Open University and Virtual University. One hundred students from each university have been selected b simple random sampling. The questionnaire was distributed during two workshops conducted by the respective universities which were needed of the time because of the nature of very own distance learning.

Results and Analysis

Table 1: The mean score of the use of digital media by distance learning students of Pakistan.

University	N	Mean	Std. Deviation
AIOU	100	9.6429	2.52544
VU	100	11.3000	3.82355

Three questions were asked on five points Likert scale from 200 (100 each) students of AIOU and VU about using the digital media. The first question was about inquiring their use of digital media to prepare class assignments outside class and the mean scores of the question were AIOU=3.55, VU=4.02. The second question was about asking their use of digital media to know the activities of their university and the mean scores were AIOU=2.91, VU=3.13. The use of digital media to contact their tutors' question was also answered by the sample of the study and the mean scores of the latter question were AIOU=3.18, VU=4.15. The mean score of the AIOU (out of the total score=15) was (mean =) 9.64. However, the students of VU's mean score is (mean=) 11.3000. This could be due to the fact that the orientation of the study in VU is more computer oriented as compared to the study in AIOU. Online lectures are available. The exercises are supposed to be attempted on the computer that should be connected to the internet.

Table 2. The correlation between digital media usage and the teacher's motivation.

		Digital Media Usage	Teacher's Motivation
Digital Media Usage	Pearson Correlation	1	.910*
	Sig. (2-tailed)		.024
	N	300	300

The Pearson product correlation was applied to gauge the relationship between digital media usage and the teacher's motivation. There is a strong positive correlation between digital media usage and the teacher's motivation (p= .91). It is also a matter of fact that the workshops are conducted frequently in both of the universities. The students who are more pushed by their tutors to form groups and discuss the study material with each other (*but not compulsory) are using digital media more frequently than those who didn't be pushed by their tutors or they were absent from those classes.

Table 3. The correlation between digital media usage and the achieved grades by the students of both universities.

		Digital Media Usage	Grades
Digital Media Usage	Pearson Correlation	1	.854*
	Sig. (2-tailed)		.021
	N	200	200

The relationship between digital media usage and grades is strong and positive (p= .85). It indicates that the students having high grades tend to use more digital media for their study purposes. It may also help the students to keep themselves updated with the activities, quizzes, assignments and paper patterns, etc. Hypothetically, every literate person is using digital media, what we can do is a debate on its usage. In digital media, the students are able to contact their seniors, tutors (if available) and other relevant persons who can help them in their study. That is one of the possible reasons the students use more digital media tend to have higher grades.

Table 4: The mean score of preference of LMS and the digital media by the distance learning university students of Pakistan.

university	N	Mean	Std. Deviation
LMS	100	3.6429	.52544
Digital Media	100	4.5932	.72355

The students of distance learning education tend to prefer digital media (mean=4.59) as compared to LMS (mean=3.64). This could also be due to the fact that the groups are created on those digital media applications (like Facebook, Google Plus, etc.) which are also used to stay connected with friends and families. LMS system is of a standard and classic kind of platform which used to make formal and official announcements which have its own limitations. The students may find digital media more user-friendly, colorful and easy to use for their quizzes, assignments and other similar activities.

The distance learning education is not less than a gift for those who cannot go to follow the traditional education system. With the advancement of new technology, it also improved itself a lot and sued the traditional approach of looking at social phenomena.

The first research question suggests that the nature of the university affects the use of smart media in terms of amount and quantity. The second research endorses the fact that the teachers should motivate students to use new technologies for study purposes. The third question challenged the notion found in the existing literature that stated that the use of social media negatively affected the student's lives but the result of the following study found that the students having higher grades in their study tend to use social media for more time than the student with lower grades. Last but not the least question answers a hint that digital media can also be used for LMS purposes.

Conclusion

The study suggests the teachers motivate their students to use new and innovative technologies. Also, it suggests the parents not to worry if their children (studying in distance learning school system) use digital media for a few more hours. Because the students having higher grades usually do so. Also, the study would like to draw the attention of the distance learning universities of Pakistan to use digital media (smart media) for more than the ordinary purposes.

References

AIOU, (n.d.). Overview, retrieved from https://www.aiou.edu.pk/overview.asp on March 07, 2019.

Dabbagh, N., & Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. The Internet and higher education, 15(1), 3-8.

Green, E. A., Markey, K. L., & Kreider, M. (2013). U.S. Patent No. 8,396,859. Washington, DC: U.S. Patent and Trademark Office.

HEC (n.d.). Retrieved from https://hec.gov.pk/english/universities/Pages/Punjab/Virtual-University-of-Pakistan.aspx on March 05, 2019.

Masaud, Z, Aswan, M, I, & Ali, M, Q. (2018). Role of Allama Iqbal Open University in Promoting Education among Rural Women in Southern Punjab. International Journal of Disnce Education and E-learning (IJDEEL), vol. 3, Issue, 1. Retrieved from https://www.researchgate.net/publication/325878373_Role_of_Allama_Iqbal_Open_University_in_Promoting_Education_among_Rural_Women_in_Southern_Punjab.

Moore, J. L., Dickson-Deane, C., & Galyen, K. (2011). e-Learning, online learning, and distance learning environments: Are they the same?. The Internet and Higher Education, 14(2), 129-135

Perraton, H. (2012). Open and distance learning in the developing world. Routledge.

Sherry, L. (1995). Issues in distance learning. International journal of educational telecommunications, 1(4), 337-365.r

Stern, D. M., & Willits, M. D. (2011). Social media killed the LMS: Re-imagining the traditional learning management system in the age of blogs and online social networks. In Educating Educators with Social Media (pp. 347-373). Emerald Group Publishing Limited.

Stollak, M. J., Vandenberg, A., Burklund, A., & Weiss, S. (2011). Getting social: The impact of social networking usage on grades among college students. In Proceedings from ASBBS annual conference (Vol. 18, No. 1, pp. 859-865).

Trajkovic, V., Vasileva, M., Jankova, O. S., Karbeva, S., & Videnovic, M. (2012). Increasing Students' Motivation by Using Social Networks In And Out of the Classroom. ICT Innovations 2012 Web Proceedings, 17-24.

VU, (n.d.). Retrieved from http://www.vu.edu.pk/AboutUs/AboutVU.aspx on March 10, 2019.

Wang, Q., Chen, W., and Liang, Y. (2011). The Effects of Social Media on College Students. Johnson & Wales University, Providence, RI.

Pre-sessional Provision for Distance Learning Students: A Universitas Terbuka Experience

Rahmat Budiman

Universitas Terbuka
Jalan Cabe Raya, Pondok Cabe, Pamulang, Tangerang Selatan 15418, Banten-Indonesia
budiman@ecampus.ut.ac.id

Abstract

This paper is based on Universitas Terbuka's new measures taken for ensuring the readiness of newly enrolled students. For most newly enrolled students, learning in a distance learning environment may present formidable challenges. Hence, a successful distance learning student, to some extent, acquires certain skills to develop the ability to manage the study independently. Universitas Terbuka is aware that the skills need to be trained to newly enrolled students. Since 2017, Universitas Terbuka has taken an initiative to provide pre-sessional provision for newly enrolled students. The goal of the program is to build independent learning management skills. It is expected that the program may improve student retention rate. The pre-sessional provision consists of a full day of sessions which involve mostly practical sessions which include making learning schedule, applying effective reading strategies, accessing online learning facilities, and making preparation for examination. In addition, students are introduced to identify potential barrier to learning and help-seeking initiatives. The program is conducted at the Regional Office once the admission session is closed and student data is recoded in the university registration record system. The trainers are regularly upskilled in order to cope with current issues in distance learning as well as to build confidence.

Keywords: *distance learning, pre-sessional provision, Universitas Terbuka*

Introduction

In Indonesia, particularly in higher education level, distance and online learning receives attention from scholars, practitioners, and experts of many kinds. The Ministry of Research, Technology, and Higher Education of the Republic of Indonesia in many occasions promoted a policy to encourage conventional universities to offer online learning (Awaliyah, 2018). One of the missions is to increase the higher education rough participation rate. Therefore, both public and private conventional universities are now making pedagogical shifts in their approach from classroom teaching to online and distance teaching. These pedagogical shifts will have significant impacts on the students and the institutions which may disrupt existing system. This situation suggests that shifting pedagogy needs holistic approaches to teaching and learning, including developing IT infrastructure system, curriculum and learning materials, and the most important is reshaping the culture of the institution and the students.

Universitas Terbuka realizes that students, particularly in the early semesters, generally experience difficulties in adapting themselves with a new environment. Newly enrolled students are not accustomed to independent learning environment. Being unable to adapt with this new environment is believed to be a potential cause of student resignation. Croft, Dalton, and Grant (2010) found that feeling of isolation may lead to attrition. Previous study conducted by Grau-Valldosera and Minguillón (2014) found that the attrition rate was particularly high in the early semesters. Similarly, Budiman (2015) found that the first semester was a critical condition for students who did not have distance learning background. In fact, distance learning students are required to manage their studies independently (Brindley, 2014).

Related Work

A literature search to identify previous studies on the same topic was unsatisfactory. Article themes related to pre-sessional provisions, orientation, or inductions for distance learning students were quite limited. Majority of articles discussed student attrition, particularly in the early semester. Among Indira Gandhi National University (IGNOU), factors that related to students attrition were financial problems, lack of family support, and inability to comprehend the learning materials (Baruah, 2011). A likely explanation is that the students were not ready for learning in a distance learning environment where students are required to study independently and be a part from lecturers and other students. To decrease anxiety and enrich distance learning experience among new distance learning students Pozdnyakova and Pozdnyakov (2017) proposed a preparatory course for in-coming students. This method is similar to the method taken by Universitas Terbuka.

A study by Jones (2013) suggests that student orientation in an online learning environment helped students make better preparation for learning. The study indicated that the students were more confident to study. This result provides an important information about the positive impact of student orientation.

All of the studies reviewed here support the idea that pre-sessional provision, orientation, or induction is an important phase in a student learning cycle which in turn may increase student retention rate.

Methods

To cope with the situation, Universitas Terbuka develops a number of initiatives, including on-site pre-sessional provision for newly enrolled students. This paper is based on professional experience and perspectives. The following sections describe the initiatives taken.

Developing Key Objectives of the Initiative

High student attrition is considered to be a key issue in distance and online learning around the globe (Brown, Hughes, Keppell, Hard, & Smith, 2015; Metscher, 2014). Similar situation also happens at Universitas Terbuka. As the university does not employ drop out system, the term “non-progressing students” has been used to illustrate the students who do not proceed to the following semester. They may resume their studies at any time they want to and the university keeps their record in the student record system. The management considered it necessary to develop an initiative to address the issue. The initiative has two main objectives:

1. To build student’s readiness to study in a distance learning environment;
2. To help newly enrolled students with the institution and peers.

Developing materials and Recruiting Human Resources

A team consisted of lecturers was set up to develop materials and to recruit trainers. The objectives were used as a framework to develop the material. In addition, based on previous studies, the team identified key issues faced by students and skills that linked closely to student success. Three main competencies were formulated. At the end of the training, students are able to:

1. develop individual learning schedule which includes the competencies to manage study time, read effectively, and make preparation for taking the examination, and completing tasks in the online tutorials;
2. create reading records;
3. access various online learning services which include the competencies to access the online tutorials, university website, OER, and other online learning services.

The following steps were to recruit the trainers and hold training of trainers. The trainers were both lecturers and administrative staff. The training of trainers were hold at the Main Office of Universitas Terbuka. Later on, they were sent to the Regional Offices to train the local staff. The trainers and the local staff then gave on-site trainings to newly enrolled students for two days. The trainings were so far conducted in 2018 and 2019.

Target Audience and Expected Outcomes

As the first year students tend to have difficulties in adapting with distance learning environment which is particularly new to the, they became the target audience of the training. The staff at the Regional Office invited the newly enrolled students to attend the training. The training itself was elective. In other words, students may not attend the session. However, those who attended the training received certificates.

During the training, students were able to discuss and ask directly to the trainers. Materials were provided by the trainers, including printed and copied materials. The training focused on practice rather than giving theoretical description in order to achieve the three competencies mentioned above.

Feedback and Follow Up

In order to implement continuous improvement, feedback were given to the trainers during the ToT and the trainings in the Regional Offices. During the ToT, feedback was given by peers. Meanwhile during the training at the Regional Offices, the students gave feedback in the form of quantitative and qualitative feedback. The feedback was analyzed by a team for future improvement. In addition, in order to gain a better insight into how the trainings ran and how the students followed the training, focus group discussion (FGD) was conducted by inviting the trainers.

Conclusion

Universitas Terbuka was aware that student attrition in a distance learning environment was particularly high. Initiatives were taken to address this situation. Trainings must be given to newly enrolled students in order that they were able to develop their readiness to study in a distance learning institution. To ensure that the training met the students' needs, several important steps were taken, including determining the objectives, identifying the competencies to achieve, selecting and recruiting trainers, and conducting the trainings. The ultimate goal of the training was to increase student retention rate and at the same time to improve student achievement.

Future Action

In order to collect information about the training, a research would conducted in the near future. It is expected that the research results may give clear information and scientific argument that can be used by management in making a policy.

References

Awaliyah, G. (2018). Kemenristekdikti akan Perbanyak Izin Kampus Buka E-Learning. *Republika*. Retrieved from https://www.republika.co.id/berita/pendidikan/dunia-kampus/18/01/04/p20t6w368-kemenristekdikti-akan-perbanyak-izin-kampus-buka-elearning

Baruah, T. D. (2011). Improving Sudent Retention through Technology in India. *Asian Journal of Distance Education, 9*(2), 15-25.

Brindley, J. E. (2014). Learner Support in Online Distance Education: Essential and Evolving. In O. Zawacki-Richter & T. Anderson (Eds.), *Online DIstance Education: Towards a Research Agenda* (pp. 287-310). Edmonton: AU Press.

Brown, M., Hughes, H., Keppell, M., Hard, N., & Smith, L. (2015). Stories from Students inTheir First Semester of Distance Learning. *The International Review of Research in Open and Distributed Learning, 16*(4).

Budiman, R. (2015). *A longitudinal study of student achievement and dropout in a distance learning English writing course.* University of Dundee.

Croft, N., Dalton, A., & Grant, M. (2010). Overcoming Isolation in Distance Learning: Building a Learning Community through Time and Space. *Journal for Education in the Built Environment, 5*(1), 27-64. doi:10.11120/jebe.2010.05010027

Grau-Valldosera, J., & Minguillón, J. (2014). Rethinking Dropout in Online Higher Education: The case of the Universitat Oberta de Catalunya. *The International Review of Research in Open and Distributed Learning, 15*(1).

Jones, K. R. (2013). Developing and Implementing a Mandatory Online Student Orientation. *Journal of Asynchronous Learning Networks, 17*(1), 43-45.

Metscher, D. S. (2014). Analysis of Contributing Factors to High Attrition Rates in Online Educational Programs. *International Journal of Professional Aviation Training & Testing Research, 6*(1), 1-17.

Pozdnyakova, O., & Pozdnyakov, A. (2017). Adult Students' Problems in the Distance Learning. *Procedia Engineering, 178*, 243-248.

Enhancing Distance Learning of Art, Culture and Heritage Using Digital Technology at Museums in Bangladesh

Sikder Md Zulkernine

PhD Scholar, Department of Visual Studies, Lingnan University, Hong Kong
Associate Professor, Department of Archaeology, Jahangirnagar University, Bangladesh
zulkernines@juniv.edu

Abstract

Due to a lack of resources, museums in Bangladesh are essentially store houses to protect the material evidence of Bangladesh's cultural heritage. Little information is provided even for objects on display in the galleries. Rarely is there information both in Bangla and English. Maps of historic locations, introductory wall texts to give an overview of the objects in a gallery, and information about individual objects that can arouse the visitors interest are absent in most museums. Museum catalogues are too costly for average Bangladeshis to consider buying. Yet every young person entering a museum is carrying a cell phone. It is their primary source of information and communication with their friends. Generally they are not allowed to take photographs in the museums but watch out for the guards and take "selfies" of themselves and occasionally of an object they find fascinating and share at the social media. Lacking a culture of volunteerism, there are no guides in the museums offering daily tours nor trained personal in the museum to recruit, train, and supervise tour guides or museum curators available except for VIP tours. Most visitors leave museums having learned very little about their cultural heritage and rarely make a return visit.

A questionnaire survey, observational studies and interview with the museum personnel was undertaken at The Varendra Research Museum at Rajshahi, established in April 1910 is one of the earliest museums in this country. The study focused on how to enrich the learning experience of public using digital technology, and to explore the ways of providing better services delivery to the visitors and a more meaningful and enjoyable art, culture and heritage educational opportunity. This study suggests that developing digital contents for museums is essential that will enrich the learning experience of public. By utilizing the potential of individual's cell phones to deliver information in both Bangla and English, a cell phone tour for museums will have a low cost way of sharing information and answering the visitor's questions regarding objects in the collection both on display and in storage. Developing audio-visual digital contents, documentation of collections with its contextual information need to be completed using digital technology and share these information on museum website for the wider audience and open interactive distance learning opportunities.

Keywords*: Digital Contents, Distance Learning, Museum Education, Lifelong learning*

Introduction

Museum has been defined by the 10th General Assembly of ICOM as “a non-profit making, permanent institution in the service of society and of its development, and open to the public, which acquires, conserves, researches, communicates, and exhibits, for purposes of study, education and enjoyment, material evidence of man and his environment”. According to the definition of Museum education is central to the museum activities.

Museum studies or museology is new discipline in Bangladesh immerges in recent time. There are some works in the context of museums in Bangladesh which were confined with the discussion on collections and display techniques and management. Museum education for public or community based museological approach yet to practice in Bangladesh. It is urgent to have interaction between museum and its community and adopt educational activities to make the museum inclusive to enrich the learning experience using digital technology, meaningful and enjoyable art culture and heritage education in Bangladesh.

Learning at Museum

Learning involves a great many process. The most basic are perception and memory. Perception is strongly influence by prior experience- we see what we know, what we recognize. Learning is influenced by motivation and attitude, by prior experience, by culture and background, and especially in museum- by design and presentation and physical setting. When we talk about learning and particularly learning in museum, we are not talking about learning facts only. Learning includes facts, but also experience and emotions. It requires individual effort, but it is also a social experience. In museum, it is the social experience that frequently is best remembered (Hooper-Greenhill, 1999, p. 21).

Early theories of learning (behaviourists, developmental psychologists and cognitive scientists) understood learning as an active process in which the learner constructs meanings. They suggested that the information is organised in schemata (organising frameworks) and that new connections to previous knowledge are made whenever a new concept is introduced in this system of frameworks (Dierking, 1992, p. 21). Hence, these learning models focus on the learning of concepts and facts (acquiring information and concepts) and on how these concepts are re-organised in the individual’s existing knowledge. However, they neglect the surrounding factors that may affect the individual’s learning processes such as where the subject is and by whom the individual is accompanied by and consequently how the individual’s experience is affected by another individual’s input.According with these early theories, constructivism refers to the idea that learners construct knowledge and meaning for themselves (Hein, 1996, p. 30). Moreover, constructivist theory acknowledges the fact that knowledge is not only built up with time but also reinforced with time.

Hein (1996) established a relationship between the principles of constructivism and museum education which will help a consideration of whether or not museum learning naturally fits into constructivist thinking. Hein (1996, pp.32-34) describes the constructivist museum as one that has exhibits and programmes that: Provide ‘hands-on’ opportunities which are also ‘minds-on’ (implies that the construction of meaning is mental), Encourage visitors to discuss and to find out together (implies that learning is a social activity), Don’t have a fixed path to follow and provide different entry points, various sensory modes and different kind of stimuli (implies that learning is contextual and that one learns in relation to what one already knows), Find the right level in which to engage the learner (implies that in order to develop further knowledge, to ‘build-on’ or ‘add-on’ knowledge, one needs to have a structure developed from previous knowledge), Provide additional resources to be taken at home (implies that learning occurs with time and that one needs to revisit ideas for a significant learning experience)

It appears that even though the constructivist museum takes into consideration that learning is a social activity, it mainly focuses on individual developments and on individual constructions of meanings. The constructivist model of learning puts emphasis on the individual learner interacting and constructing meaning with phenomena (Hein, 1996, p.33). In the constructivist theory of museum learning the social group is seen as cluster of individuals rather than as a group that interacts and mutually constructs meaning.

An alternative to the constructivist learning approach is the socially-situated or collaborative learning theory. The latter sees the museum learning as a social process and hence understands the concept of visitor learning in a museum setting as a process that incorporates all the group members' inputs in a collaborative effort (Borun et al. 1996, p. 135).

Falk and Dierking (in Dierking, 1992, p. 6) suggested when they developed the Interactive Experience Model which later was redefined as Contextual Model of Learning. In this model, the learning experience of an individual is influenced and framed by 3 overlapping contexts: the personal context (what the individual already knows and his or her motivations and interests), the social context (whom the individual comes with) and the physical context (where the learning experience takes place). The contextual model of learning (that is, the contextual model of learning applied to families learning experience in the museum) would be one in which both the adult's and the child's personal context are intertwined. In which, the social context would correspond to the family group and the physical context to the museum, and the objects within it.

Within this learning context, it is reasonable state that the individual's experience when visiting a museum in a family group differs very much from when visiting with other peers or in the case of children, with school groups.

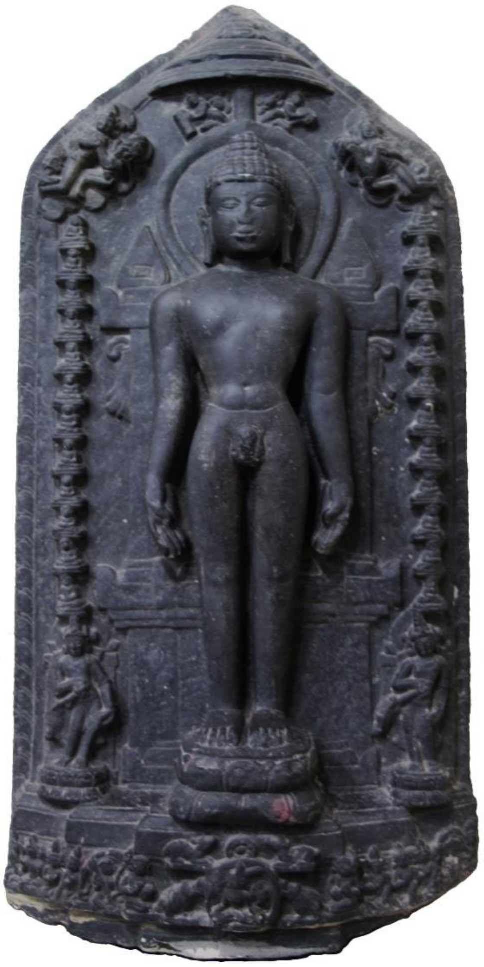
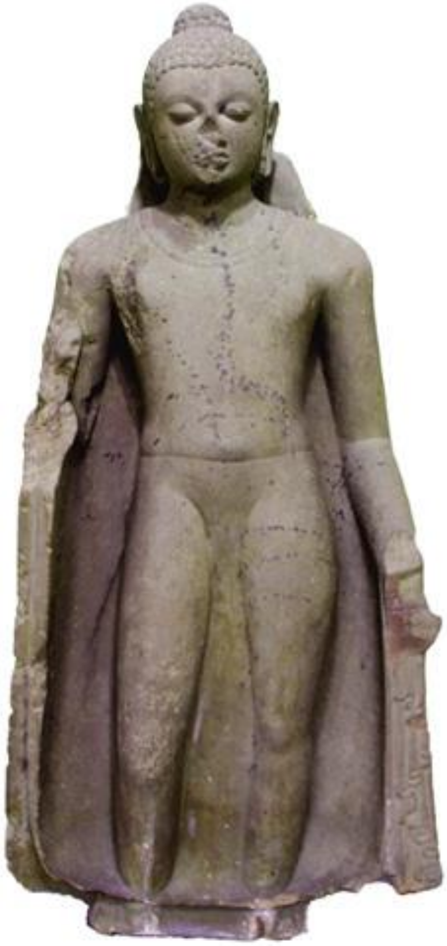
Case Study at Varendra Research Museum (VRM)

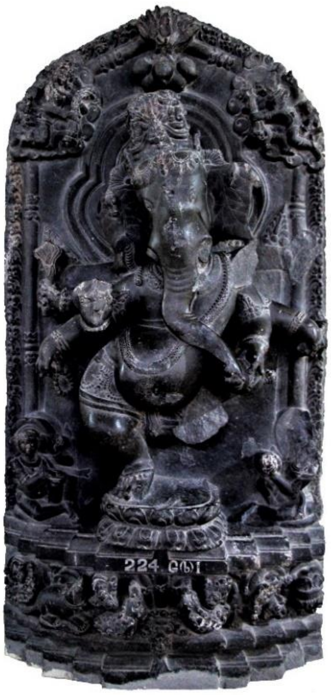
The British brought the concept of museum to Bengal. The year 1796 was the starting point of the history of museums, not only in Bengal but also in the Indian subcontinent. The initiative came from the members of the Asiatic society, who collected many archaeological, ethnographical, geological and zoological specimens and felt the need to house the materials suitably. In 1796 donations were invited to erect a building. Warren Hastings, the patron of the Society, provided a plot of land at Park Street, Calcutta, and the building was completed in 1808, and the first Museum in the subcontinent, the Asiatic Society Museum, was founded in 1814 with Dr Nathaniel Wallich, a Danish Botanist, as its Curator. There are several museums in the country, which are depositories of the country's rich cultural heritage.

Varendra Research Museum originated from Varendra Research Society at Rajshahi, established in April 1910 under the patronage of Kumar Saratkumar Ray of the Dighapatiya Raj family, was the first museum in the country. Kumar Saratkumar Ray and two of his close associates Akshay Kumar Maitreya and Ramaprasad Chanda spent much of their time and energy in establishing the society and then the museum. Their lifelong effort was to unveil the glorious past of Bengal in general, and of Varendra in particular by lying bare the monuments that still defied the ravages of man and nature. Saratkumar led an exploratory tour accompanied by AK Maitreya, Rakhaldas Bandyopadhyay and a few others to different part of the country in early April 1910. The party was able to collect 32 pieces of sculptures including the life-size images of Chandi from Mandoil. On their return to the town the leading residents of Rajshahi gave the Kumar and his colleagues a reception and emphasized the preservation of the collections at Rajshahi. So out of necessity the Rajshahi Museum (later Varendra Research Museum) was born.

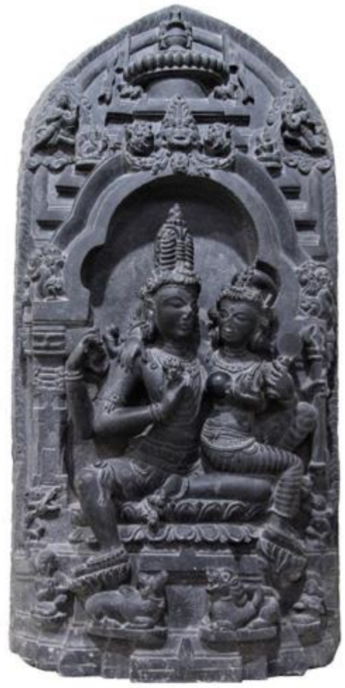
The Varendra Research Museum collection consists of stone and metal sculptures, epigraphs, coins, pottery and plaques in terracotta, weapons, Arabic and Persian documents, paintings, books and periodicals, Sanskrit and Bangla manuscripts.

Some Important Collections of VRM

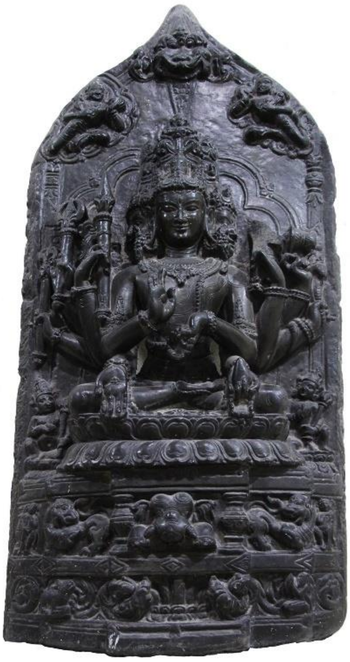
	
Shantinath is the 16th of 24 Jain teachers, the 24th and last was Mahavira, a near contemporary of Buddha Shakyamuni, the historic Buddha who lived in the 5th century BCE. Likely the oldest but least well known of all the religions that began in South Asia, none has had a greater impact on the lives of the poor and the downtrodden in our lifetime than the teachings of the Jain Naths.	Sarnath Buddha: This 5th century image of the Buddha was found in Bihrail but a scientific analysis of the Chunar sandstone from which it was carved, as well as the style and workmanship of the sculptor, identify this sculpture as having been brought to Bangladesh from Sarnath, India



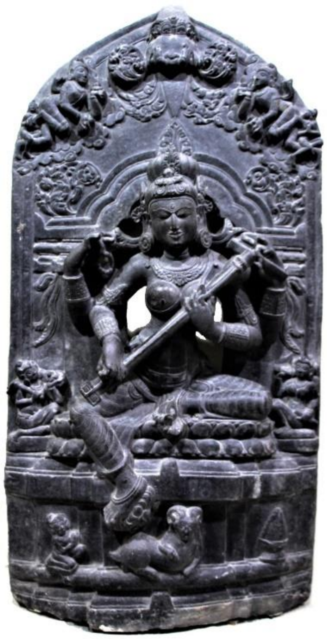
Ganesha: Children’s favorite God,
popular God in Hinduism.



Uma Maheshvara: Shiva and Parvati are seated together on a single lotus in loving embrace



Sada Shiva: It is a symbolic representation of cosmic power. When Shiva is depicted in his cosmic manifestation, before the creation of the universe, he is known as Sada Shiva in whose body the entire universe resides, waiting to be born.



Saraswati: Goddess of knowledge, music, arts, wisdom, and nature, Saraswati is worshiped by Hindus, Buddhists, and Jains throughout South and South-east Asia, and by Buddhists in China, Korea, and Japan.

Objectives

The main objective of this study was to find out the current experience of visiting Varendra Research Museum by the citizen to suggest the better educational activities of museums, distance learning using digital technology. The study had some other specific objectives in relation to its general objective. Such as:

- To explore who visit the museum and the interest of visitors in visiting the museum.
- To investigate the challenges and opportunities faced by the visitors.
- To know the level of satisfaction of the respondents regarding visiting museum.
- To propose the application of new technology to enhance the learning experience of the public

Methodology

The study is a baseline one and the nature of the study is both qualitative and quantitative. The basic method which is used in this study is sample survey. Random sampling method has been used here for determining the sample.The survey was carried out in the Varendra Research Museum premise from August 7ththrough 12th, 2017. A total number of 219 respondents are randomly selected from the study area. Data was collected from respondents using several data collection methods and different data collection tools. Such data collection tools are considered as valid sources of data for a research (Rudestam and Newton 1992, p.70) and have provided with data of real practice whereas the literature review determined an understanding of the current and past academic approaches to learning in a museological context. Face to face interviews were conducted with the visitors utilizing both open and closed end survey questions. An in-depth Interview has also been conducted with one representative of the museums, one top administrative of VRM and three museum professionals, the staff of VRM were interviewed. Collected data have been edited properly and the edited data has been processed through tabulation with the help of SPSS software before analysis. Later, this data has been presented with tables and graphs.

Method	Target Group	Number
Sample Survey	Visitors	219
In-depth Interview		
	Representative of Ministry of cultural affairs	1
	Top Administrative of VRM	1
	Museum professional of VRM	3

Table 7: Sampling method and sample size

Findings

This represents the findings of the study regarding visiting VRM. These are highlighting below:

Background characteristics of the respondents

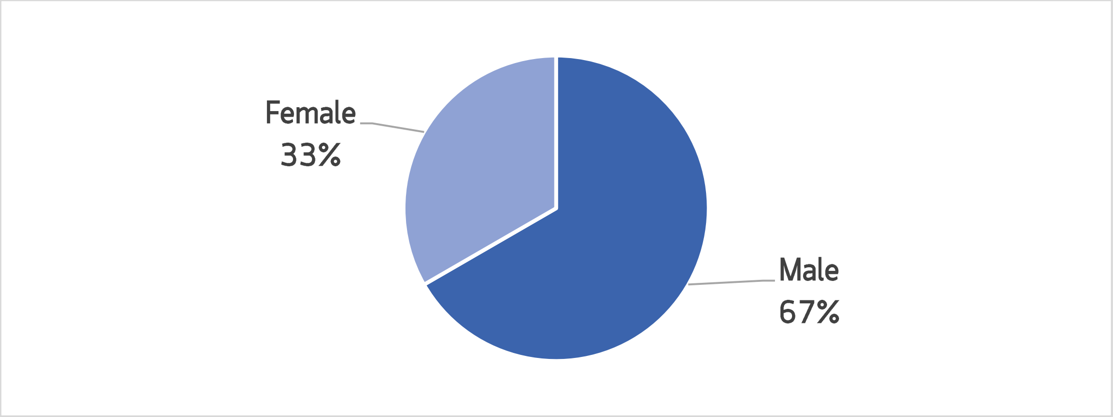


Figure 1: Respondent's Gender

This Figure 1 shows that 67% respondents are male. It simplifies that male persons frequently visit the museum. On the other hand, number of female (33%) is much lower than the male persons. It means females visit the museum less often than males.

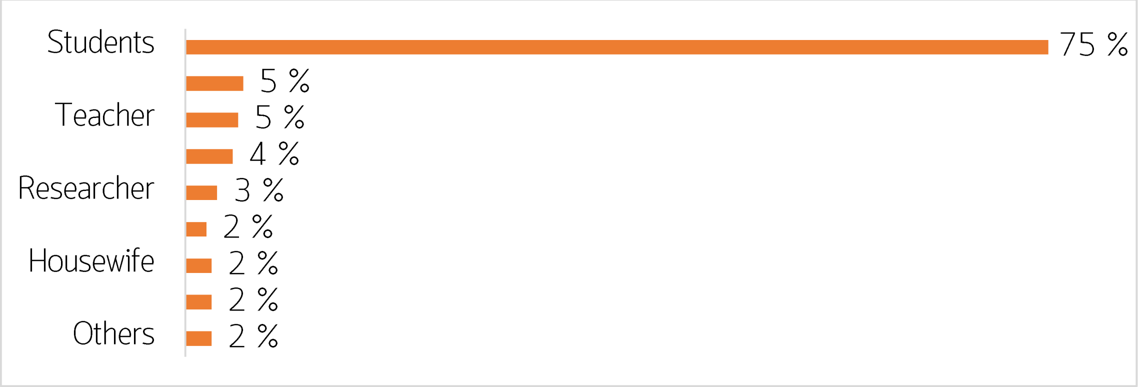


Figure 2: Occupational Status of Respondents

The survey was conducted among the general visitors of the Varendra Research Museum. The Figure 2 shows that about 75% of the respondents are students. They mostly visit the Varendra Research Museum. It indicates the increased interest of the students in arts, culture and heritage of Bangladesh. About 5% of the visitor are unemployed, 5% Teacher, 4% Government Job holder, 3% researcher, 2% Businessman, 2% Housewife and 2% respondents are private job holder. It is very tough for job holders to visit the museum as they remain busy with their work. With the government instituting a two day weekend for office holders, it will be important for museums to keep a record of any increase in the museum attendance of office holders.

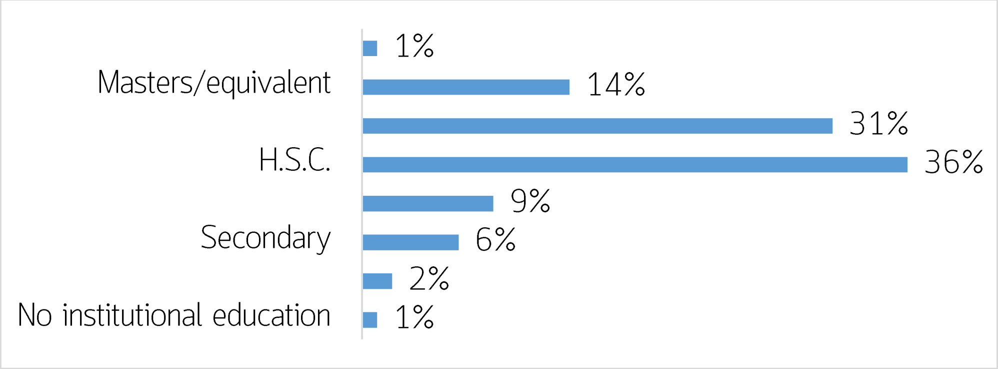


Figure 3: Educational status of the visitors

This figure 3 shows that only 1% of visitor has no institutional education and 90% of the visitor has education level from SSC to Post graduation. It indicates that they have the capacity to read and understand both Bangla and English text at the museum.

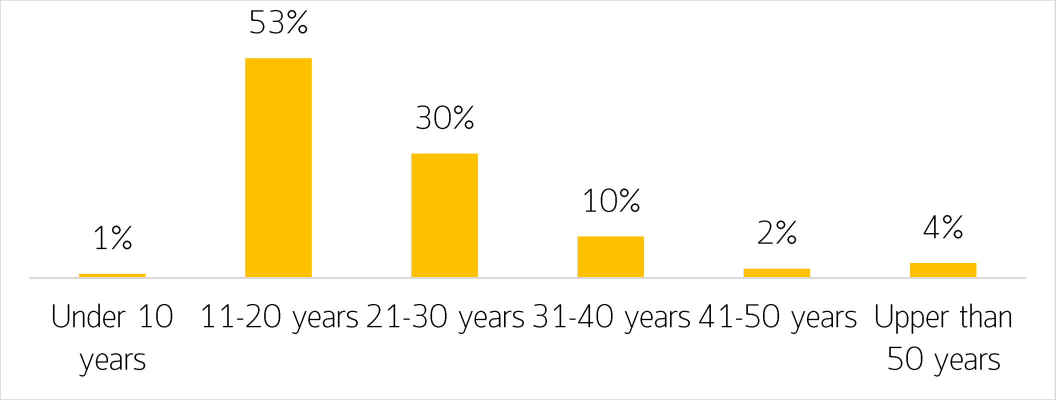


Figure 4: Age Status of age of respondent Visitors

This Figure 4 shows that the highest numbers of visitors 53% are from the age group 11-20 years. The second highest age group is 21-30 years. 10% of the visitors from the age group 31-40 which indicates that the most of the visitor of this museums are young.

Status of using cell phone and access to internet

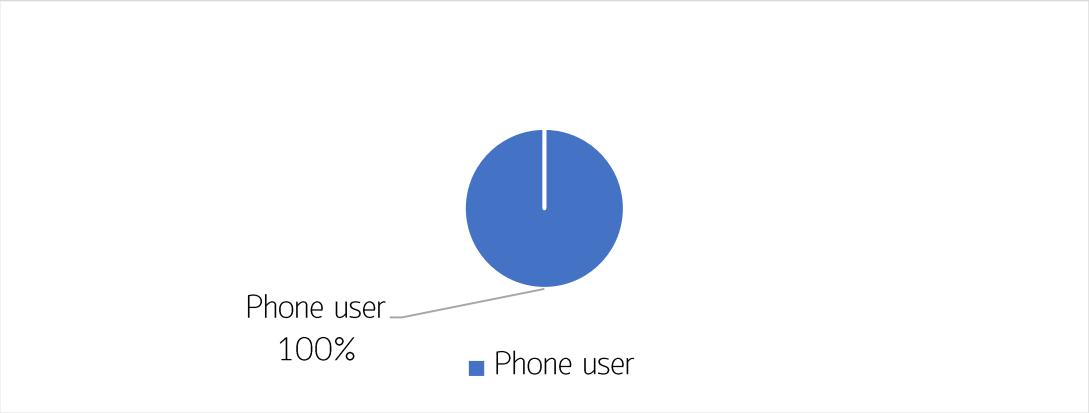


Figure 5: Status of using mobile phone

Nowadays mobile phone is the biggest medium of communication. The necessity of mobile phone needs no telling. Here, Figure 5 reveals the status of using mobile phone by the respondents. It is seen from the figure that a significant percentage of respondents (100%) use mobile phone.Now-a-days the number of users of mobile phone is very high.

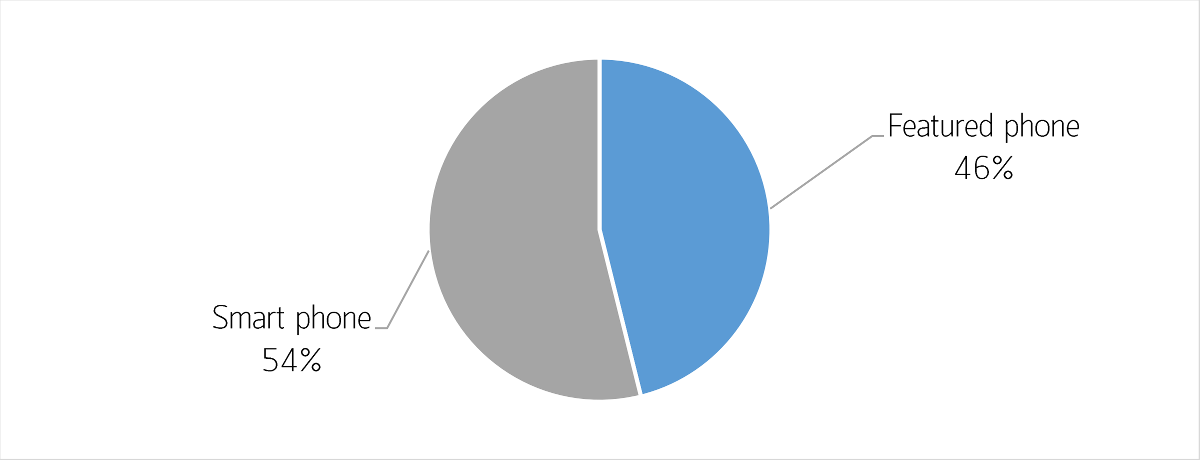


Figure 6: Type of phone used by the respondents

People use different types of phone according to their demand, capacity and interest. This figure 6 exhibits the type of mobile phone used by the respondents in the study area. It is a very positive sign that 54% respondents use Smart phone. On the other hand, 46% respondents use featured phone.

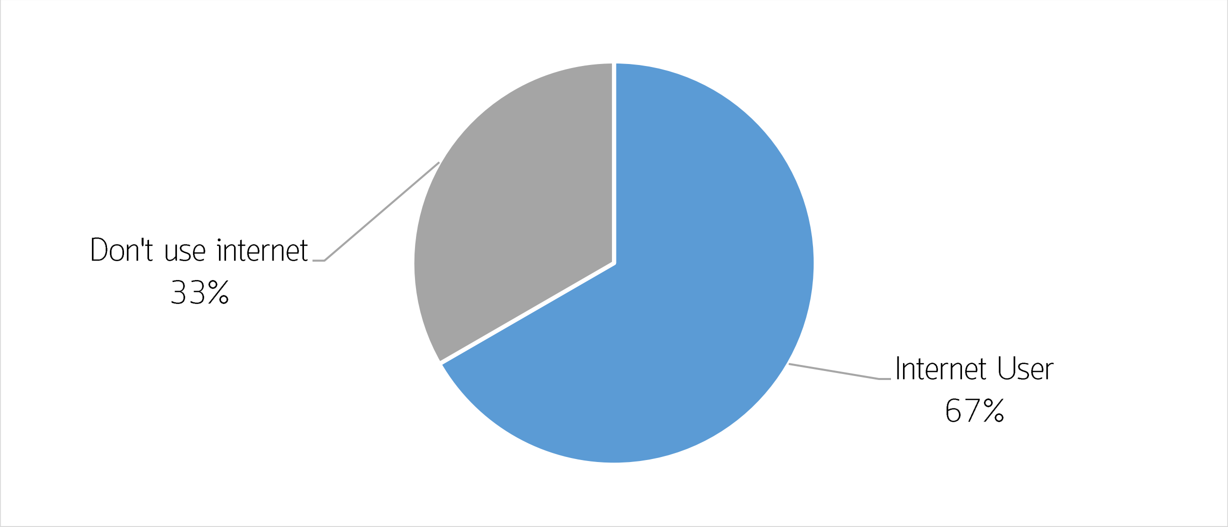


Figure 7: Status of using internet

Internet is another way of connecting with the world. Any information can be received and exchanged through the internet. This Figure 7 shows the status of using internet by the respondents. The study finds that 67% respondents use internet while 33% respondents do not use internet at all. Here, a significant majority uses internet.

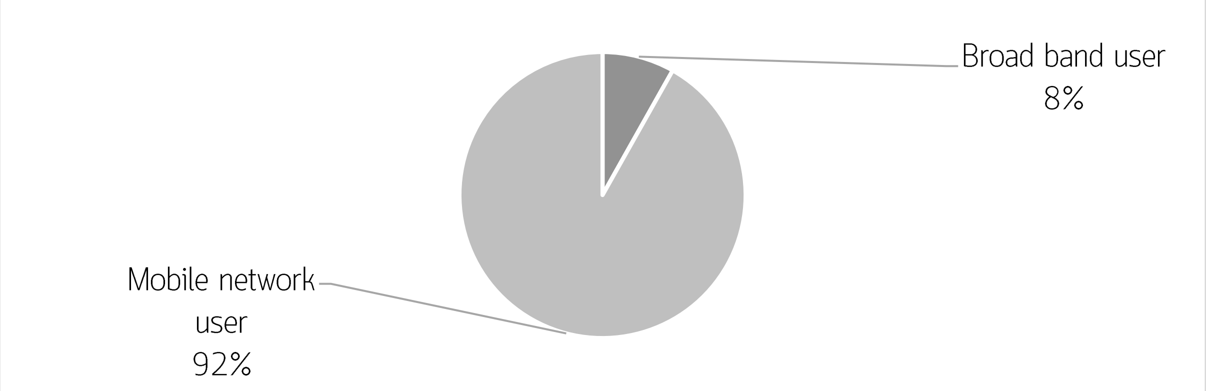


Figure 8: Status of using Network

Figure 8 point out that 8% of respondents use broadband connection and 92% of respondents use mobile network to connect to theinternet. Almost all of the smart phone users connect through mobile network.

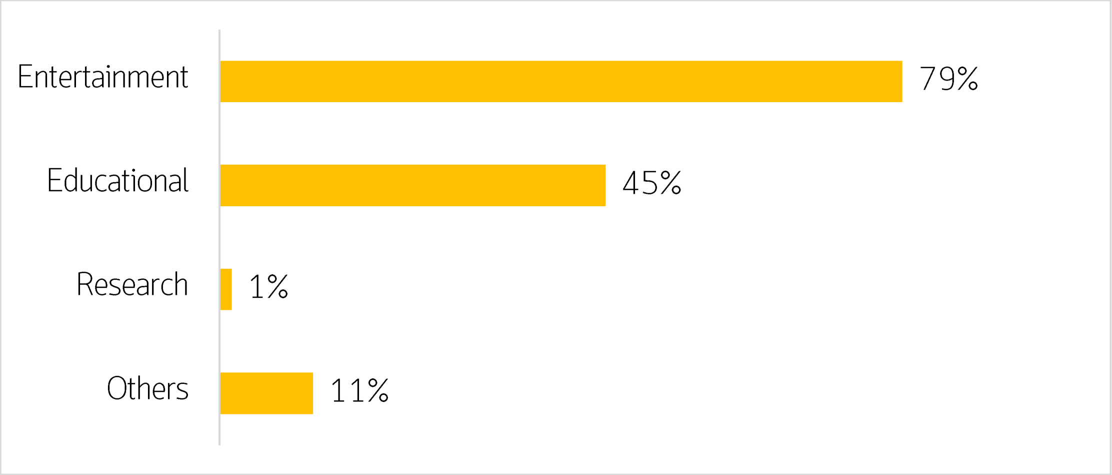


Figure 9: Purpose of visiting Varendra Research Museum

(Multiple responses)

The figure 9 shows the response of visitor regarding the purpose of their museum visit. It represents that prime purpose of their museum visit is to get entertainment and education. So museum need to come up with more provision to produce quality education material and entertainment.

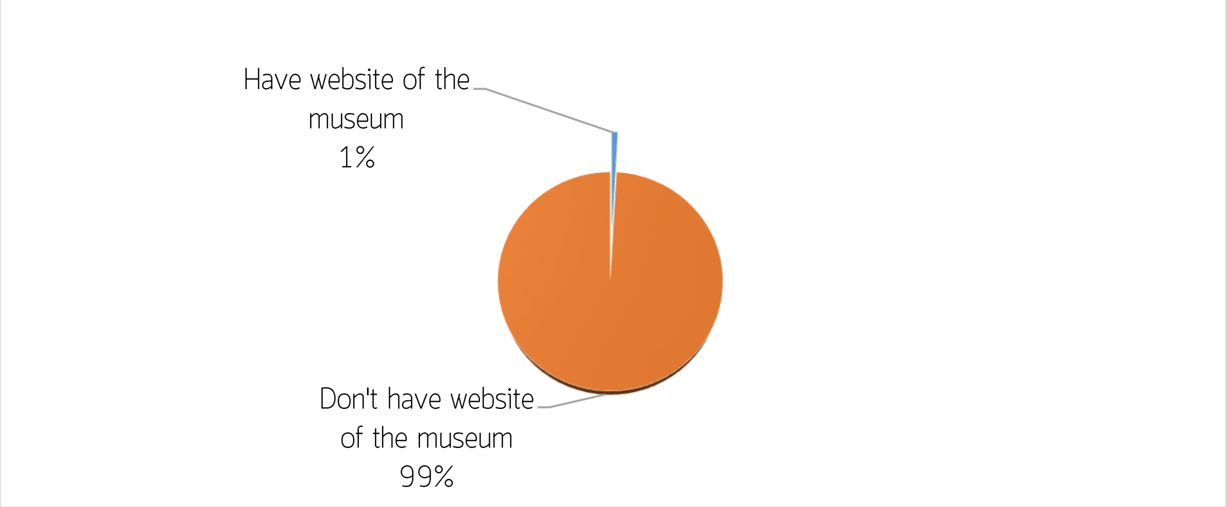


Figure 10: Status of available web information for Visiting VRM

People generally seek information before planning to visit a museum. Unfortunately, the Varendra Research Museum, as is the case with most museums and other public institutions in Bangladesh, has no website for the visitor to get advance information before visiting the museum. From the Figure-10 is has seen that only 1% respondent thinks that there is website but 99% thinks there is no website.

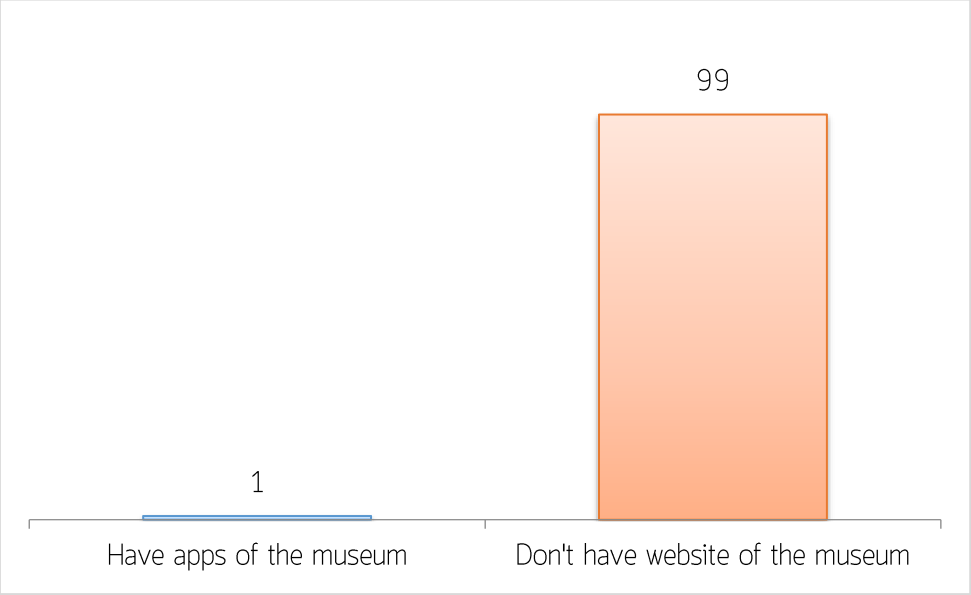


Figure 11: Status of Museum apps and Websites of the VRM

The Figure 11 shows that there are no museum apps or website for the VRM museum available at theWorld Wide Web.

Satisfaction Level of Visitor of VRM:

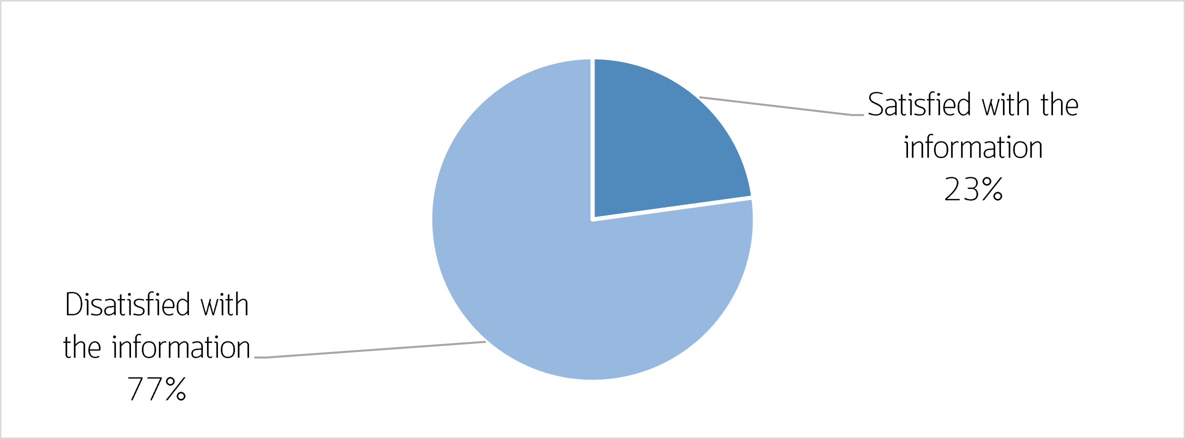


Figure 12: Respondent's purpose fulfilled or not

Visitors come to museums for entertainment and to learn more about their cultural heritage. It is seen that only 23% respondent's purpose has been fulfilled.

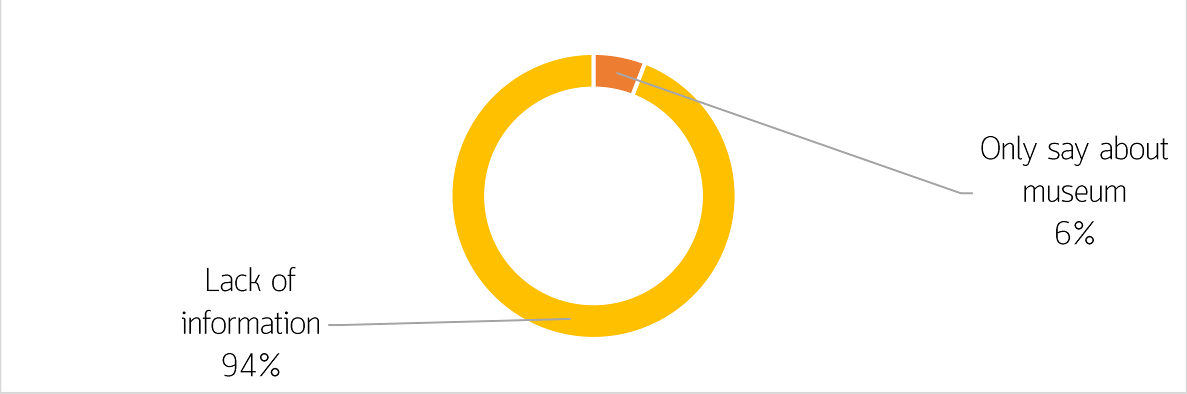


Figure 13: Reason for Dissatisfaction with the information

Here it has been explored why the respondent were dissatisfied. The Figure 13 pointed out that the respondent were dissatisfied because of the lack of information. 94% of the respondent did not get the information they were looking for. So it is very important for the museum authority to respond to the information demand of the visitor.

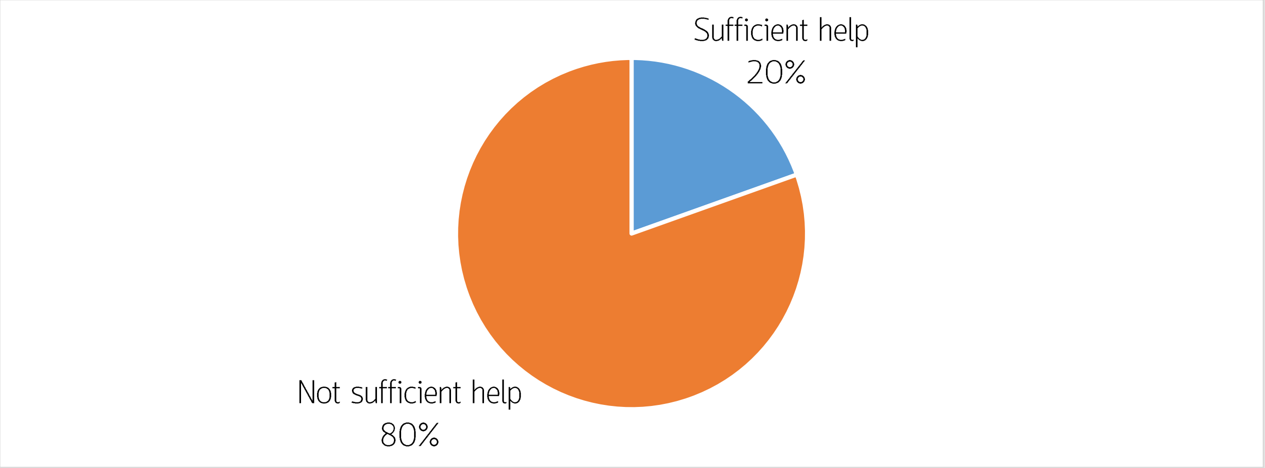


Figure 14: Status of support provided by the museum

Figure 14 shows that 80% of the respondents did not get sufficient help or information provided by the museum. 20% respondents shows their satisfaction with the present condition of the museum

Information regarding Satisfaction level of the existing facility of the museum

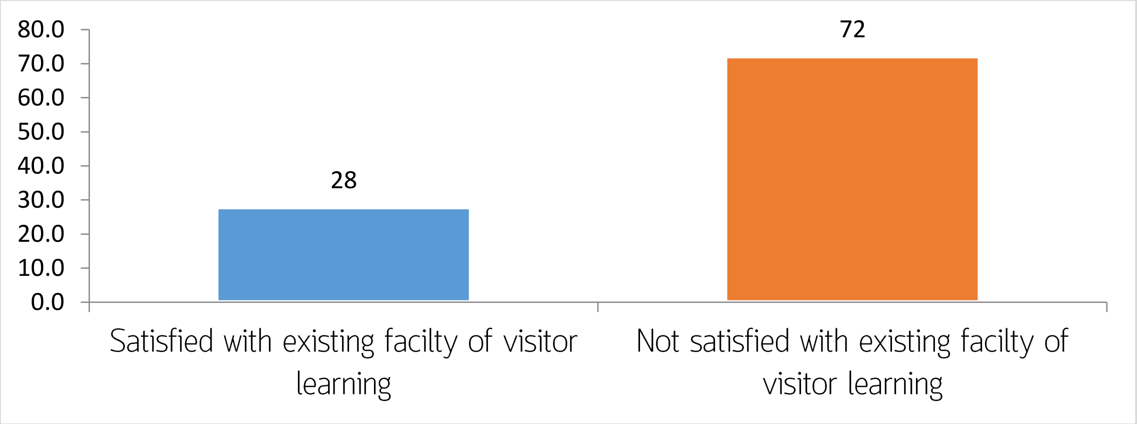


Figure15: Status of satisfaction level of existing facility for visitor

The Figures 15 shows that 72% of the respondents are not satisfied with the existing facility of visitor learning. Only 28% respondent shows their satisfaction with the current facility of visitor learning. Therefore museum authority needs to come up with the facility of learning in the museum.

Changes would you make the museum tour more educative and enjoyable

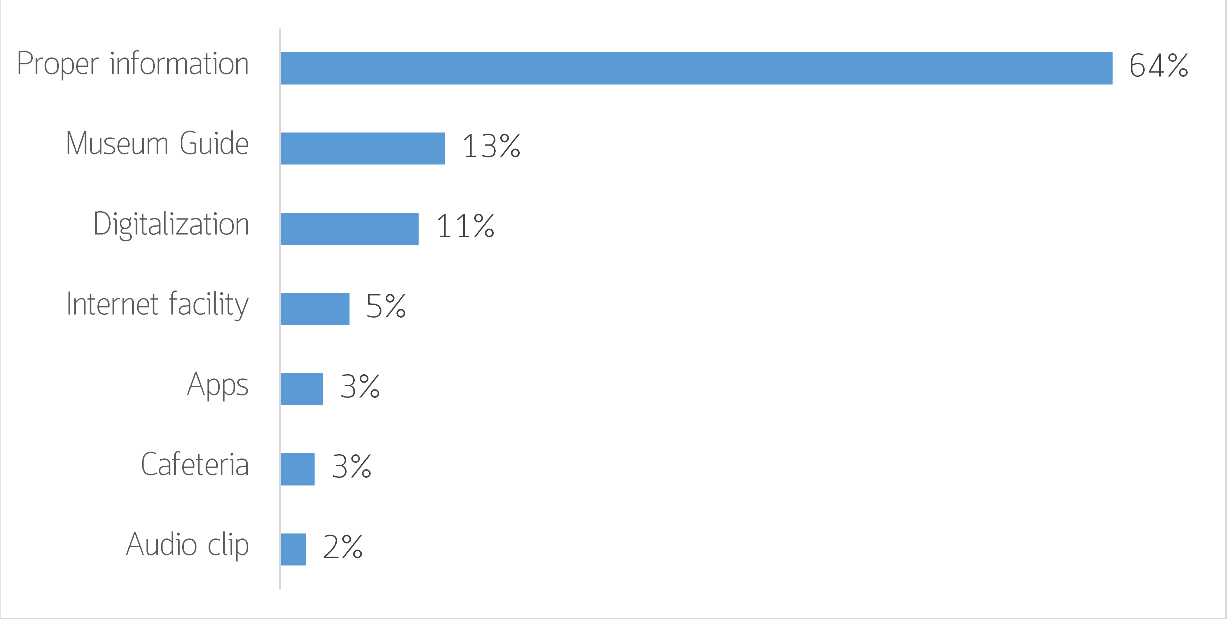


Figure 16: Suggestion to make the museum tour more educative and enjoyable

The Figure 16 shows the suggestion from the respondents to make the museum tour more educative and enjoyable.64% respondents suggestion is to present proper information in the museum, 13% of the respondents suggest to develop Museum guide, 11% of the respondents put emphasis on digitalization, beside these others suggests internet facility, apps, cafeteria, audio clip. This figure is very important guideline for the museum authority to make the museum tour more educative and enjoyable. All the suggestions are equally important to make this museum up to the mark.

Recommendation

In this modern age, social, economic and technological changes are happening to transform the elements of the public sector and museums are no exception. The study has found out that 70% respondents spend within 200 taka to visit the museum. So, it is necessary to start cellphone tour for the museum to maximize the benefit of the cost to the visitors. As the museum is very large in its size, it take a huge amount of time to get information for all groups of visitors male, female, students, researcher etc. So, online process and distribution of information through online platform can play a vital role for distance learning of visitor as well as onsite learning at the museum.

If online system commences, visitors can go and visit the website of the museum and use the online resources to write their reports or home work from their educational institutions. The website will open to the public 24X7 and enhance the distance learning using new technology.

Awareness training and promotion work among the visitors should be undertaken for the betterment of the museum. The website will provide visitors with the opportunity to give feedback on their experiences both using the website and on visiting the museum. This feedback will enable the museum to constantly improve the database and its services and provide the kinds of information that meets the interests of the general public and needs of scholars alike.

Important information which is needed for research cannot found easily from VRM. The museum does not have its own website and information provided on other websites is minimal. So, the use of ICT should be increased to help the researcher get valuable information. The study has also found out that 100% of respondents use the internet through their smart phone, so it will be helpful for the visitor if they can get access to the cell phone tour at VRM using their internet connection.

Conclusion

The majority of visitors to the Varendra Research Museum are Muslim. Nearly half gave as their reason for coming to gain knowledge and had visited the museum on at least one previous occasion. This is extraordinary as more than three quarters of the visitors stated that their purpose in coming had not been fulfilled and still they came. This is so positive because the public is telling the museum that they want to know about the objects on exhibition, in particular, they want to know about the Hindu and Buddhist sculptures at a museum that has one of the world’s largest and most spectacular collections of sculptures from the Pala and Sena periods of Bangladesh’s history.

Visitors were troubled to see so many sculptures broken and damaged. They were embarrassed by the near nudity and frank sensuality of many of the images. They didn’t know who made the sculptures or why they were made. They were mystified as to why some of the deities had multiple arms and heads. Visitors were far more open to carefully examining and admiring these sculptures, and it is clear from the survey that they are curious, they have questions, and the more they learn about the art the more they will respect the traditions of their ancestors who produced these world masterpieces.

Visitors were astonished by the quality of the workmanship, the exquisite details, the beauty of the individuals depicted, and the amazing world of flowers, birds, animals, and mythological creatures to be found in the details of the sculptures. The information that visitors do not know, but will equally astonish them, is that these sculptures represent deep religious concepts.

Government museums and historic sites not only protect but are obliged to share with the pubic the cultural heritage of Bangladesh. By utilizing the potential of individual's cell phones to deliver information in both Bangla and English, museums will have a low-cost way of sharing information and answering the visitor's questions regarding objects in the collection both on display and in storage. At the same time developing digital contents for museums is essential that will enrich the learning experience of public. Developing audio-visual digital contents, documentation of collections with its contextual information need to be completed using digital technology and share these information on museum website for the wider audience and open interactive distance learning opportunities. It is very much needed to ensure the proper use of technology for the betterment of VRM. Creating an interactive website that will reach citizens of Bangladesh and beyond and put the Varendra Research Museum on the world map as a place art lovers will plan to visit.

Acknowledgement

I would like to acknowledge VRM for their kind permission for undertaking the survey work at the museum photograph permission of the objects for the academic purpose. Thanks Mr. Stephen T Eckerd, Chairman, Centre for Heritage Education Bangladesh for taking photography of the objects and courtesy of the photograph goes to him. I also acknowledge A2i for the support of the project “Prototyping a cell phone tour for museums that will enrich the learning experience of public”.

Reference

Blud, M. 1990. ‘Social Interaction and Learning among Family Groups Visiting a Museum’, *Museum Management and Curatorship*, vol. 9 pp. 43-51.

Borun, M. 2002. ‘Object-Based Learning and Family Groups’, in Paris S G ed. *Perspectives on Object-Centered Learning in Museums*, Lawrence Erlbaum Associates, London, pp. 245-260.

Borun, M., Cleghorn, A. and Garfield, C. 1995.‘Family Learning in Museums: A Bibliographic Review’, *Curator*, vol.38, no. 4, pp.262-270.

Borun, M., Dritsas, J., Johnson, J., Peter, N., Wagner, K., Fadigan, K., Jangaard .A, Stroup, E., and Wenger, A. 1998. *Family Learning in Museums: The PISEC Perspective*, The Franklin Institute, Philadelphia.

Borun, M., Chambers, M., and Cleghorn, A. 1996. ‘Families are learning in Science Museums’, *Curator*, vol. 39, no.2, pp. 123-138.

Brown, C. 1995. ‘Making the Most of Family Visits: Some Observations of Parents with Children in a Museum Science Centre’, *Museum Management and Curatorship*, vol. 4, no. 1, pp. 65-71.

Cohen, S. 1989. ‘Fostering shared learning among children and adults: the children’s museum’, in Durbin G. (ed.) *Developing Museum Exhibitions for Lifelong Learning*, The Stationary office, London, pp. 73-76.

Diamond, J. 1986. ‘The Behaviour of Family Groups in Museums’, *Curator*, vol. 29, no.2, pp. 139-154.

Dierking, D. 1992. ‘The Family Museum Experience: Implications from Research’, in Nichols S. (ed.), *Patterns in Practice: Selections from the Journal of Museum Education*, Museum Education Roundtable, Washington, pp. 215 – 221.

Ellenbogen, K. 2002. ‘Museums in Family Life: An Ethnographic Case Study’ in Leinhardt, G., Crowley, K. and Knutson, K. (eds.), *Learning Conversations in Museums*, Lawrence Erlbaum Associates, London, pp. 81-92.

Hein, G. 1996. ‘Constructivist Learning Theory’, in Durbin G. (ed.), *Developing Museum Exhibitions for Lifelong Learning*, The Stationary Office, London

Hein, G. E., 1998. *Learning in the Museum.*London: Routledge. 203 pages.

Hein, G.E., 1999. The constructivist museum. In Hooper-Greenhill, E. (ed). *The educational role of the museum*. 346 pages.

Hilke, D. 1989. ‘The Family as a Learning System: An Observational Study of Families in Museums’ in Butler B. and Sussman M. (eds.), *Museum Visits and Activities for Family Life Enrichment*, The Haworth Press, London, pp. 101-129.

Hooper-Greenhill, E, 1999a, ‘Education, communication and interpretation: towards a critical pedagogy in museums’, in Hooper-Greenhill, E, (ed), *The educational Role of the Museum,* second edition, Routledge, London, 3-27

Hooper-Greenhill, E, 1999b, ‘Museum learners as active post modernists: contextualising constructivism’, in Hooper-Greenhill, E, (ed), *The educational Role of the Museum*, second edition, Routledge, London, 67-72

Hooper-Greenhill, E. 2000.*Museums and the Interpretation of Visual Culture.* London and New York, Routledge

Kropf, M. 1992. ‘The Family Museum Experience: A Review of the Literature’, in Nichols S. (ed.), *Patterns in Practice: Selections from the Journal of Museum Education*, Museum Education Roundtable, Washington, pp. 222-229.

Leichter, H., Hensel, K..and Larsen, E. 1989. ‘Families and Museums: Issues and Perspectives’ in Butler B. and Sussman M. (eds.), *Museum Visits and Activities for Family Life Enrichment*, The Haworth Press, London, pp. 15-50.

McManus, P. 1988. ‘Good Companions. More on the social Determination of Learning Related Behaviour in a Science Museum’, *Museum Management and Curatorship* vol. 7, pp.37-44.

McManus, P. 1994. ‘Families in Museums’ in Miles R. and Zavala L. (eds.), *Towards the Museum of the FutureNew European Perspectives.* London, USA and Canada: Routledge. pp. 81-97.

Morgan, M. and Sebolt A. 1978. ‘Integrating the Family’, *Museum News*, vol. 56 no. 5, pp. 29-31.

Persson, P. (2000). Community impact of science centres: Is there any?.*Curator* (Vol. 43, pp. 9-17).

Sterry, P. and Beaumont, E. 2006.‘Methods for Studying Family Visitors in Art Museums: A Cross-Disciplinary Review of Current Research’, *Museum Management and Curatorship*, vol. 21 pp. 222-239.

Wolins, S. 1989. ’A Case for Family Programs in Museums’, in Butler B. and Sussman M. (ed.s), *Museum Visits and Activities for Family Life Enrichment*, The Haworth Press, London, pp. 7-14.

SUB-THEME 2

DISRUPTIVE INNOVATIONS IN DISTANCE LEARNING

A Study of e-Assessment System and its Efficacy in Evaluating Learning Outcomes

Major Sonali Kadam (Retd)

Symbiosis Centre for Distance Learning
dydirector@scdl.net

Abstract

A robust evaluation system which measures the learning outcomes effectively should be one of the priority areas of every ODL institution. Innovations in online assessments systems have made it possible to link learning outcomes with assessment items. It is observed that most of the ODL institutions in India still use paper- pen mode of conducting exams. The Institutions which use the e- assessment systems do not have a structured mechanism for providing relevant inputs to their e-assessment engines and often, they do not use their e- assessment engines optimally. This Research addresses this gap. This paper explores how e-assessment systems can be optimally utilized to test learning outcomes as per Bloom's Taxonomy, in formative and summative assessment of students. The researcher through this paper presents a case study of an e-assessment system by mapping sample questions from a question bank to the learning outcomes of an ODL course of study. The research study finds that there is a lack of structured mechanism for providing inputs to an e-assessment engine. This leads to disconnect between course level learning objectives and assessment items. The Research study concludes with a systems' model to depict the inputs that would be needed to optimally utilise the e-assessment system resulting in outputs that ensure that (i) the measured learning = the actual learning (ii) all learning objectives have been measured through appropriate test items. The research paper recommends an input matrix giving tools to test knowledge, attitudes and skills, details of unit wise weightage of marks, types of test items, and combination of test items, difficulty level and the domain of learning. A feedback loop re-energizing the system through modifications in the input matrix likewise in the test items used in the e- assessment engine has also been suggested. The paper has also identified a feedback mechanism to ensure that the teaching learning process is modified if the actual learning is not in line with the desired learning and learning objectives are modified if learning outcomes are not in sync with the market needs.

Keywords: *e-Assessment, Systems- Model, Input Matrix, Bloom's Taxonomy, ODL*

Rationale and Objectives of the Study

Rationale of the Study

Technology has transformed the way in which education is delivered in the 21st century. The new age students are also more adept at using technology and accepting new methods of education delivery.

A robust evaluation system which measures the learning outcomes effectively should be one of the priority areas of every ODL institution. Innovations in online assessments systems have made it possible to link learning outcomes with assessment items. Assessments of students is not merely a tool to rank them, but is an important tool to measure student learning, identify the gaps in student's learning and to encourage the students to overcome their learning difficulties. Thus, if assessments are used effectively, they can help students achieve their goals for learning and development.

Objectives of the Study

The primary objective of this study is to deliberate upon how e-assessment systems can be optimally utilized to test learning outcomes as per Bloom's Taxonomy, in formative and summative assessment of students.

The objectives of the Research are as under:

- To study the evaluation methodology used by some of the ODL institutions in India.
- To examine the capabilities of current e-assessment systems used by one of the ODL institutions in India.
- To measure efficacy of the e-assessment systems in evaluating the learning outcomes.
- To examine how e-assessment systems can be optimally utilised to test all areas of learning as per Bloom's Taxonomy.

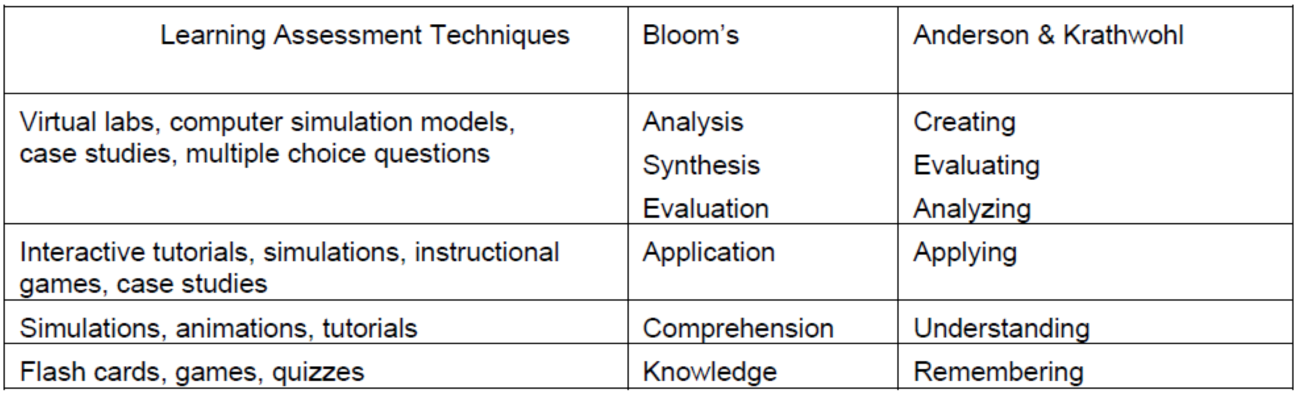
Theoretical Framework

Bloom's Taxonomy provides the theoretical framework for this Research Study. Bloom's Taxonomy is a framework for classifying statements of what we expect or intend students to learn as a result of instruction. The framework was conceived as a means of facilitating the exchange of test items among faculty at various universities in order to create banks of items, each measuring the same educational objective. The final draft of Bloom's Taxonomy was published in 1956 under the title, Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook I: Cognitive Domain (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956).

Bloom's Taxonomy has provided the basis for developing effective assessment strategies, which can enable linking the learning outcomes to assessment items.

The Table below shows the co-relation between the learning objectives, taxonomy and assessment tools (Jeanne P. Sewell, 2010):-

Table 1. Learning Assessment Techniques and Associated Taxonomy Levels



Learning Assessment Techniques	Bloom's	Anderson & Krathwohl
Virtual labs, computer simulation models, case studies, multiple choice questions	Analysis Synthesis Evaluation	Creating Evaluating Analyzing
Interactive tutorials, simulations, instructional games, case studies	Application	Applying
Simulations, animations, tutorials	Comprehension	Understanding
Flash cards, games, quizzes	Knowledge	Remembering

A good assessment strategy will ensure all levels of learning are measured through multiple test items. This will further help the ODL institutions ensure that learning outcomes are met effectively.

Methodology

Secondary sources of data were used to ascertain some of the institutions using e-assessment systems. Case study of an e-assessment system was carried out by mapping sample questions from a question bank to the learning outcomes of an ODL course of study.

Present Scenario: Use of e-Assessment Systems in ODL Institutions in India

The researcher has carried out secondary research to collect the data on methods adopted for evaluation of students by some of the ODL institutions in India. The table below shows a comparative of few of the ODL institutions in India with respect to the e-assessment utilized for formative & summative assessments.

Table 2: A Comparative of Assessment Systems used by some of ODL Institutions in India

S.No	Name of University/Institution	e-Assessment	Formative	TEE	Booking System	Exam System	Assessment System
1	Andhra University-SDE	No	NA	NA	Traditional	Paper pen mode	NA
2	Dr. Baba Saheb Ambedkar Open University	No	NA	NA	Online	Paper pen mode	NA
3	Dravidian University	No	NA	NA	Traditional	Paper pen mode	NA
4	Gandhi Institute of Technology & Management (GITAM)- CDL	No	NA	NA	Traditional	Paper pen mode	NA
5	University of Delhi	No	NA	NA	Traditional	Paper pen mode	NA
6	Institute of Management Technology, Gaziabad	Yes	Yes	Yes	Online	Online	Question Mark

S.No	Name of University/Institution	e-Assessment	Formative	TEE	Booking System	Exam System	Assessment System
7	Rashtriya Sanskrit Vidyapeetha	No	NA	NA	Traditional	Paper pen mode	NA
8	Netaji Subhash Open University	No	NA	NA	Traditional	Paper pen mode	NA
9	TERI University	Not mentioned			Online	Online	NA
10	Sikkim Manipal University	Yes	Yes	Yes	Yes	Online	Meritrac
11	Symbiosis Centre for Distance Learning	Yes	Yes	Yes	Yes	Yes	Self Developed
12	Indira Gandhi National Open University	Yes	Yes	No	Yes (Partially)	Yes (Formative)	Self Developed

Findings of the Study

It is observed that most of the ODL institutions in India still use paper- pen mode of conducting exams. Most of the State Open Universities have not yet adopted e-assessments for their term end examinations. Indira Gandhi National Open University (IGNOU), the largest Open University in India, is yet to completely adopt online assessments. It offers formative assessments for a few of its programs. A number of private distance learning institutions in India conduct online assessments.

The researcher has observed that Institutions which use the e- assessment systems do not have a structured mechanism for providing relevant inputs to their e-assessment engines and often, they do not use their e- assessment engines optimally. This research addresses this gap.

Case Study – e-Assessment System @ Symbiosis Centre for Distance Learning

Symbiosis Centre for Distance Learning (SCDL) is one of the largest autonomous institutes in India offering distance learning programs in areas of Management, IT, Education, Humanities & Social Sciences. With an active student base of over 100,000 from India and abroad, SCDL conducts over 300,000 formative & summative assessments across the year.

SCDL has developed its own assessment system that supports all types of evaluation methodologies like online, offline as well as objective and subjective types. The system has been effectively utilized by SCDL to conduct its formative & summative assessments.

Symbiosis Centre for Distance Learning has introduced for its students an ‘on-demand’ term end examination system which allows the student to book an examination as per his/her convenient date, place & time. With over 75 examination centres across India, SCDL is conducting term end examination for its students at multiple locations parelly throughout the year.

Key Features of the System

1) Integrated system which includes the booking system, assessment system & result generation module.

2) Flexible to take care of many evaluation methods –, MCQs, fill in the blanks, match the following, pictoral, audio- visual, graphical, subjective and many more.

3) Allows paper setter to select the difficulty level of the questions to ensure standardization across multiple learners.

4) Standardized exam rules can be pre-set including the number & type of question, difficulty level of questions, time availability, distribution of marks etc.

5) Objective type questions are auto corrected , while subjective questions can be corrected online

6) Robust and scalable design with state of art technology usage.

7) Comprehensive audit reporting of all assessments.

Mapping Learning Objective & Assessment Items

For the purpose of this study, the researcher has mapped the learning outcomes to a sample of test items in relation to the taxonomy principles. The program of Post Graduate Diploma in Educational Administration offered by SCDL was considered for this study. As a sample, course on 'Educational Administration' was taken and one of the units within the course was considered for mapping of learning outcomes & assessments.

The table below shows the mapping for Unit 'Concept of Educational Administration'

Learning Objective	**Blooms Taxonomy Revised**	**Assessment Items**
Define Meaning of Educational Administration	Remembering	**Subjective** 1. Define Educational Administration in your own words. Write any five characteristics of Educational Administration. **MCQ** 2. Which of the following is a function of educational administration a) Implementation; b) Planning; c) Deciding; d) Inspection; e) All of Above **Fill in the blank** 3. The ______ & ________ in operating an educational organization in accordance with established policies comprise administration?
Identify aims & objectives of educational administration	Understanding	**Subjective** According to you, what are the most important objectives of educational administration? As an administrator, how will you achieve these objectives? **Fill in the Blank** Educational administration decides the goals and ________ for teaching and learning.
Apply principles of Educational administration	Applying	**Subjective**

Learning Objective	Blooms Taxonomy Revised	Assessment Items
in an actual administration scenario		1. How will you utilize physical & human resources to achieve defined educational objectives? **Multiple Choice Multiple Response** The principles of educational administration are a) target fixing; b) equality c) justice d) flexibility e) none of the above

Findings and Conclusion

Findings of the Case Study

- Symbiosis Centre for Distance Learning has a robust e-assessment system which can be effectively utilised for testing higher order learning & skills.

- The program level outcomes were clearly defined for the program considered for this study. There is clear linkage to course level outcomes, learning outcomes and assessment items for each unit of study.

- Unit-wise weightages in terms of marks and credits are assigned and same is reflected in the e-Assessment system.

- All levels of learning are however not being tested efficaciously through e-assessments.

- Most of other ODL institutions are using MCQ type of assessment tools, without exploring the possibility of testing higher domains of learning. No ODL institution is using their e-Assessment system is measuring the skills of a student, which is essential for making the student employable.

Conclusion

E-Assessment system can be effectively utilized for testing all levels of learning as per Bloom’s Taxonomy. Technology innovations have made it possible to use various types of test items such pictorials, graphics, audio & video, games, simulations etc., which can be easily employed for testing higher order thinking. ODL institutions have not evolved a structured approach for e-Assessment system to effectively test the students on knowledge, application, analysis, synthesis, creativity, skills and attitudes.

Recommendations

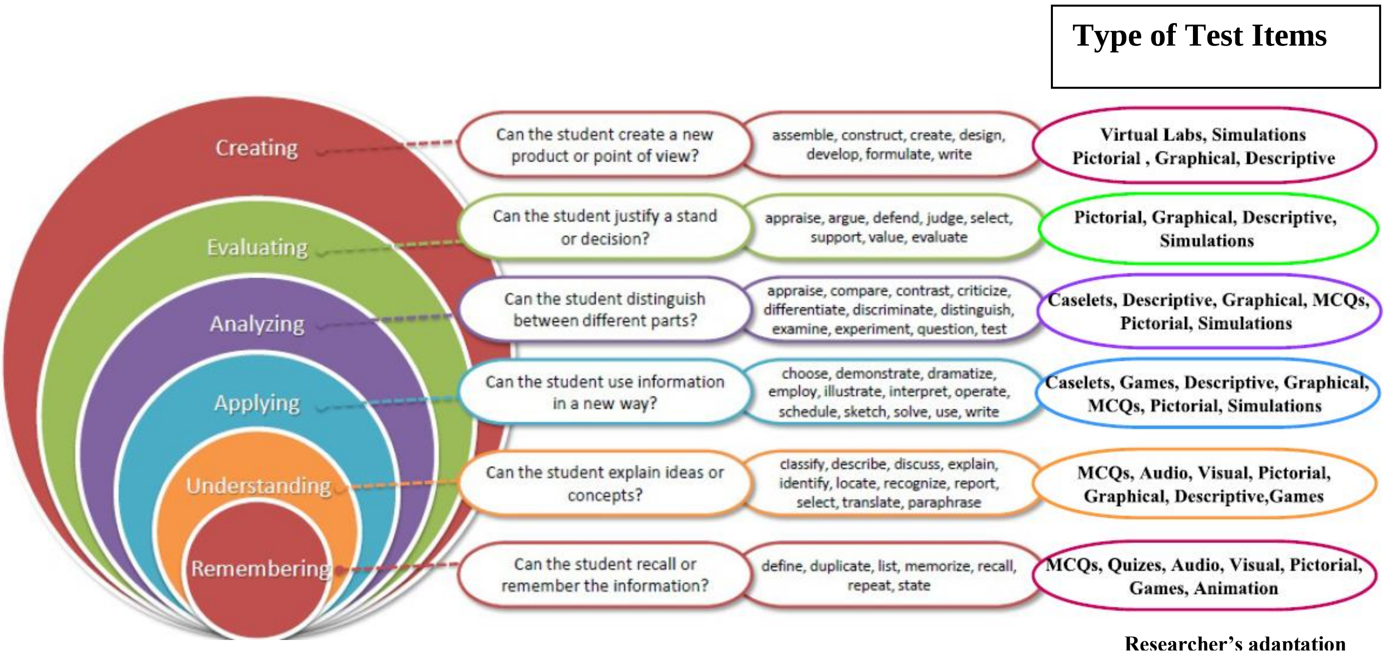
1. A unit wise matrix depicting weightage of marks , types of test items, combination of test items difficulty level and the domain of learning outcome that is being tested should be prepared and used as a guideline for defining the rules for generating a question paper from the e-Assessment system.

2. e-Assessment system should be equipped to test the skill component of learning outcome of the student through simulations and gamification as part of the evaluation methodology.

3. Behavioural games should be incorporated to test the attitudinal change that has been brought about in a student as a result of the teaching learning process.

4. ODL institutions should use a structured approach to evolve an e-Assessment system that effectively tests the students on knowledge, application, analysis, synthesis, creativity, skills and attitudes

5. The tools that can be used would include pictorials, graphics, audio & video, games, simulations etc. A graphical representation of the revised Bloom's taxonomy, detailing the type of assessment items, that can be used as a guideline for developing assessment strategy is depicted below:


Type of Test Items
Creating
Evaluating
Analyzing
Applying
Understanding
Remembering
Can the student create a new product or point of view?
assemble, construct, create, design, develop, formulate, write
Virtual Labs, Simulations Pictorial , Graphical, Descriptive
Can the student justify a stand or decision?
appraise, argue, defend, judge, select, support, value, evaluate
Pictorial, Graphical, Descriptive, Simulations
Can the student distinguish between different parts?
appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test
Caselets, Descriptive, Graphical, MCQs, Pictorial, Simulations
Can the student use information in a new way?
choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write
Caselets, Games, Descriptive, Graphical, MCQs, Pictorial, Simulations
Can the student explain ideas or concepts?
classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase
MCQs, Audio, Visual, Pictorial, Graphical, Descriptive,Games
Can the student recall or remember the information?
define, duplicate, list, memorize, recall, repeat, state
MCQs, Quizes, Audio, Visual, Pictorial, Games, Animation

Researcher's adaptation

Retrieved from https://picswe.net/pics/blooms-taxonomy-critical-thinking-ec.html.

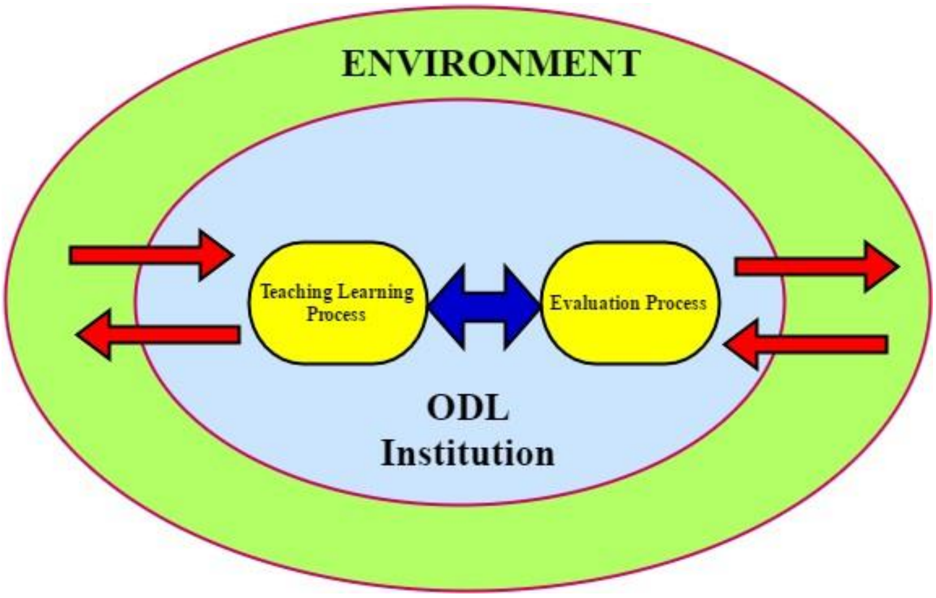

ENVIRONMENT
Teaching Learning Process
Evaluation Process
ODL Institution

Diagram 1: Eco-System for Validation of Learning Outcomes

An ODL institution needs to develop an eco-system in a manner that it closely interacts with the environment and stakeholders to validate its teaching learning process and its evaluation process.

Systems Model

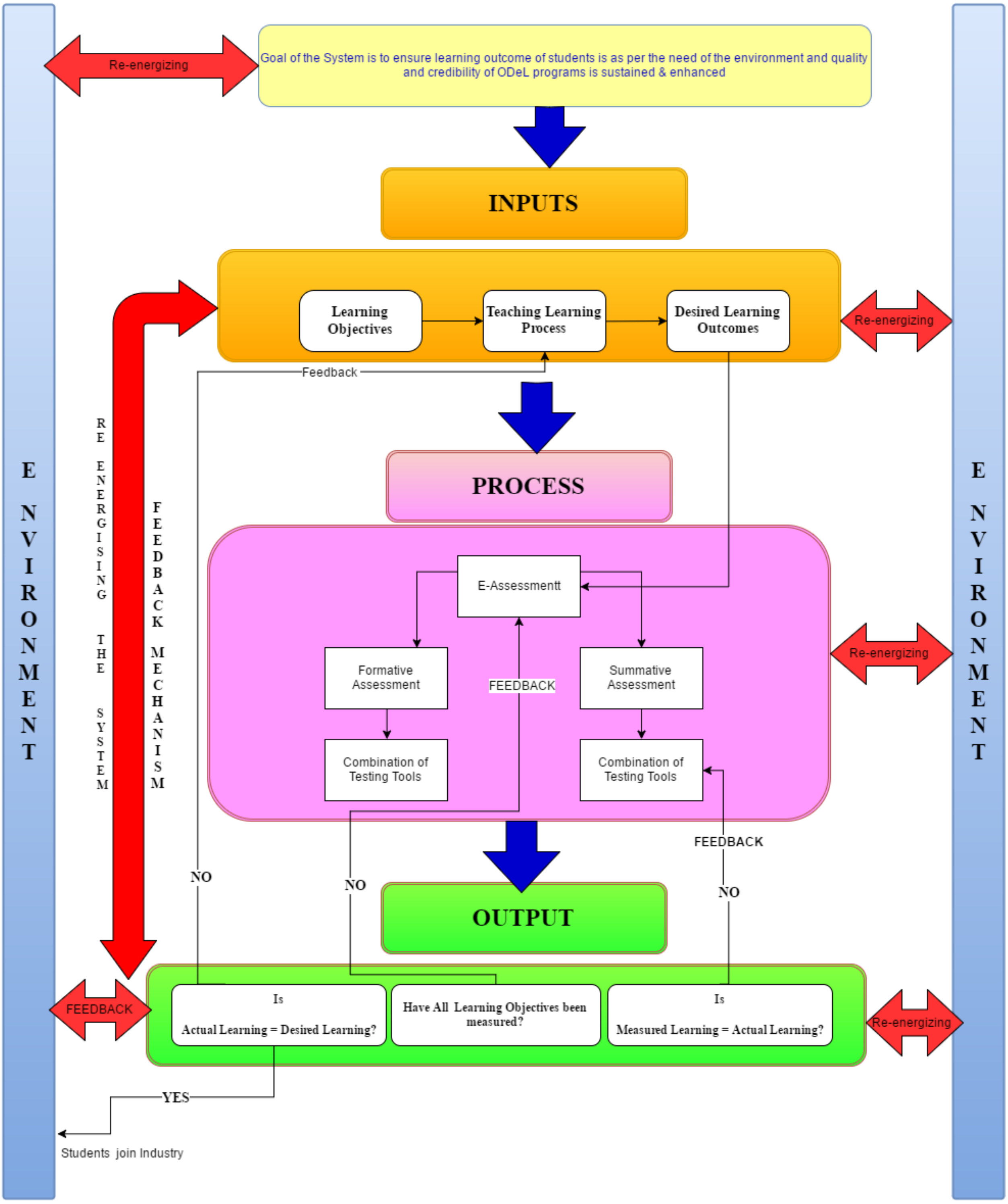
The goal of the Systems Model is to ensure that learning outcomes achieved by the students are as per the need of the environment and the quality & creditability of ODL programs is sustained and enhanced on an ongoing basis.

A systems model has been developed by the researcher to explain how an effective assessment system can be developed by an ODL institution. The model to depict the inputs that would be needed to optimally utilise the e-assessment system resulting in outputs that ensure that:

- the measured learning = the actual learning
- all learning objectives have been measured through appropriate test items.

It is recommended that an input matrix needs to be developed which details out the tools to test knowledge, attitudes and skills, details of unit wise weightage of marks, types of test items, and combination of test items, difficulty level and the domain of learning. A feedback loop re-energizing the system through modifications in the input matrix likewise in the test items used in the e- assessment engine has also been suggested. The paper has also identified a feedback mechanism to ensure that the teaching learning process is modified if the actual learning is not in line with the desired learning and learning objectives are modified if learning outcomes are not in sync with the market needs.

Systems Model


E N V I R O N M E N T
Re-energizing
Goal of the System is to ensure learning outcome of students is as per the need of the environment and quality and credibility of ODeL programs is sustained & enhanced
INPUTS
Learning Objectives
Teaching Learning Process
Desired Learning Outcomes
Re-energizing
Feedback
RE ENERGISING THE SYSTEM
FEEDBACK MECHANISM
PROCESS
E-Assessmentt
Formative Assessment
Summative Assessment
FEEDBACK
Combination of Testing Tools
Combination of Testing Tools
Re-energizing
FEEDBACK
NO
NO
NO
OUTPUT
FEEDBACK
Is Actual Learning = Desired Learning?
Have All Learning Objectives been measured?
Is Measured Learning = Actual Learning?
Re-energizing
YES
Students join Industry
E N V I R O N M E N T

References

Jeanne P. Sewell, K. H. (2010, March). Online Assessment Strategies: A Primer. *MERLOT Journal of Online Learning and Teaching*, 1-9.

Anderson, Lorin W. & Krathwohl, David R. (2001). A Taxonomy for Learning, Teaching and Assessing: a Revision of Bloom’s Taxonomy. New York. Longman Publishing.

Black, P., Harrison, C., Lee, C., Marshall, B. & William, D. (2003). Assessment for Learning: Putting it into Practice. Berkshire, England: Open University Press.

Bloom, B.S. (Ed.), Engelhart, M.D., Furst, E.J., Hill, W.H., & Krathwohl, D.R. (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook 1: Cognitive domain. New York: David McKay.

Effectuality of Using Chatbox Class Discussion (CCD) Platform among Filipino Grade 12 Students

Maria Cecilia C. Sualog[1], Dr. Cecilia Junio-Sabio[2]

[1]Principal, Ridgewood School of Caloocan

Acacia St., Rainbow 5, Ph.2, Bagumbong, Caloocan City, Philippines

macel_jjj@yahoo.com

[2]Professor V, Pamantasan ng Lungsod ng Maynila

vpcfjs@gmail.com

Abstract

This research explores the use of e-learning delivery to Senior High School (SHS) students enrolled in Accounting & Business Management track. Mixed methods were used and a triangulation of data was employed. The participants in this study were 15 students and 3 teachers from three Grade 12 classes. Quantitative method was used in measuring academic performances in terms of attendance and grades during face to face discussion (FFD) and CCD implementation. Qualitative method was used to gather students' and teachers' perceptions on the use of CCD. Results of analysis revealed that for attendance, CCD had higher means as compared with FFD which implies that CCD is more preferred. There is also a significant difference between the two in terms of attendance ($p = .005 < .050$). In terms of grades, it was found that there is a statistically significant difference between the two ($p = .002 < .050$) with CCD obtaining a higher mean. The CCD also had more synonymous scores with $SD = 3.85$ as compared with 3.94 for FFD). ANOVA was used to establish the significant difference for the three classes for both attendance and grades. Qualitative data were gathered through focused group discussion with open-ended questions. Its primary goal is to identify the perceptions of the participants in the use of CCD as compared with FFD. The focused group interviews were done at the middle of the grading period and after the period ended. Findings revealed that students find learning with CCD pleasurable and convenient. Teachers pointed out the improvement in students' attendance, appreciation and interest in learning. Problems encountered by both students and teachers were when internet connection falters.

Keywords: *e-learning, high school, chatbox class discussion*

Introduction

The implementation of the two additional years in high school or the Senior High School (SHS) of K-12 Curriculum in the Philippines in 2016 was faced with enormous challenges. The most critical challenge for the Department of Education (DepEd) is the additional facilities and hiring qualified teachers. To address the problem, DepEd encouraged the private schools to offer SHS by providing subsidy to public school completers who will opt to enroll in private schools. With the number of public school completers and considerable amount of subsidy, private schools were enticed to finally offer SHS.

The use of alternative means of educational delivery like the Chatbox Class Discussion (CCD) is not among those frequently employed in the middle and senior high school in the Philippines. In fact, in the gathering of literature made by the researchers, there is a scant percentage of studies made in this field. It is for this reason that the researchers thought of experimenting the use of CCD among grade 12 students who are enrolled in the Accounting and Business Mamangement track, School Year 2018-2019, specifically in the Ridgewood School of Caloocan.

The need to employ technology in the teaching-learning processes gives students and teachers direct connection. CCD is a platform of teaching and learning using Facebook chat to accomplish content objectives at specified time agreed upon by both students and teachers. The teachers prescribed websites, videos, and other downloable materials to address the content requirements which became the point of discussion via CCD. CCD promotes real-time collaboration and discussion that can lead to deeper and effective processing of class materials. Deviating from the traditional FFD and looking into the alternative means of delivery has been encouraged as well as envisioned by DepEd, and the need to catch up with the 21st century classroom environment is also apparent. Therefore, the use of a secure platform like the CCD and discussing the issue of chatroom safety both within and outside of school is important. Sources for safety guidelines include ProtectKids, Connect Safely and Teen Help" (Tomaszewski, 2012).

Statement of the Problem

Generally, this paper investigates the effectiveness of using CCD as an alternative means of educational delivery among Senior High School students. In this study, the use of CCD as against FFD was assessed and differentiated in terms of attendance and grades. Specifically, this research sought to find answers to the following questions:

1. What is the profile of the student respondents in terms of number of students in class?
2. When FFD and CCD were implemented, what is the performance of the students in the three classes in terms
   2.1. attendance and
   2.2. grades?
3. Is there a significant difference between the use of FFD and CCD platforms according to students' attendance and grades?
4. What are the students' and teachers' perceptions on the use of FFD and CCD?

Methodology

The study utilized the descriptive type of research where mixed method was employed to investigate the effectiveness of the the use of CCD over the FFD. Quantitative technique was used to test the significant difference between the attendance and academic achievements of the students when FFD and CCD were used while qualitative method was used to elicit the perceptions of the respondents in using FFD versus CCD. Focused group discussion interviews were separately conducted with the students and the teachers. Open ended questions were given during the focused group discussion interviews which were done during the midterm and at the end of classes.

The CCD platform was implemented to three Grade 12 classes for one quarter. These were students who were enrolled in the Accountancy and Business Management (ABM) track of Ridgewood School of Caloocan, Manila, Philippines in School Year 2018-2019. Teachers carefully reviewed and identifed the links and websites to accomplish every content objective in the curriculum guide prescribed by DepEd. These relevant links were sent in the course chatbox for students to view or read ahead in preparation for the CCD (Tomaszewski, 2012).

The Grades as well as the attendance of the student participants were recorded during the previous grading period where the usual FFD was observed. The following grading period CCD was implemented and the same were noted. Performances in terms of grades and attendance were compared. To confirm the validity of the quantitative data taken, the researchers conducted a focus group discussion interviews with the students and teachers to extrapolate their perceptions of the use CCD in attaining the content objectives.

Results and Discussion

1. Profile of the Student Respondents in terms of Class Size

Table 1
Profile of the Respondents in three classes.

Class	Frequency	Percent
A	5	33.30
B	6	40.00
C	4	26.70
	15	100.00

The student respondents came from 3 different classes. The biggest group was that of Class B with six (6 = 40.00) participants while A five (33.30%) and C four (26.70%). According to the study of Kim (2013), smaller group has higher chance of interactivity, thus, the researchers considered classes with fewer students to implement the CCD.

2. Performance of Students with FFD and CCD

2.1 Attendance

Shown in Table 2 below are the mean and standard deviation of studnets' attendance when FFD and CCD were used.

Table 2
FFD vs. CCD in Terms of Attendance

Discussion	Attendance (Mean)	Verbal Interpretation	SD
Face-to-face	4.43	VS	1.95
Chat box	6.00	O	0.00

Legend:

0.00-1.20	*P*	*Poor/Fail*	*3.61-4.80*	*VS*	*Very satisfactory*
1.21-2.40	*F*	*Fair*	*4.81-6.00*	*O*	*Outstanding*
2.41-3.60	*S*	*Satisfactory*			

FFD yielded a 4.43 mean for attendance while chat box discussion obtained a higher attendance mean of 6.00 verbally interpreted as outstanding (standard deviation = 1.95 and 0.00, respectively with CCD attendance showing itself better as attendance was synonymously perfect). CCD made taking part in discussions more convenient, leading to more consistent participation.

According to Dhruve (2017), instructional design strategies must be created for good learner experience which aims to make courses more engaging, motivating, and learner-centric, to make the e-learning effective. Similarly, the Program for International Student Assessment (PISA) Survey 2000 (New Zealand Report 2000) cited that the student engagement to school and class attendance, completing homework, paying attention are among the measure of program effectiveness.

2.2. Grades

Table 3

FFD vs. CCD in Terms of Grades

Discussion	Grades	Verbal Interpretation	Standard Deviation
Face-to-face	86.14	VS	3.94
Chat box	88.57	VS	3.85

Legend:

65-74	P	Poor/Fail	85-89	VS	Very satisfactory
75-79	F	Fair	90-100	O	Outstanding
80-84	S	Satisfactory			

FFD yielded an 86.14 mean of their grades while CCD obtained a higher mean of 88.57 (Standard Deviation = 3.94 and 3.85, respectively with CCD grades being more synonymous as there is less deviation).

3. Significant difference between the use of FFD and CCD platforms.

3.1 Attendance

Table 4

Significant Difference between Attendance of FFD vs. CCD

Discussion	Degree of Freedom	Computed Value t	p-Value	Decision	
Face-to-face Chat box	14	3.307**	.005	Reject	Significant

**Sig @.01 (@-tailed)

Table 4 shows that CCD also had significantly higher attendance (computed t-value = 3.307** @ 14 degrees of freedom with p-value = .005 < .010) than FFD did. This led to the decision to have the null hypothesis of no difference rejected as the type of discussion used proved to be significant a variable in determining student performance.

3.2. Grades

Another indicator of CCD effectiveness is students' grades. As mentioned in PISA Survey 2000 (New Zealand Report 2000) there should be an increase in students' learning performance. To gauge the increase in performance, the significant difference between the grades when FFD and CCD was established. Table 5 shows the averages of grades of the students in the grading period with FFD and the CCD in 3 courses.

Table 5

Significant Difference between the Grades of FFD vs. CCD

Discussion	Mean	VerbaI Interpretation	degrees of Freedom	Computed Value t	p-Value	Decision	
Face-to-face	85.80	VS	14	.353	.710	Fail to reject	Not Significant
A	85.67	VS					
B	87.75	VS					
C							
Chat box	88.60	VS	14	.247	.785	Fail to reject	Not Significant
A	87.67	VS					
B	89.50	O					
C							

**Sig @.01 (@-tailed)

Class was insignificant a variable; it determined neither FFD nor CCD scores (computed F-values = .353 .247 @ 14 degrees of freedom with p-values = .710 .785 > .050). It is as whatever the class they belonged to, their grades were verbally interpreted to be very satisfactory or outstanding for both FFD and CCD. Thus, in both cases, the null hypotheses of no difference failed to be rejected as the use of FFD (within that group) still led to performances in class that were very satisfactory. The same was true for those who were part of the CCD; all of the respondents (within the group) had scores that were verbally interpreted to be very satisfactory to outstanding. Within these groups, class groupings (A, B or C) did not have a significant effect on performance.

Table 6

Significant Difference between the Grades of FFD vs. CCD

Discussion	Degrees of Freedom	Computed Value t	p-Value	Decision	
Face-to-face	14	3.747**	.002	Reject	significant
Chat box					

**Sig @.01 (@-tailed)

CCD yielded a significantly higher mean of 88.57 (computed t-value = 3.747** @ 14 degrees of freedom with p-value = .002 < .010) than FFD did with 86.14 though both are considered very satisfactory, leading to the decision to reject the null hypothesis of no difference. It is as the differences in discussion proved to be significant.

This result is consistent with the study of Fayomi et al (2015) revealing that students in higher educational institutions that engaged in e-learning, generally performed better than those in FFD courses. Also, Holley (2002) found that students who participate in online/ e-learning achieve better grades than students who studied traditional approach.

4. Student and Teacher's Perception

4.1 Students' Perception of CCD

To further measure the effectiveness of CCD, series of focused grouped interviews with the students were conducted to deduce their learning perceptions on their acquired skills as well as the competencies. When asked on the preparations they made before the scheduled CCD time, mostly answered that they view the given videos. In the case of suggested links, they read through and make notes as required by the teachers with one student saying that she was making further researches on the given topics.

Generally, the students find pleasure with CCD with the following reasons:

a. They love to use technology.
b. It improves their English language skills.
c. It enhanced their typing skills.
d. Less hours spent in school so they can help at home.
e. They feel challenged because they are given specified time to give answers.

They also feel challenged thinking about how to answer the questions which encouraged them to really study before the class. They find it easy and convenient just using their phones.The most dominating problem in CCD is the poor internet connections while the class is going on. Some clamours of having less personal interactions and misconceptions.

When asked of their preference between the FFD and CCD, 80% preferred CCD because they have less time in school to do the following:

a. To help doing household chores.
b. More time to do other assignments, researches and school projects.
c. They can think well and browse answers from Google.
d. They can still attend class from home even they are sick or they have personal problems.
e.

The other 20% preferred FFD because there is active personal interactions to avoid misconceptions and problems with unstable internet connections. Other suggestions by the students were for them to be allowed to speak dialect during the discussion and schedule be done earlier so they can sleep early. Furthermore, there are recommendations for the school to support the teachers to have a good internet connection so that they can also do video chatting.

Students preferred CCD over the FFD because they love the use of technology. Since it is home based, they have lesser time in school and can do other important things. However, unstable internet connections is the biggest issue in the implementation of CCD. Similarly, Eldeeb (2014) in his study found that students were enthusiastic to participate in the study and to use the e-learning. But in the same study, only 4% preferred to have a fully online course, 23% preferred a full traditional classroom course and 73% preferred mixed mode – web supplemented courses- rather than a complete web dependent course. In this study, there are still few students who prefers the FFD for reasons of misconceptions and miscommunications happening during the CCD. On the other hand, the fascination of 80% student-participants should not be ignored.

4.2. Teachers' Perceptions of CCD

To substantiate the results of students perception on CCD, independent focused group interviews were conducted with the teachers of the three courses. The first was done in the middle and another at the end of the quarter.

The teachers' preparations were defined in the CCD Manual of the school. During the focused group interviews, the teachers reiterated the instructions to first have a thorough understanding of the curriculum guide prescribed by the DepEd. When the topic to teach was identified, the teachers prepared some videos or links from Google to carry out the content objectives. The websites were then sent to the chatbox as early as possible for the students to make advance readings, notes taking and be prepared for the online discussion. This was reflected in the better grades obtained by the students in their exams.

Minutes before the scheduled time for CCD, the teachers checked on the internet connection to ensure perfect flow of the discussion. But interruptions during discussion never fails. Often, they scheduled late at night for fewer people are online hence, less interruptions.

The teachers found pleasure in using the CCD because they felt updated in terms of the use of technology in the 21st century. They found the experience quality learning through a unique medium of instruction. Moreover, they found their students well prepared and actively participates in the discussion. It was also observed that in the 3 classes attendance was perfect in the duration of CCD implementation. On the other hand, Cunningham and Bradley (2004) mentioned in their study that teachers were more comfortable with technology used across the board with the exception of chat rooms and instant messaging. This was in contrast to what they thought about their students. They felt that students had a high comfort level with computers in general, especially instant messaging.

On the other hand, the teachers found CCD good but still found FFD comfortable, more effective and interaction personal. More so, the teachers found CCD as “cool” because they can be connected with the students anytime. Unstable internet connections was still an issue in CCD use. Other problems encountered was with the capacity of the computer or cellphone being used. Teachers’ suggested that the school will provide wifi and high capacity computers to teachers. Furthermore, the CCD will not only be limited to texting but to video call discussion.

Similarly, Brown (2015) cited in his study that teachers find online learning disadvantageous because it provides fewer interactions, students need to be technology or need to be tech savvy, with issues on access to technology and technical issues. On the other hand, they found it convenient in terms of time and venue where learning can take place. Thus, cost effective for students residing in remote locations.

Conclusion

Summary

This study was made to explore the effectuality of the use of CCD platform in attaining content objectives. To measure effectiveness of CCD, students’ attendance and grades were compared when CCD and the traditional FFD were implemented to the 15 students of 3 Grade 12 classes. This study reveals that students’ attendance improved significantly with the use of CCD which shows students’ engagement to the subjects. Also, students’ grades increased significantly upon the use of CCD which implies that learners’ achievement of the desired learning outcomes were enhanced. To further substantiate the quantitative results, qualitative data of students and teachers’ perceptions were elicited through focussed group interviews. Both students and teachers share common positive feelings about the use of CCD. They found CCD desirable for various reasons like having attended classes even they are sick since they can still participate even at the comfort of their homes. Hence, they stay connected and updated with the lessons which results to better grades. On the other hand, there were dissatisfactions to some extent due to the absence of personal interactions and unstable internet connections. Thus, they also want to do FFD at times when there were misconceptions about the lessons which needs clarifications. This was consistent with the result of this study as cited by both students and teachers.

Furthermore, findings of this study will address students’ interests in technology and problems on absences. More so, enhance students’ engagement to learning. Also, the school may hire part time qualified teachers who can do CCD after class hours.

Recommendations

In this study, the CCD was executed only with some meetings but for the purpose of assessment. It was revealed in this study that students experience misunderstandings and misconceptions about the lesson which hindered the accomplishment of the content objectives. As suggested by both the students and teachers that CCD and FFD should be mixed, that is hy-brid or the blended learning approach. Brown (2015) in his study implied that hy-brid model or the blended learning is a good solution in contrasting issues cited by the teacher participants about CCD. Hence, further study on blended learning be explored and that a longer period of observation be made given the limitations of this research.

References

Brown, C. (2015). Secondary teachers' perceptions of online learning. Retrieved from https://dspace2.creighton.edu/xmlui/bitstream/handle/10504/84677/Brown_C_2016_EdD.pdf?sequence=1.

Casteel, A. (2019). *Moore's theory of transactional distance in transactional distance tagged connectedness / transactional distance*. Retrieved 2019 from http://alexcasteel.com/moores-theory-of-transactional-distance/.

Cook, V. (2015). *Engaging generation Z students.* Retrieved from https://www.shiftelearning.com/blog/millennials-elearning-industry?utm_source=hs_email&utm_medium=email&utm_content=21296196&_hsenc=p2ANqtz-81MNpgmqrNECiOsGR3mQn9oUuGdqeKslYEB5Zc4UnHKL8L_GIaho8vtrDtvxXcEMRW9vXMMcMfWVvAF6fsApD1zI9vmA&_hsmi=21296196&fbclid=IwAR2yrwsvQK8KPaHMuVlY8yaaw6q06abhKZgD1ajnhpzewJHQOpR4hq_PYyE.

Cruz, I. (2015). Trade union congress of the Philippines. College teachers and SHS. *The Philippine Star.*

Cunningham, J. & Bradley, K. (2004). Teacher perceptions as an integral component in the development of online learning tools. Running Head: Teacher Perceptions of Online Learning Tools. Retrieved from http://www.uky.edu/~kdbrad2/OnlineLearningTools.pdf.

DepEd (2016). *Senior High School – SHS 2016blots a remarkable start.* Retrieved from www.deped.gob.ph

Dhruve, P. (2017). *How to measure the effectiveness of e-learning programs.* CommLab India: Rapid Elearning Solutions.

Eldeeb, R. (2014). *Students' Perceptions to e-learning*. IOSR Journal of Research & Method in Education (IOSR-JRME), e-ISSN: 2320–7388,p-ISSN: 2320–737X Volume 4, Issue 3 Ver. IV (May-Jun. 2014), PP 33-36.

Fayomi, O., Ayo, C., Ajayi, L. & Okorie, U. (2015). *The impacts of e-learning in facilitating academic performance among private secondary schools and tertiary institutions in Ota, Ogun state, Nigeris HE*. INTED 2015

Holley, D. (2002). *Which room is the Vvirtual seminar in please?*. Education and Training,,44(3), 112-121.

Kim, J. (2013). *Influence of group size on students' participation in online discussion forums*. Computers & Education, vol. 62, pages 123-129.

Malipot, M. H. (2017). Educators group airs concerns on implementation of Senior High School. *The Philippine Star*.

Mateo, J. (2016). *Grade 11 students told to enroll early*. The Philippine Star. Retrieved May 11, 2016, from https://www.philstar.com/headlines/2016/05/11/1582424/grade-11-students-told-enroll-early#0TpdJ3Cpq2mEri4E.99.

Mazur, A.D. and Miller, C. (2013). The CIPP evaluation model: A summary. *AmberMazur Blog: A Journey Through The Evolution Of Educational Technologies*. Retrieved June 2013 from https://ambermazur.wordpress.com/2013/06/10/the-cipp-evaluation-model-a-summary/.

McClenney, Kay, Marti, N. and Adkins, C. (2000). *Student Engagement and Student Outcomes: Key Findings from CCSSE Validation Research.* CCSSE Validation Research (2000).

Minkin, M. (2014). How to organize a classroom chat. Retrieved from http://teacherhacks.net/classroom-chat-rooms-a-great-first-technology-project/.

Montemayor, M. T. (2019). *DepEd launches cyber expo on education, technology*. Philippines News Agency. Read more at https://www.philstar.com/other-sections/education-and-home/2019/02/14/1893440/deped-monitor-technology-use-public-schools#OjqgBCDYfCHTp79y.99.

Padre, J. (2010). *The enhanced k+12 basic education program rationale*. Philippine Research Journal.

Programme for International Student Assessment (2000). *Measuring student knowledge and skills: A new framework for assessment*. New Zealand Report, August/July 2000.

Resmovits, J. (2013). Education report: Chronic absenteeism undermines over 5 million students. *Breaking news and opinion on the huffington post. N.p., n.d. Web.* 29 Apr. 2013. Retrieved from http://www.huffingtonpost.com/2012/05/17/absent-studentschronic-absenteeism-dropouts_n_1522673 .html

Samson, O. (2017). Pinoy Gen Z harder to impress–study. *Business Mirror*.

Saxena, S. (2013). *Top 10 characteristics of a 21st Century Classroom.* EdTech News, Dec. 20, 2013

Stufflebeam, D. L. (2002). *CIPP evaluation model checklist in the national youth leadership council (NYLC) resource centre*. Retrieved June 2002 from http://www.nylc.org/sites/nylc.org/files/files/250CIPP.pdf.

Stufflebeam, D. L. (2002*). CIPP evaluation model (context, input, process, product) in the international handbook of educational evaluation*. Springer International Handbooks of Education, December 2002, ISBN-13: 978-1402008498.

Tomaszewski, J. (2012). *Online chat: ideas for classroom use.* Education World Copyright © 2012.

Technological Innovation for Achieving SDG4 in Coastal District of Bangladesh

Md Ahsan Ul Kabir[1], Md. Nashir Uddin [2]

[1]Assistant Regional Director, Sub Regional Centre, Bhola
Bangladesh Open University, Bangladesh; kabirmukul71@yahoo.com

[2]Deputy Regional Director, Sub Regional Centre, Bramonbaria
Bangladesh Open University, Bangladesh; nashir0070@yahoo.com

Abstract

Since 1992, Bangladesh Open University has been struggling to provide quality education by open and distance learning (ODL) method using technology. To achieve SDG4 like any other countries, Bangladesh is trying to ensure the quality education for urban, rural and also for coastal people. During the nineties, this university was delivered academic programs through radio, television along with face to face classroom delivery. Nowadays because of the advent of the Internet, this university has opportunities to use innovative technology e.g. YouTube, micro-SD card, eBook, e-Learning platform, web-radio and web-TV for our learners. Bhola is a coastal district of Bangladesh and this district is also a less developed coastal zone and BOU has a Sub-Regional Centre (SRC) in Bhola. Because of its geographical position, the SRC has more facilities to apply all advanced learning technologies to provide timely educational services to learners. However, a study was initiated to understand and to find out how the technologies can directly help the learners, which technologies were appropriate and accessible, which technologies were helpful for them to have an impact on the learners' personal social and or professional quality of life. The study was conducted on 75 learners of different courses and the data was collected using questionnaire and to cross-check the data collected through questionnaire, the learners were also interviewed in groups and individually. In the findings of the study, it was not only the success stories but also there were some issues of challenges learners faced during pursuing an academic program. This study exposed the issues and barriers of using technology in pursuing ODL in Bangladesh, a developing country of Asia. Therefore, the outcomes of the study would attract the attention of researchers, ODL practitioners, policy makers for SDG-4 to achieve the inclusive and equitable education in the global south.

***Keywords**: SDGs, Quality Education, ODL, Innovation*

Introduction

Bangladesh Open University (BOU) has introduced technology facilitated education and while introducing the facilities, this university also considered the learners' accesses, abilities and preparedness for participating in the ICT-innovated education and then BOU has finally employed a mix of media for delivering education as per the access and affordability of the learners. This university has been still the pioneer in launching technology for education delivery in the country because it has a vision to ensure education for all in the country and a mission to spread quality education among all sections of citizens of the country, irrespective of their age and gender in a flexible manner. While the university strives to meet the aspiration of the government to reach the un-reach through the network of the university, the government has also responsibility of achieving Sustainable Development Goals (SDGs) in Bangladesh meeting the targets and indicators of the goal. The SDGs has 17 goals and each goal has its targets and indicators which are interconnected and complicated. However, because of the university's capacity and dimension of approaches to its learners, this university is the best candidate to contribute towards achieving SDGs in Bangladesh. In a specific sense, BOU has huge potential to achieve the SDG goal-4, quality education. Now, this university has its study center, sub-regional and regional center in the coastal areas. The Coastal areas are constantly inspected and attended because of its vulnerability and hazard. However, the safety of the people and their livelihoods require more resource allocation because the climate does not behave in the uniform manner. Each new season brings challenges e.g. cyclone, water surge, tidal erosion, heavy rainfall, storm which the people face and remain in alert for saving themselves. The geographical position of the people is also responsible for their vulnerability and creates constant barriers to be out of poverty and hunger. In the coastal areas, the need of quality learning is imperative and BOU has been implementing the education program to help the people of this area. Among coastal districts, Bhola is one which is near to the sea, the Bay of Bengal. Considering all the perspectives, this study was initiated to understand how the technology-facilitated education of the university has been working in Bhola to achieve SDG-4.

Objective

The objective of the study is know how the technology introduced by the university has been helping the learners in learning and whether the learners felt with the technologies as they were expected to react to learning facilities. The university authority in the belief is that any introduction of technology is welcomed and learners feel rejoice in the using of new innovation. The Internet infrastructure has been growing in rapid speed and the computer network facilities are becoming accessible to many learners in Bhola district. The university today has its website, e-book, video lectures, micso-SD cards, BOUTube, YouTube videos, which the learners can access irrespective of their current enrolment. The technology facilitated lectures or academic materials are supplementary as the university has face-to-face classroom tutorial sessions for the learners and provides printed study materials which the learners collect while getting admission in a course of the university. Thus, the university takes pride in supplying additional services and its entrepreneurship of delivering education through technology at the doorstep of the learners because the technology helps in and gaining knowledge and improving the role of education throughout the world and the role of education is to change people into human resource. In other words, BOU has been established with a view to "spread multimodal instruction at every standard and knowledge, both general and scientific, by means of any kind of communications technology, to raise the standard of education and to give the people educational opportunities by democratizing education and to create a class of competent people by raising the standard of education of the people generally" (BOU ACT, 1992). The reason of making its academic materials accessible and free is to delivery optimum students' services to its learners and by democratizing education, the university ensures access to education for all girls and boys or women and men. The prospective usage of Internet and technology-based learning is so huge and pervasive to "school the illiterate, bring job training to the unskilled, open a universe of wondrous images and knowledge to all students, and enrich the understanding of the…learner" (Web-Based Education Commission, 2001). and the learners now are participating in technology-based learning which raises the moral of the students that they are receiving the best service from the university. In Bhola, the Internet facilities for the house are available and the learners can access to cordless connection (WiFi) and the mobile operators are also providing the network service at a low price. The research intended to identify the uses of technology and learners' access and affordability to it and how much the technological innovation can be helpful in achieving quality education which is ultimately supporting Bangladesh in achieving SDGs in Bangladesh.

Methodology

The research method was both quantitative and qualitative (Miles & Huberman, 1994). The learners were the sample in the study and the number of learners participated in the sample was 75 learners. The sample was random and they were selected on the basis of availability, convenience and easy accessibility from our workplace and study centres. Their age ranged from 17 years old to 55 years old. Among the respondents, 38 were females and 37 males. A questionnaire was used and for checking the questionnaire, individual and group interviews were taken based on the questionnaire. A questionnaire is a research instrument consisting of a series of questions for the purpose of gathering information from respondents (McLeod, 2018). The questions were answered with 'Yes or No' basis and to get the information in details and depth and the same questionnaire was also used as the basis of interview. The data was collected for longer than six weeks. Because of the responsibility and the station of the workplace, the respondents were, as stated above, accessible and the respondents' behavior was observable for a long time. The interviews were arranged separately individual and in group as well. An interview is a conversation for gathering information. A research interview involves an interviewer, who coordinates the process of the conversation and asks questions, and an interviewee, who responds to those questions (Easwaramoorthy & Zarinpoush, 2006). Group interviewing is the systematic questioning of several individuals simultaneously in formal or informal settings (Fontana & Frey, 1994). Their responses and reflections were recorded in written and with permission, an audio recorder was used during the interviews so that their speeches could be accurately reflected in the research. The interviews were spontaneous and while collecting data, some respondents were quite in an impression that they had opportunity to talk to the university authority to express their views. They felt that they should inform their difficult perspective and challenges and these were related to the study material, tutorial sessions, communication with study center or sub-regional center, simple barriers with staff of the university. The learners have smart phones and Internet connectivity and they have access to social media e.g. Facebook, YouTube.

Result and Discussion

Faculty, instructors, staff, administrators, policy makers and governance bodies have their own unique perspectives on the role of learning technologies within higher education and each has a sense of what would constitute an enriching experience (Porter, 2008). BOU has its own staff, adjunct tutors, study centres in the costal district, Bhola. The university has secondary school certificate (SSC), Higher Secondary Certificate (HSC), Bachelor of Arts (BA), Bachelor of Social Science (BSS), Bachelor of Education (B.Ed.) programs. While collecting data, there was a mix of students who were from different academic programs during the data collection through questionnaire or group interviews because the students from different academic programs could complement each other in giving data. Even the tutors of the students in few interviews were sometimes present during the data collection though they did not participate actively and influence the interview process. This research work has been basic and fundamental approach to look into learners' condition. The BOU learners know about the technological changes over the last decade and they have knowledge about the availability of the digital contents introduced by the university. The video lectures programs and e-books are online which the students can just download or view using Internet.

Quantitative Data

In the quantitative data, the major information were recorded in the article so that the readers can understand in simple percentage computation. These data are from the questionnaire which comprised of close-ended ‘Yes’, ’No’ answer and however, for details, they could comment on the question orally which was considered as interviews and recorded in the qualitative data. However, in the quantitative data, it was found that the 64% respondents were in opinion that technology base education system can contribute to their learning. Among the learners, 86% respondents mentioned that they felt that they were learning more and comfortable with technology based education delivery and other 14% learners, they needed assistance from the tutors with learning using technology. 78% respondents were in opinion that they were participating in a self-led learning and they had sufficient capacity to study alone and 22% respondents thought they needed assistance from friends or family members. 45% respondents believed they had ability to take notes from a video, audio lectures and they could complete assignment and 55% other respondents needed supports from tutors and other learners while completing assignment work. 61% learners thought that they continued study using available downloaded resources even if there was online disruption. 90% learners thought that they understood online audio/video lectures well. 53% respondents thought that they understood well to relate printed materials with online audio-video study materials. 69% respondents thought that they had sufficient ability to carry on a discussion focusing on a particular topic. 52% respondents believed that they needed to contact their tutors or instructors regularly to complete a technology-based education. 42% respondents mentioned that they needed administrative supports to be successful and it would assist them to learn in an elaborate way. 58% respondents thought that they did not require administrative support but support from study centre and sub-regional centre would definitely encourage them learn more. This inclusive approach supports the people of the country to achieve the targets and indicators of SDG-4.

Qualitative Data

The qualitative data was collected through face-to-face interview and the learners, who were the respondents, made some discussion, comments and opinions which were in narrative and the same has been recorded in the article. During the interview, a learner mentioned that a tutor, while tutoring in a class, could play a video lecture from the BOUTube or YouTube online, which the learners could view and later the tutor could make groups to comment on the video lecture and through the discussion, both learners and tutor could understand a topic in a deeper way. Another respondent mentioned that if the lectures could be viewed regularly in tutorial classes and ultimately, the learners would get benefited and especially for the learners, who may not have the access to Internet at home. During interviews, some students who were accustomed with technology but they mentioned that they did not have email accounts, they had Facebook account. They were asked how they operated Facebook accounts without email, they used their phone number to be on Facebook. Some learners mentioned that the challenges for video lectures BOU has are long and uneventful and the videos should be short and attractive. Few learners suggested that the learners should have an inaugural session which must show the technological facilities available for the learners. Some learners suggested that the tutors should mention the website address, BOUTube, YouTube videos, e-book, online support available, though the university provides the guidebook at the beginning of a course. One learner mentioned that for technology, they should have supports from the university and thus, the sub-regional centre should also have a computer-lab which the students could use whenever it was necessary. Another mentioned that the study centre had the labs but they could not get it open every time and they needed to book it early though they had their own mobile devices. In the interviews, the learners proposed if they had a computer lab open all the time with instructors in their study centres, they would be benefited. In addition, if both the sub-regional centre and the study centre should also have provided the facilities which would be a motivational factor and if someone did not have a device, one could use the device from the centres and this provision would create opportunity for them. This would create more inclusive approach towards the learners and that would be step forward towards achieving the quality education. Some other learners thought that the centres should have information boards about the on-going and up-coming video lectures and e-books. One learner demanded more lectures should be in Bengali version. During the interviews, the learners were in opinion that it was necessary to ensure low cost of the Internet browsing and for the learners, the Internet should be free of cost. The staff of sub-regional center should be more friendly and supportive because the technology has been newly introduced and the staff should provide the learners assistance to create a user-friendly environment in the university.

Conclusion

The study reflects the learners were getting advantages from the technology-delivered education. However, they have barriers because some of them still had lack of capacity and access in technology-based learning system though they had learners' eagerness in pursuing the learning. The data revealed some thought of learners about policy adoption, new infrastructure introduction which would be very helpful for the university authority to adopt. The important information, which this research demonstrates that technology for delivering education in Bangladesh has a meaningful impact on the learning. The research also displays that the learners have potential efficiency to achieve necessary knowledge and skill, though there needs some institutional initiative from BOU for solving learners' wants like computer lab with instructors, a library with computers in Sub Regional Centre (SRC) in Bhola, Further, the government should take initiative to provide low cost Internet services which the learners can use in their computer at the households. It is also reflected that technology based education system is still a new genre in Bangladesh which BOU has been pioneer in delivering education through e-book, BOUTube, YouTube, Web Television. Since this study mainly focuses on the existing students of Bangladesh Open University and the majority of students have technology, skill and eagerness to participate in an academic programme through technology based education system. In a final sentence, we can mention that the data of this research can positively ensure that the learners have already accepted the new method of education and ultimately, the system is making progress towards affordable, equitable and quality education and effective effective learning outcomes, sustainable lifestyles, and creating a culture of peace in Bangladesh.

References

Bangladesh Open University Act, 1992, Retrieved June 4, 2019 from the website: https://www.sai.uni-heidelberg.de/workgroups/bdlaw/1992-a38.htm

Frey, J.H., & Fontana, A. (1991), The group interview in social research. Social Science Journal, 28, 175-187.

Frey, J.H., & Fontana, A. (1994), Retrieved May 30, 2019 from the website: http://methods.sagepub.com/reference/the-sage-encyclopedia-of-social-science-research-methods/n382.xml

M. Easwaramoorthy & Zarinpoush F, (2006) Imagine Canada, Retrieved June 2, 2019 from SAGE, website: http://methods.sagepub.com/ reference/the-sage-encyclopedia-of-social-science-research-methods/n382.xml

Miles, M. & Huberman, A. (1994). Qualitative Data Analysis: An Expanded Sourcebook, Sage, Thousand Oaks.

McLeod, S, 2018, Questionnaire, Retrieved May 31, 2019 from SimplyPsychology, website: https://www.simplypsychology.org/questionnaires.html

Porter, David, 2008, Education for a Digital World: Advice, Guidelines, and Effective Practice from Around the Globe, Introduction, ed.Dr. David G. Harper, BCcampus & Commonwealth of Learning, Vancouver, Canada

SDG 4 Indicators- 2017 Updates, 2017, Retrieved May 31, 2019 from A Medium Corporation, website: https://medium.com/sdgs-resources/sdg-4-indicators-2017-updates-afa063c0d669

Web-Based Education Commission (2001), The Power of the Internet for Learning: Moving from Promise to Practice, Retrieved May 31, 2019 from website: https://books.google.com.bd/books/about/The_Power_of_the_Internet_for_Learning.html?id=xJwnANuxxwYC&redir_esc=y

SUB-THEME 3

SUBJECT-SPECIFIC RESEARCH IN DISTANCE LEARNING

Who are the International Students in Online Higher Education?

Kyungmee Lee, Brett Bligh

Department of Educational Research, Lancaster University
County South, Lancaster University, Lancaster, United Kingdom, LA1 4YD
k.lee23@lancaster.ac.uk; b.bligh@lancaster.ac.uk

Abstract

In the current higher education context, where there is a growing economic imperative for universities to diversify and globalise their income streams, offering online programmes is increasingly positioned as an effective strategy for recruiting international students. However, supporting online international students studying at a distance is not a simple task for either universities or tutors. The problem, in part, stems from a lack of scholarly understanding of how online international students experience—and engage with—online learning. This presentation addresses that gap in understanding by systematically, yet critically, reviewing relevant narratives from published scholarship about who online international students are (or are perceived to be). A total number of 39 articles, which have i) a focus on higher education; ii) a focus on pedagogical practice (rather than administrative matters, including recruitment); and iii) a focus on international students resident in a country different from the institution offering their online course, were reviewed in this project. We took a grounded theory approach to analysing the selected papers, which were treated as an empirical data set for our project, following the three steps of coding: open coding, axial coding, and selective coding. The presentation will discuss four types of narrative in the published academic literature, which describes online international students primarily as: i) unspecified others of rapidly increasing numbers; ii) specific others, with particular deficits; iii) specific others, to be drawn on as pedagogical resources; and iv) active participants in international learning communities. Specific examples of each type of narrative will be provided during our presentation and then, we shall discuss both the merits and the drawbacks of each type of narrative for online educators seeking pedagogical suggestions about supporting online international students in their real-life teaching contexts.

Keywords: *online international student; online higher education; critical literature review*

Introduction

This article reports the results of a critical literature review of scholarly narratives about international students in online higher education (HE) settings. There has been a growing emphasis on effective internationalisation strategies, which are seen as crucial for the success (or even survival) of HE institutions (Bourn, 2011; Warwick & Moogan, 2013). Offering online programmes has been explored as an innovative mechanism posited to underpin effective internationalisation strategies—enabling international students to earn a foreign degree without leaving their home countries (HM Government, 2013; OLTF, 2011). Yet, despite the proliferation of online programmes, and of international students being recruited to those programmes, little is known about the characteristics of those international students and their experiences of participating (Fenton-O'Creevy & van Mourik, 2016). Therefore, the present article contributes towards developing a more holistic understanding of online international students. The underlying aim of our work was to collect the different academic narratives presented in currently published literature. This paper examines each of those narratives and poses a set of questions in relation to each: "what has been stated and what has not been stated about online international students in the selected literature?" and "to what extent are those statements effectively supported by evidence?"

The review project followed a systematic scoping process when searching for literature and selecting articles for critical review (cf. Arksey & O'Malley, 2005). The evidence base was collected by searching peer-reviewed journal articles and book chapters in Scopus, the largest abstract and citation database of peer-reviewed literature (www.scopus.com). The search was conducted based on the title, abstract, and keywords of papers, using the following compound search terms:

- "internationalisation" OR "globalisation" OR
- "international student/learner" OR "overseas student/learner" OR "Asian/African/American/Chinese/Japanese/Korean/Taiwanese… student/learner" **AND**
- "online/distance/virtual/open education/learning/course/program*/universit*"

The above search, when conducted in January 2019, returned 418 items. By using several filtering criteria—i) a focus on higher education; ii) a focus on pedagogical practice (rather than administrative matters, including recruitment); and iii) a focus on international students resident in a country different from the institution offering their online course, we finally selected 39 items for inclusion in the critical analysis.

We took a grounded theory approach (Charmaz, 2014) to analysing the selected papers, which were treated as an empirical data set for our project. The initial coding was done by the first author, following the guidelines suggested by Strauss and Corbin (2015), who propose three steps: open coding, axial coding, and selective coding. Firstly, each article was broken down into a series of meaning units of analysis (i.e., sentences or paragraphs defining and describing international students in online HE), with those units carefully coded. Our two dimensions for the initial coding schemes consisted of: claims (or statements) about international students in online HE, and the evidence presented to support the claims. The second round of reading (i.e., axial coding) was also undertaken by the first author, with the codes are more carefully examined and compared with/against each other at this stage. An attempt was made to identify and categorise claims and evidence that appeared more commonly, or which was ascribed more weight within the source material. Finally, both authors collaboratively conducted the process of selective coding and four—more substantial—themes were generated as a result. Those four themes (i.e., narratives about online international students) will be presented in the following section of this paper, with the exposition highlighting questions like "how are international students conceptualised by the theme?" and "how are characteristics of international students discussed by the theme?"

Narrative 1: Unspecified others with a rapid increase in their numbers (N=27)

The first type of narrative about online international students is built around the affirmation of an increasing demand for HE access worldwide; the advancement of information and communication technology and increases in its educational use; and the economic and educational necessity of providing online HE to globally dispersed students. When expounding the narrative, most authors proceed by stating one or more of the following claims: i) that a growing need for HE access worldwide prompts a rising demand from international students, with online education an effective solution to meet it; ii) that there is a growing number of international students accessing HE institutions in Western (or English-speaking) countries via the means of online education; and iii) that internationalisation is fundamentally beneficial to both universities and students, including domestic students, living in a global society.

Making such claims does not usually involve providing specific information about who is being referred to as international students. Online international students are often portrayed as if an imaginary group existing somewhere far from the authors' (or their institutions') countries—in exotic lands given only generic descriptors: developing countries, non-Western countries, or Asian countries. One thing, however, is made clear about this unspecifiable mass—that they want to access HE provided by universities geographically located in developed countries or Western countries, to which they cannot physically attend. Those exotic others, therefore, have chosen to attend Western universities by registering for online programmes in great numbers, with even more of them expected to do so in the near future.

Such narratives have stark limitations when considered from the perspective of online educators. The narrative carries a strong imperative flavour but is not, most of the time, based on considerations of actual students and specific pedagogical strategies. In essence, the narratives in this category, as found in the 27 papers, are largely rhetorical and frequently invoked within initial statements—used within the texts to emphasise the importance of the authors' articles and/or the initiatives presented in the papers. The assumptions in those narratives tend to be simply taken-for-granted by the authors, rather than being substantially discussed or articulated. The evidence or data provided to support these narratives typically includes descriptive statistics, such as student numbers and the annual growth in those numbers. In addition, most articles providing such imperative narratives refer to particular national policies and related discussions.

The relation of these narratives to online HE is, perhaps, to exhort educators to accept the urgency of doing "something" better for those unspecified "others". As online educators, it is likely that such narratives might prompt questions, in turn, about who this unknown mass really are, how they are to be supported, how online tutors are to support their particular international students, and how those online tutors are supposed to know what has been effective or appropriate. The importance of "having" strategies is emphasised within this narrative, but the strategies themselves are not forthcoming from within it. In other words, this way of talking about online international students does not offer much in the way of meaningful pedagogical suggestions that might be recognised or enacted by those online educators seeking more effective ways to support their students.

Narrative 2: Specific others with deficits (N=20)

The second type of narrative we identify shifts the focus to international students themselves—and immediately serves to highlight how international students may be different from their domestic counterparts. The narratives of this type, furthermore, conceptualise one or more deficits with which those international students are perceived to be associated, particularly those from non-Western countries. Online international students are often stigmatised as "being at risk" of being unsuccessful or unsatisfactory in their learning. A deficit of language proficiency among online international students is the mostly frequently mentioned factor, with that deficiency recognised as likely to cause various challenges and difficulties throughout the learning process (see Cong and Earl, 2011; Kwon et al., 2010). It is also commonly suggested that online international students suffer from another deficiency: one related to the cultural understanding of (or familiarity with) what is expected in Western educational contexts. Specific groups of students are positioned as being passive, conformist, uncritical and silent (see Liu, et al., 2010; Ramanau, 2016).

Overall, what is positive about these deficit narratives is that—by contrast to the imperative narratives discussed above—they highlight actual problems that have been experienced by particular student groups (e.g., Chinese, Russian, Korean, Asian, or African students) in particular online HE settings. Also, many of the relevant articles that do use these narratives as a basis for offering pedagogical solutions to identified problems: often, more or less specific strategies to support those international students with whom their narrative has been concerned. For example, Zhang and Kenny (2010) suggest three ways in which universities can improve the quality of international student learning experiences in their online programmes.

Nevertheless, there are two interrelated assumptions that render these narratives problematic. Firstly, the formulation of deficits is commonly used to imply that there are definite divergences between domestic and international students in online HE; very often, that turns out to be a projected distinction between ‘Western’ and ‘non-Western’ students, a fact that is unproblematised by the authors and which is therefore, in our view, somewhat arbitrary. Secondly, homogenous assumptions about cultural and social background are frequently made on a *national* basis: it is assumed that there are distinctive characteristics shared among students from the same countries. For example, Zhang (2013) examines the influence of Confucian-heritage culture on Chinese learners’ engagement in online discussion in U.S. HE. Based on observing the engagement patterns of 12 students from China, Taiwan, and Hong Kong, the author concludes that

> *As a result, when encountering difficulties in learning, the Chinese learners were intimidated to interact with their instructors. Instead, they tended to seek help from peers, particularly those who shared similar cultural and linguistic backgrounds. (p. 238).*

Significant questions can be posed in relation to such statements, such as: how do researchers know and determine which students are from “Confucian traditions”; and can it be assumed that all students from China, Taiwan, and Hong Kong (each with distinctive historical and societal characteristics, and the former a very large-scale geographical construct) are from the same cultural background? To address the same issue from a different angle, we might consider whether we would think it acceptable to assume that all *Western* students had shared attitudes towards their instructors and peers, ones fundamentally different from Chinese students. This issue seems increasingly urgent given the growing recognition of diversity and multiculturalism within societies across much of the globe. In addition, some studies projecting this type of narrative are in danger of disregarding that “learning at a distance” can, by itself, be a challenging task for all—even for domestic students (see Lee, 2017). Thus, the validity of the empirical warrant for these deficit narratives can be critiqued methodologically, on the basis that the difficulties of non-international students in the same settings have typically been obscured.

Thus, these deficit narratives fail to provide online educators with balanced and sophisticated views about what it means to be an online international student, or how tutors might support such students in their courses. At their worst, narratives of this type can serve to reinforce those preconceptions and biases that online tutors might already have regarding different ethnic groups and/or nationalities. The sense of international students having a degree of agency to pursue their own development is underplayed.

Narrative 3: Specific others as pedagogical resources (N=8)

The third type of narrative highlights the pedagogical value of intercultural exchanges, and of learning about other "cultures" through interacting with international students. Texts incorporating this type of narrative often proceed from favourable notions of international education and internationalised curricula, positioning them as an essential component of contemporary HE provision. Narratives of this type share a sense of urgency about preparing students for participating in a global economy as competent workers; doing so will be achieved, it is suggested, by providing them with a range of educational opportunities to develop global perspectives and knowledge, as well as intercultural communication skills.

One striking finding from our analysis is that the main focus of these narratives is often not on international students but, rather, on their domestic counterparts. Such counterparts often have an identified need to access international learning opportunities without leaving their own institutional context—that is, without directly immersing themselves in international situations. This type of narrative, therefore, positions international students as pedagogical resources whose presence in online HE serves to make learning environments and curricula 'internationalised'. Thus, international students are seen as having instrumental or economic value for providing internationalised learning:

> *Traditionally, international opportunities are undertaken as expensive elective placements, out of the reach of many students. By undertaking this online module, I have been able to develop a strong understanding of the issues and challenges faced by US nurses, an opportunity that would not have otherwise have been open to me. Wider access to international opportunities is important. (Strickland et al., 2013, p. 1164)*

Another striking finding, related to the preceding point, is that these value-oriented narratives most commonly arise in papers describing or evaluating specific educational initiatives: ones that create international connections between two more courses or universities across different countries. One such initiative is described in the following way:

> *International partnerships for this module were developed from existing networks. Partners from Western Carolina University (USA) and Lahti University of Applied Sciences (Finland) were involved in negotiating the learning activities to ensure a comparable learning experience for all students [...] Students collaborated through the wiki for an 8 week period during this trimester with a total of 22 students from the three participating institutions: 8 from USA, 7 from UK and 7 from Finland (Strickland, et al., 2013, p. 1161)*

The narratives go on both to celebrate the success of the initiatives they evaluate, and to provide illustrative data indicating positive results about learning satisfaction, behaviours, and outcomes. From an educator vantage point, there are at least two significant shortcomings. Firstly, these narratives are often not focussed on the complexity (or the multi-voiced nature) of the educational phenomena they highlight. Intercultural communication—and specifically *online* intercultural communication—is a challenging and disruptive situation even for experienced researchers with willing international collaborative partners. As one of the present authors has noted elsewhere, providing students with international learning experiences is a challenging task for individual tutors where they cannot leverage considerable social and linguistic capital (Lee, 2018). It is worth emphasising that in the above example, Strickland, et al. (2013) utilised existing international networks to develop their online module. Not all online tutors, of course, would have those "existing" networks.

Secondly, by comparison with the second theme, these resource-oriented narratives do laudably position international students as the equal counterparts of domestic students. Indeed, in some cases, narratives of this type further blur the distinction between "international" and "domestic" students—

on the grounds that both groups need to acquire intercultural communication skills, and that both groups are “needed” to create meaningful intercultural communication opportunities. And, it is possible because participating international students are fully capable of engaging in the communicative activities; it is a starkly different assumption from those narratives in the preceding theme. What then is driving that difference? The answer can be found by recalling Strickland, et al.’s (2013) description of their participants as being “8 students from USA, 7 from UK and 7 from Finland”—all Western!

The answer can be found by recalling that international students in the deficit narratives were largely specified as non-Western and non-native speakers. This double standard (Western vs. non-Western international students) may create or reinforce destructive, rather than supportive, attitudes towards international students among online educators and students: attitudes whereby distinct groups of international students are treated differently, according to the instrumental value they bring into online learning settings.

Narrative 4: Active participants in international learning communities (N=6)

The fourth, final type of narrative suggests more constructive understandings of international students and their experiences: perceiving them as active participants within international learning communities, in which every single participant is unique regardless of their origins or locations. This comprehensive, more inclusive view of international students often proceeds from authors’ critical reflection on their *own* interactions with those students. From the vantage point of online educators, we find these emancipatory narratives more helpful and insightful for two key reasons.

The first reason is that the narratives describe international students’ online learning experiences, without unnecessarily generalising them (as having fixed characteristics) or being judgemental about what is observed and described. These accounts, thereby, allow for a greater possibility of noticing development or change—in the texts we found, that development most typically relates to students’ gradual accommodation to online learning environments or to intercultural communication practices. For example, Chen, Bennett, and Maton (2008) illustrate one moment within an in-depth description wherein two particular Chinese students *themselves* proactively addressed some of the challenges they faced when participating in an online course offered by a university in Australia. The authors subsequently expand that focus, to conceptualise the adaptation processes of international students as they encounter a variety of challenges within an online learning environment. In the study, international students are not simply disadvantaged, needing support from other parties (such as their domestic peers, tutors, and universities); instead, they are active agents in their own learning processes who attempt to develop their own coping strategies and skills.

Secondly, the texts maintain a relatively practical essence to their narratives; typically doing so by emphasising what online educators actually did (rather than merely ‘should do’) when designing an individual module or working to unfold a set of teaching-learning interactions. Furthermore, the actions described often highlight the integration of pedagogical practices and strategies across courses and students—both international students and their domestic counterparts—rather than focussing on providing remedial support for targeted individuals or groups. The essential difference between the resource-oriented narratives above—in which international students are a *means* to achieve the specific goal of international education—and these more emancipatory narratives is this: here, both international education and students are each perceived as the natural educational background and conditions for online higher education.

For narratives built on such assumptions, there seems no particular need to problematise international students (or, indeed, to celebrate their presence). The narratives in the 6 papers we highlight under this theme are more inclined, instead, towards developing a comprehensive understanding of what is going on in particular modules experiencing growing diversity in their participants. Sometimes that narrative is expressed more specifically, as being about and how to make the international learning community stronger (see Sadykova, 2014). Thus, this type of narrative is emancipatory in its nature but *not only with regard to international students*. In this type of narrative, both tutors and students (including international students themselves) are responsible for supporting international students' experiences and developing supportive learning communities.

Conclusion

Overall, our review highlights that the fourth type of narrative is of particular merit. That narrative proceeds by perceiving international students as a natural part of online teaching practice—as authentic beings with their own unique strengths and weaknesses, just like any other students in an online course. That supports a holistic view: one that focuses on developing a supportive international learning community in collaboration with our students. Through focusing on our daily interactions with *all* of our online students, rather than isolating the international, we might be able to notice possibilities for taking small yet practical steps towards more inclusive online learning—in ways that take advantage of both contingent possibilities and wider pedagogical strategising.

References

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19-32.

Bourn, D. (2011). From internationalisation to global perspectives. *Higher Education Research & Development, 30*(5), 559-571.

Charmaz, K. (2014). *Constructing grounded theory*. Sage.

Chen, R. T. H., Bennett, S., & Maton, K. (2008). The adaptation of Chinese international students to online flexible learning: Two case studies. *Distance Education*, *29*(3), 307-323.

Cong, Y., & Earl, K. (2011). Chinese postgraduate students learning online in New Zealand: Perceptions of cultural impact. In *Cases on Globalized and Culturally Appropriate E-Learning: Challenges and Solutions* (pp. 73-93). IGI Global.

Fenton-O'Creevy, M., & van Mourik, C. (2016). 'I understood the words but I didn't know what they meant': Japanese online MBA students' experiences of British assessment practices. *Open Learning: The Journal of Open, Distance and e-Learning*, *31*(2), 130-140.

HM Government (2013). *International education strategy: Global growth and prosperity*. Department for Business, Innovation and Skills, London. Retrieved from https://www.gov.uk/government/publications/international-education-strategy-global-growth-and-prosperity

Kwon, K., Han, D., Bang, E. J., & Armstrong, S. (2010). Feelings of isolation and coping mechanism in online learning environments: A case study of Asian international students. *International Journal of Learning*, *17*(2). 343-356.

Lee, K. (2017). Rethinking the accessibility of online higher education: A historical review. *The Internet and Higher Education, 33*. 15-23.

Lee, K. (2018). Implementing computer-mediated intercultural communication in English education: A critical reflection on its pedagogical challenges. *Journal of Computer Assisted Learning, 2018*, 1-15.

Liu, X., Liu, S., Lee, S., & Magjuka, R. J. (2010). Cultural differences in online learning: International student perceptions. *Educational Technology & Society, 13*(3), 177-188.

OLTF (2011). *Collaborate to compete: Seizing the opportunity of online learning for UK higher education: Report to HEFCE by Online Learning Task Force*. Retrieved from http://www.hefce.ac.uk/media/hefce1/pubs/hefce/2011/1101/11_01.pdf

Sadykova, G. (2014). Mediating knowledge through peer-to-peer interaction in a multicultural online learning environment: A case of international students in the US. *The International Review of Research in Open and Distributed Learning*, *15*(3).

Ramanau, R. (2016). Internationalization at a distance: A study of the online management curriculum. *Journal of Management Education*, *40*(5), 545-575.

Strickland, K., Adamson, E., McInally, W., Tiittanen, H., & Metcalfe, S. (2013). Developing global citizenship online: An authentic alternative to overseas clinical placement. *Nurse education today*, *33*(10), 1160-1165.

Strauss, A. L., & Corbin, J. (2015). *Basics of qualitative research: Grounded theory procedures and techniques.* London, UK: Sage.

Warwick, P., & Moogan, Y. J. (2013). A comparative study of perceptions of internationalisation strategies in UK universities. *Compare: A Journal of Comparative and International Education*, *43*(1), 102-123.

Zhang, Y. (2013). Power distance in online learning: Experience of Chinese learners in US higher education. *The International Review of Research in Open and Distributed Learning*, *14*(4).

Zhang, Z., & Kenny, R. (2010). Learning in an online distance education course: Experiences of three international students. *The International Review of Research in Open and Distributed Learning*, *11*(1), 17-36.

Effectiveness of Blended Learning in Teacher Education Programme through Distance Mode

Dr. P. Sivakumar

Professor and Head
Department of Education, Directorate of Distance Education
Alagappa University, Karaikudi, Tamil Nadu, India. psksiva2002@gmail.com

Abstract

Blended learning is an intentional integration of both classroom and online learning/ e-learning that focus on the best advantages of these two learning modes. Teaching and learning activities of classroom should be framed in such a way to support online/ e-Learning activities and vice versa to ensure the effective Blended learning. To find out the effectiveness of Blended Learning in Teacher Education programme through distance mode an experimental study has been carried out. Forty in-service teachers studying Bachelor of Education Programme through distance mode were identified as sample of the study. They were distributed equally into experimental and control groups by simple random technique. 'Pre-test, Post-test, Control group design' has been adopted for the present investigation. Blended learning method was applied to the experimental group and the control group was exposed to lecture method. There was a significance of difference between the pre and post-tests achievement scores of the control group. This group was able to register an upward performance and found lecture method was effective. The performance of the experimental group in terms of achievement was higher in the post-test when compared with its pre-test scores. This clearly testifies the effectiveness of the Blended learning method. Moreover, the performance of the experimental group in the post-test is higher when compared to the control group. It clearly shows the supremacy of the Blended Learning method over the Lecture method. The study concluded that the blended learning can effectively be utilised in Teacher Education programme through distance mode. The percentage of the blend should be in accordance with the subject matter and the type of the learners.

Keywords: *Blended Learning, Online Learning, E-Learning, and Teacher Education Programme.*

Rationale and objectives of the study

The most striking changes in Distance Education is application of net based learning which created new terminologies like online learning, e-learning or web-based learning. Online learning is defined as the use of Internet to access learning materials; to interact with the content, instructors and other learners (Ally, 2002). Many researches have been conducted in online learning. Furthermore, the comparisons have also been made with traditional face-to-face instruction. Convergence between online and Face to face instruction brought a tremendous change in pedagogy. Due to this convergence a synergistical effect has been witnessed in the teaching and learning process. Blended learning combines both online and face-to-face instruction (Reay, 2001; Rooney, 2003; Sands, 2002; Ward &LaBranche, 2003; Young, 2002).At the same time, traditional Face to face learning cannot be underestimated, because it has its own effect and advantages. The research studies about the perception of students in traditional classes indicate that the students were more satisfied with the clarity of instruction (Chen and Jones, 2007) whereas, students in blended learning class gained an appreciation of the class and indicated more strongly that their analytical skills improved (Chen and Jones, 2007). This study indicated that when students are in traditional setting, instruction becomes clearer but when they are in blended class, learning process may become doubtful for them although they see more improvements in their analytical skills. Akkoyunlu and Soylu (2008) mentioned that highest grade of students' perceptions is given to face-to-face environment that learning is best linked with classroom teaching. Thus, the studies carried out by Akkoyunlu & Soylu, 2008 and Chen and Jones, 2007 supported face-to-face learning.

Whereas, some of the studies support e- learning and on- line learning environment. An experimental study carried out by El-Deghaidy and Nouby (2008) indicated that achievement of students in blended group is significantly higher than students in control group, and found that students' attitudes towards e-learning are significantly higher in blended group. This study concluded that blended learning is effective with respect to attitudes and achievement. Study carried out by Deliağaoğlu and Yıldırım, 2008 indicated that no significant difference achievement levels and knowledge retention between Blended learning group and Traditional learning group but satisfaction from blended environment was higher. Furthermore, in a study conducted by Smyth et. al., (2012) indicated that in overall, participants had positive feelings on blended learning system.

These studies indicated that students favoured e- learning /web-based online learning environment but they did not want to avoid face to face component. Hence, it is indispensable to integrate both the e- learning /web-based online learning environment and the traditional face to face learning environment. Based on these rationales the investigator selected blended learning approach. One of the foremost aims of the study is to facilitate and enhance the achievement of B.Ed. learners through distance mode by means of Blended Learning Method.An attempt has also been made to compare effectiveness of Blended Learning Method with that of Lecture Method.

The following are objectives of the study:

- To develop Blended Learning Method in Secondary Teacher Education Programme
- To find out the effectiveness Blended Learning Method in Secondary Teacher Education Programme.
- To compare the effectiveness of Blended Learning Method with that of Lecture Method based on achievement of Secondary Teacher Students.

Theoretical framework

Technology plays an important role in every walk of life. Dede (2007) mentioned that new technology not only impacts the culture as a whole but also the ways in which students and faculty conceptualize and apply the process of teaching and learning. When technology optimally integrated with face to face instruction a modern educational strategy is emerged which is known as Blended learning aims at interactive learning, resulting in the blending or mixing of traditional classroom activities with that of virtual one. It integrates the advantages of both traditional classroom learning with that of the technology based learning which helps cater to the individual needs of the learner. Even identical twins are differ from each other, similarly students have unique learning styles and a blended approach can likely to cater to needs in accordance with these uniqueness. It incorporates the element of technology into the traditional classroom setting. “Blended learning is the thoughtful fusion of face to face and online learning experiences. The basic principle is that face to face oral communication and online written communication are optimally integrated such that the strengths of each are blended into a unique learning experience congruent with the context and intended educational purpose” (Garrison and Vaughn, 2012). “Blended learning systems combine face to face instruction with computer-mediated instruction” (Graham, 2006).

According to Salama (2005), Blended learning is a logical and scientifically acceptable alternative to e-learning, has higher yields, is less expensive, and incorporates more sophisticated types of learning. Singh (2002) defined dimensions that can be blended as offline and online learning, self-paced and collaborative learning, structured and unstructured learning, custom content with off-the-shelf content, learning, practice and performance support. Garrison and Kanuka (2004) stated that “blended learning is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences.” Osguthorpe and Graham’s (2003) emphasised that Blended learning combines face-to face with distance delivery systems… but it’s more than showing a page from a website on the classroom screen…those who use blended learning environments are trying to maximize the benefits of both face-to-face and online methods.” Osguthorpe and Graham (2003) emphasised six important points for the utilisation of blended learning system: (i) pedagogical richness, (ii) access to knowledge, (iii) social interaction, (iv) personal agency, (v) cost effectiveness, and (vi) ease of revision. In the present study, effort has been taken to incorporate these potential components of Blended Learning in Teacher Education programme through distance mode.

Methods

Participants

B.Ed students studying through Distance mode in Alagappa University Karaikudi, Tamil Nadu, India were purposively selected for the present study. Forty students based on age, and academic performance were selected as sample. Those forty students were equally assigned to both control and experimental groups by simple random sampling method. Thus, the total sample size for the present study was forty.

Materials

For the present study the following research tools were used.

i. Blended Learning Method based lesson plans, and
ii. Achievement Test

i) **Blended Learning Method based lesson plans.** Thirty lesson plans in Educational Psychology were prepared in accordance with the Blended learning Method. These lessons were given to three subject experts. Based on the opinion given by the experts modifications were made. Preliminary try out has also been made for five days among ten students who were not on the part of experimentation. Based on the experience and students' opinion fine tuning were carried out.

ii) **Achievement Test**. To measure level of achievement in Educational Psychology, an achievement test consisting of fifty objective type questions was developed. This achievement test was presented to three subject experts and were requested to comment on structure of the questions, appropriateness to the level of the students, distraction, and content coverage. Based on the opinion questions were modified, and reworded. The maximum possible score was 50, with difficulty transactions ranging from 0.35to 0.80 and the discrimination coefficients for the questions from 0.39to 0.91.

Procedure

For the present investigation, Station Rotation Model described by Heather Staker and MichealB.Horn (2012) has been adopted. According to them, in this model students rotates on a fixed schedule or at the teacher's discretion among classroom-based learning modalities. This model includes at least one station for on line learning. Other stations may include activities such as small group or full - class instruction, group projects, individual tutoring and paper and pencil assignments. Some implementation involves the entire class alternating among activities together, whereas others divided the class into small group or one by one rotation.In the present study, the teacher led instruction was given to entire class, whereas for collaborative activities the class was divided into four groups. Each group had five members. On line learning was provided individually.

In this study experimental method was adopted. The pre and post-tests control group design was utilised for the present study. The relative effect of the treatment was compared on the basis of the two groups, the Experimental and Control, which were almost equated in all aspects. The Control group served as a reference from which comparison made and had not received treatment whereas, the experimental group received the treatment. The study included the following variables: (a) Independent variable: (i) Blended learning, and (ii) Lecture method (b) Dependent variable: (i) Achievement. The present study has the following hypotheses:

- The Blended Learning Method is effective for Secondary Teacher Education Programme.
- There exist no significant differences between the pre-test means of control and experimental groups.
- The difference between the means of the pre and post tests of the control group is significant.
- There exists significant difference between the means of the pre and post tests of the experimental group.
- The difference between the post- test means of the control and experimental groups is significant.

The study had the following phases: (i) Administration of the achievement test as pre-test both for experimental and control groups. (ii) Application of Blended Learning Strategy for the experimental group (iii) Application of Lecture Method for the control group. (iv). After the application of the experimental and control variables administration of the achievement test as post-test both for experimental and control groups. The study has some delimitations which are as follows; i) Though many subjects are being thought for Secondary Teacher Education Programme (B.Ed), Educational Psychology alone taken for the investigation. ii) Thirty lessons in Educational Psychology were prepared in accordance with the Blended learning Method for the investigation. iii) Only forty students were selected for the study and are randomly assigned to control and experimental groups.

Results and conclusion

In this sub section the results and conclusion are presented.

Table Number - 1

Significance of Difference Between Pre-Test Mean Scores of Control and Experimental Groups.

Group	**M**	**SD**	**N**	**'t'**
Control	17.1	2.625	20	0.45
Experimental	17.45	3.31	20	

The table Number -1 reveals that obtained mean value of control group in pre-test score is 17.1 with 2.625 standard deviation, whereas for experimental group obtained mean value of pre-test score is 17.45 with 3.31 standard deviation. Calculated t value is 0.45 which is not significant at 0.05 level and hence there is no significance of difference between the pre-test mean scores of the control and experimental groups. It infers both groups are homogenous. Table Number - 2 shows 't' value calculated for the comparison of pre and post -tests performance of the control group.

Table Number -2

Significance of Difference Between the Pre-Test Mean Scores and the Post – Test Mean Scores of Control Group

Test	**M**	**SD**	**N**	**'t'**
Pre	17.1	2.625	20	13.54*
Post	26.65	2.28	20	

The table shows that obtained mean value of control group in pre-test score is 17.1 with 2.625 standard deviation and obtained mean value of control group in post-test score is 26.65 with 2.28 standard deviation. There exists significant difference between the pre-test and post-test scores of the control group as the calculated 't' value 13.54 which is significant at 0.05 level. This group has been exposed to Lecture method and was able to register an upward performance. The mean difference between pre and post- tests indicates influence of lecture method. Table Number - 3 shows the significance of difference between the pre-test and post-test mean scores of the experimental group.

Table Number – 3

Significance of Difference between the Pre-Test and Post-Test Mean Scores of Experimental Group

Test	**M**	**SD**	**N**	**'t'**
Pre	17.45	3.31	20	29.62*
Post	39.65	2.28	20	

*Significant at 0.05 level**.**

The table number -3 reveals that obtained mean value of experimental group in pre-test score is 17.45 with 3.31 standard deviation, whereas obtained mean value of post-test score is 39.65 with 2.28 standard deviation. Calculated t value is 29.62 which is significant at 0.05 level and hence there is significance of difference between the pre and post-test mean scores of experimental group.

The following conclusions are drawn from the above table.

1. The experimental group differ in its pre-test and post-test performance (t = 29.62 , significant at 0.05 level).
2. The performance of the experimental group is higher in the post-test when compared with its pre-test scores.
3. This clearly testifies the effectiveness of the Blended learning method**.**

Table Number – 4 shows the significance of difference between post-test mean scores of the control and experimental groups.

Table Number – 4

Significance of Difference between Post – Test Mean Scores of Control and Experimental Groups

Group	M	SD	N	't'
Control	26.65	2.28	20	19.26
Experimental	39.65	2.28	20	

*Significant at 0.05 level.

The table shows that obtained mean value of control group in post-test score is 26.65 with 2.28 standard deviation and obtained mean value of experimental group in post-test score is 39.65 with 2.28 standard deviation. There exists significant difference between the post-test scores of the control and experimental groups as the calculated 't' value 19.26which is significant at 0.05 level.

Conclusions based on the above table is summarized hereunder:

1. There exists significant difference between post-test performance of the Learners in the control and experimental groups. The computed 't' value is greater than the table value and is significant at 0.05 level.
2. The performance of the experimental group in the post-test is higher when compared to the control group.
3. The significance of difference between the control and the experimental groups in their post-test performance clearly shows the supremacy of the Blended Learning method over the Lecture method.

Discussion

This study focuses its attention on the effectiveness of Blended Learning Method at Secondary Teacher Education Programme (B.Ed) level for the learners of distance mode.The overall analysis of the present investigation indicates that the Blended Learning Method is effective at Secondary Teacher Education Programme (B.Ed) level for the learners of distance mode.Hence, the first hypothesis, the Blended Learning Method is effective for Secondary Teacher Education Programme was accepted. Based on the literature available in connection with blended learning and its implication on learner's achievement, it has been found that this method of learning is effective in general (Deliağaoğlu and Yıldırım, (2008); El-Deghaidy and Nouby, (2008) Imbernon et al,(2010). Imbernon et al (2010) found that the virtual and blended learning environments can help develop effective teaching skills. In some studies, effectiveness was evaluated with respect to some independent variables that are achievement, satisfaction, behavior, critical thinking skills, learner support, participation, interaction, affect and retention (Akyüz and Samsa, 2009; Hughes, 2007; Melton et. al., 2009; Woltering et. al., 2009). Whereas in the present investigation the effectiveness is measured in terms of achievement only.

The second hypothesis, there exist no significant differences between the pre-test means of control and experimental groups was tested and found correct. As per the table number -1 there was no statistically significance of difference found, and hence it was concluded that these groups were homogenous. For the pre and post-tests control group design both the groups should be homogenous, and hence the homogeneity is established. The results of the table number- 2 clearly endorse the third hypothesis, the difference between the means of the pre and post-tests of the control group is significant. As per the table number 2 there exists significant difference between the pre-test and post-test scores of the control group as the calculated 't' value 13.54 is significant at 0.05 level. This group has been exposed to Lecture method, and wasable to register an upward performance.Results showing increasing mean score of achievement test in post -test performance can be attributed to Lecture method, which enhanced students' focus on the lessons. This finding was supported by a study carried out by Deliağaoğlu and Yıldırım (2008) to compare effectiveness of blended learning with traditional learning. Their study showed that both groups had similar achievement levels and knowledge retention. Furthermore, high level of positive attitudes and course satisfaction were reported by both groups. In conclusion, their study indicated no significant difference but satisfaction from blended environment was higher.

The fourth hypothesis namely, there exists significant difference between the means of the pre and post-tests of the experimental group was also tested and found correct. The experimental group differ in its pre-test and post-test performance (t = 29.62, Significant at 0.05 level). The performance of the experimental group was higher in the post-test when completed with its pre-test scores. But some studies have different findings, for instance Melton et. al. (2009) studied effectiveness of blended learning undergraduate health course on student satisfaction and student achievement. It is found that there was not any significant difference on students' pre-test and post-test grades (Melton et. al., 2009). Akyuz and Samsa (2009) were interested in the effectiveness of blended learning on critical thinking skills of students. Their results indicated that there are no significant differences between pre-test and post-test scores. This result indicated that effectiveness of blended learning on critical thinking skills has not been observed in this study (Akyuz and Samsa, 2009).

Keller (2008) pointed out that the use of the internet and other visual elements is intended to encourage learners participation in the various initiatives that are involved in a classroom setting. Enabling a visual connection to the concepts highlighted in the classroom setting promotes the quality of responses that are generated by learners (Watson,2008).The degree of visual presentation, augmented with sounds, enhanced students' attention to the details of the materials being examined(Lai,2000). Influence of image in the promotion of learning was found by this author. Sivakumar and Arulsamy (2004) emphasised that interactive multimedia plays an important role in teaching and learning Hence, the Blended learning method, which incorporates application of internet and other visual elements including interactive multimedia can be attributed towards higher post -test performance of learners in experimental group.

The performance of the experimental group in the post-test is higher when compared into the control group. The variation between the control and experimental groups in their post-test performance clearly shows the supremacy of the Blended Learning Method over the Lecture method. This clearly testified the effectiveness of the Blended learning method. Hence, the fifth hypothesis namely, 'the difference between the post- test means of the control and experimental groups is significant' was also accepted. This finding is supported by El-Deghaidy and Nouby (2008) who applied blended e-learning cooperative approach (BeLCA) on pre-service teachers' achievement, attitudes and cooperativeness. Their findings indicated that achievement of students in blended group is significantly higher than students in control group. They found that blended learning as effective with respect to attitudes and achievement.

Recommendations

In the light of the findings of the study the following recommendations are proposed;

i) Teaching process through distance mode need not only rely on the traditional pattern of lecturing in relation to Teacher Education Programme. Instead other methods such as Blended Learning need to be introduced which optimally integrate both the face to face and on - line/ e - learning. Teachers in Distance Education should leam to change with the times and methods or strategies offered for distance learning. These changes ultimately improve the teaching and learning process in Distance Education. The ability to adapt to these changes may be one of the most important attributes for teachers in distance mode.
ii) The educational planners may take the advantages of Blended Learning Method while planning the teaching and learning process for distance learners. The advent of the internet and the growth of web have now transformed distance teaching from a passive mode to an interactive mode. One of the most important characteristics of blended learning is rich learning experience based pedagogical development which incorporates influential learning experiences. Richer learning experiences of the students result from using both on-line and face to face learning. In the present investigation the blended learning provided a rich learning experience, which was

a result of meticulous planning. The most important feature of blended learning is that the students are actively involved in learning content and materials individually and collectively through on –line and face to face methods. Hence the educational planner should carefully incorporate these features in distance learning.

iii) The Educational Planners and Policy Makers should take care to provide appropriate technological support, skill training for the successful implementation of Blended Learning method in Distance Learning. The present investigation is carried out in the area, where the limited access to e- resources is one of the challenges because of low bandwidth on the network. This is mainly because the place has large and remote areas. The internet broadband and capacity of downloading in those areas is limited Therefore, the quality of the Internet usually becomes a common issue in applying technology- based learning. Hence, appropriate technological support should be ensured.

iv) Daphine and Sivakumar (2015) emphasised that women can be powerful agents of change and, they recognize that gender equality and women's empowerment and the full realization of human rights for women have a transformative and multiplier effect on sustainable development. One of the Millennium Development Goals (MDG) for ensuring equity and peace across the world is to remove the gap between male and female students in education. If careful attention is not paid and major steps are not taken, the situation will become extremely critical. One of the ways and means to eradicate the gender gap is through Technology integration in curriculum more particularly for rural women. Though the present investigation includes female students, their performance, attitude, interest towards technology integration have not been studied. Hence the gender influence can also be investigated.

v) Every social science research has its own limitations and shortcomings. The present research is no exception as it focused on comparative effectiveness of blended learning with that of traditional Lecture method in distance learning with reference to Teacher Education Programme. However, for the continuation of the present investigation the investigator recommended the following proposals;
    a) The study focused only on achievement in Teacher education programme through distance mode, other variables like Problem solving, analytical skill, attitude, interest, satisfaction, and retention can be studied.
    b) It is indispensable to investigate that whether the teachers and students have the necessary skills essential for Blended Learning.
    c) Relationship between Blended Learning competency and achievement may be explored.

Acknowledgment

This article has been written with the financial support of RUSA-Phase2.0 grant sanctioned vide Letter No.F.24-5112014-U, Policy (TN Multi-Gen), Dept. of Edn, Govt of India, Dt.09.10.2018.

References

Akkoyunlu, B., & Soylu, M.Y. (2008). A study of student's perceptions in a blended learning environment based on different learning styles. *Educational Technology & Society*, 11(1), 183-193.

Akyüz, H.İ., & Samsa, S. (2009). The effects of blended learning environment on the critical thinking skills of students. *Procedia Social and Behavioral Sciences*, 1(1), 1744-1748

Ally,(2002) cited in Anderson, T. (2008). *The theory and practice of online learning.* (2nd ed.). Athabasca University Press.

Arulsamy, S., Sivakumar. P., (2004) Interactive Multimedia in Technology and Learning *University News, Journal of Higher Education,42(30),5-92004.*

Chen, C.C., & Jones, K.T. (2007). Blended learning vs. traditional classroom settings: Assessing effectiveness and student perceptions in an MBA accounting course. *The Journal of Educators Online*, 4(1), 1-15.

Daphine,R., and Sivakumar P. (2015).Eliminate Gender Disparity In Education Through Technology Integration In Curriculum For Empowering Rural Women. *Human Rights International Research Journal*,3(1),2320-6942.

Dede, C. (2009). Introduction: A sea of change in thinking, knowing, learning, and teaching. In G. Salaway, J. B. Caruso, & M. Nelson (Eds.), *The ECAR study of undergraduate students and information technology* (pp. 19-26). Boulder, CO: *Educause Center for Applied Research.*

Deliağaoğlu, Ö., &Yıldırım, Z. (2008). Design and development of a technology enhanced hybrid instruction based on MOLTA model: Its effectiveness in comparison to traditional instruction. *Computers & Education*, 51(1), 474-483.

El-Deghaidy, H., &Nouby, A. (2008). Effectiveness of a blended e-learning cooperative approach in an Egyptian teacher education programme. *Computers & Education*, 51(3), 988-1006.

Garrison., and Vaughn. (2012). Blended Learning in Higher Education: Framework, Principles, and Guidelines, *John Wiley & Sons*, Inc.

Garrison, D.R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education*, 7(2), 95-105.

Graham, C. R. (2006). Blended learning systems: Definition, current trends, and future directions. In C. J. Bonk & C. R. Graham (Eds.), *The handbook of global learning: Global perspectives, local designs.* San Francisco: Pfeiffer.

Hughes, G. (2007). Using blended learning to increase learner support and improve retention. *Teaching in Higher Education*, 12(3), 349-363.

Keller, J.M. (2008). First principles of motivation to learn and e-learning, *Distance Education*, 29(2).

LaiS, (2000). Influence of audio-visual presentations on learning abstract concepts, *International Journal of Instructional Media*, 27(2).

Melton, B., Graf, J., &Chopak-Foss, J. (2009). Achievement and satisfaction in blended learning versus traditional general health course designs. *International Journal for the Scholarship of Teaching and Learning*, 3(1).

Osguthorpe, R.E., Graham, C.R. (2003). Blended learning environments. Definitions and Directions. *The Quarterly Review of Distance Education*, 4(3), 227-233.

Reay, J. (2001). Blended learning—a fusion for the future. *Knowledge Management Review*, 4(3), 6.

Rooney, J. E. (2003). Blending learning opportunities to enhance educational programming and meetings. *Association Management*, 55(5), 26–32.

Salama, H. (2005). Blended learning: Natural Evolution for E-learning, E-learning Forum,2005, http://www.elearning.edu.sa/forum/attachment.php.attachmentid

Sands, P. (2002). Inside outside, upside downside: Strategies for connecting online and face-to-face instruction in hybrid courses. *Teaching with Technology Today*, 8(6).

Singh, H.(2002). Building effective blended learning programs. *Educational Technology*, 43(6), 51-54.

Smyth, S., Houghton, C., Cooney, A., & Casey, D. (2012). Students' experiences of blended learning across a range of postgraduate programmes. *Nurse Education Today*, 32(4), 464-468.

Ward, J., & LaBranche, G. A. (2003). Blended learning: The convergence of e-learning and meetings. *Franchising World*, 35(4), 22–23.

Young, J. R. (2002). Hybrid teaching seeks to end the divide between traditional and online instruction. *Chronicle of Higher Education*, p. A33.

Watson,J.,(2008). Blended Learning: :e Convergence of Online and Face-To-Face Education: Promising Practices in Online Learning, *North American Council for Online Learning, Vienna*, VA, USA, 2008.

Woltering, V., Herrler, A., Spitzer, K., Spreckelsen C. (2009). Blended learning positively affects students' satisfaction and the role of the tutor in the problem-based learning process: Results of a mixed-method evaluation. *Advances in Health Sciences Education*, 14(5), 725-738.

Influenced Drivers of Human Capital of Innovation Creativity in a Distance Education Organization

Anucha Wittayakorn-Puripunpinyoo

School of Agriculture and Cooperatives
Sukhothai Thammathirat Open University, Thailand
puanucha@windowslive.com

Abstract

School of Agriculture and Cooperatives as a distant education organization is one of twelve schools in Sukhothai Thammathirat Open University (STOU) which was established in 1982 under the name of the school of agricultural extension and cooperatives, teaching and learning through distance education. The research objectives were to 1) study the personal characters of human capital in the school of Agriculture and Cooperatives, STOU, and 2) find out the influenced drivers of the human capital of innovation creativity in the School of Agriculture and Cooperatives, STOU. The study population was a total number of 45 persons who work for the school of agriculture and cooperatives, STOU. The sample size was 37 persons working for the school of Agriculture and Cooperatives comprised of 29 persons of academic staff and 8 persons of academic service staff. The primary data collection was collected by a questionnaire while the secondary data was collected from the official documents and website. Descriptive statistics was applied. The inferential statistics was applied to multiple regression. The estimated parameters were applied by Ordinary Least Square (OLS), t-test, F-test and the Coefficient of DeterminationR2. The research results expressed that 1) the majority of employees were female with older than 45 years old. They earned a doctoral degree with an associate professor position. Most of them archived the position of government officers. They held their position over 20 years, and 2) the influenced drivers of the human capital of innovation creativity were the personal commitment to lead organization, the personal admittance to colleague reasons, the person's job learning, the person searching for job successfulness, and the personal skills of problem analysis to job improvement. Since STOU is an open university, it is important that human capital in the School of Agriculture and Cooperatives have to improve themselves for the disruptive technology in the digital society.

Keywords*: Human Capital, Innovation Creativity, Distance Education*

Introduction

Sukhothai Thammathirat Open University (STOU) was officially established by Royal Charter on 5 September 1978 as Thailand's eleventh state university. His Majesty King Bhumibol Adulyadej (King Rama IX) graciously bestowed the university its name in honor of King Prajadhipok (King Rama VII), who once held the title "Prince Sukhothai Thammaracha" prior his accession to the throne (www.stou.ac.th). On 24 October 1978, His Majesty issued royal mandates appointing the first University Council and appointing Professor Dr. Wichit Srisa-an as the first president, effective from January 1978. After approximately two years of preparation, STOU received its first academic class on 1 December 1980. STOU began with three schools of study: Educational Studies, Liberal Arts and Management Science.

From 1979 to 1984, STOU had no home campus of its own, so it had to share space with such agencies as the National Education Commission, Thai Airways, the Faculty of Economics of Chulalongkorn University, and the Ministry of University Affairs. In 1981, Mr. Monkol Kanjanapas donated to the university a 30-rai section of land located in Pakkret district of Nonthaburi province. The university then bought more land, bringing the total to approximately 135 rai. Construction at this site began in 1982, and the university began operating from the new location on 9 December 1984. At its founding, STOU was the first university in Southeast Asia to use the distance learning system. This new system of learning expanded the role of higher education in Thailand by engaging learners who previously had no opportunity to further their education. Since its establishment, STOU has enabled the development of individuals and communities throughout Thailand and beyond.

The School of Agriculture and Cooperatives, performed as a distant education organization is one of twelve schools in Sukhothai Thammathirat Open University which was established in 1982 under the name of the school of agricultural extension and cooperatives. At that time, the school of agriculture and cooperatives had only 2 academic majors---agricultural extension and cooperatives extension. Also, it was founded on the conviction that since agriculture has been a key livelihood for Thai people, wider economic development in Thailand is tied to the development of the country's agricultural potential. The school continues to rely on this philosophy in teaching students subjects such as agricultural production methods, agricultural technology, and the formation and management of agricultural cooperatives. In addition, the school aims to give students an understanding of Thailand's natural resources and resources for conservation through agricultural practices.

Nowadays, the school of agriculture and cooperatives, Sukhothai Thammathirat Open University has the main functions as 1) teaching through the distant educational system, 2) research and 3) social services. There have 45 employees divided into 2 categories---academic staff, and service staff. There are 37 employees in the section of academic staff which comprised of associate professors, assistant professors, and lecturers. There are 8 employees in the academic service staff comprised of the chief of secretary and officers.

Since 1982, the school of agriculture and cooperatives has faced with the global change of society as well as the economy. Education, as a part of world dynamic, also has been changed along with the global movement especially distant education which school of agriculture and cooperatives, Sukhothai Thammathirat Open University faced. Human capital through the school of agriculture and cooperatives ‘employees also faced with global change. Human capital and innovation creativity in an organization are a core competency for distant education as well as the key mechanism of organizational performance. Innovation creativity of human capital is an essential factor that made organizational performance in the disruptive technology era. As one of the academic staff in the school of Agriculture and Cooperatives, the author examined the influenced drivers of innovation creativity in the school of agriculture and cooperatives of Sukhothai Thammathirat Open University as a distant education organization.

Objectives of the Study

1 to study the personal characters of human capital in the school of agriculture and cooperatives, Sukhothai Thammathirat Open University as a distant education organization

2 to find out the influenced drivers of the human capital of innovation creativity in the School of Agriculture and Cooperatives, Sukhothai Thammathirat Open University as a distant education organization.

Definition

Influenced Drivers mean factors that have a positive impact on human capital creativity in the School of Agriculture and Cooperatives, Sukhothai Thammathirat Open University as a distance education organization.

Human capital means persons who work in the School of Agriculture and Cooperatives, Sukhothai Thammathirat Open University composed of 37 persons.

Innovation Creativity means the human capital's capacity or conceiving something original or unusual, the implementation of something new.

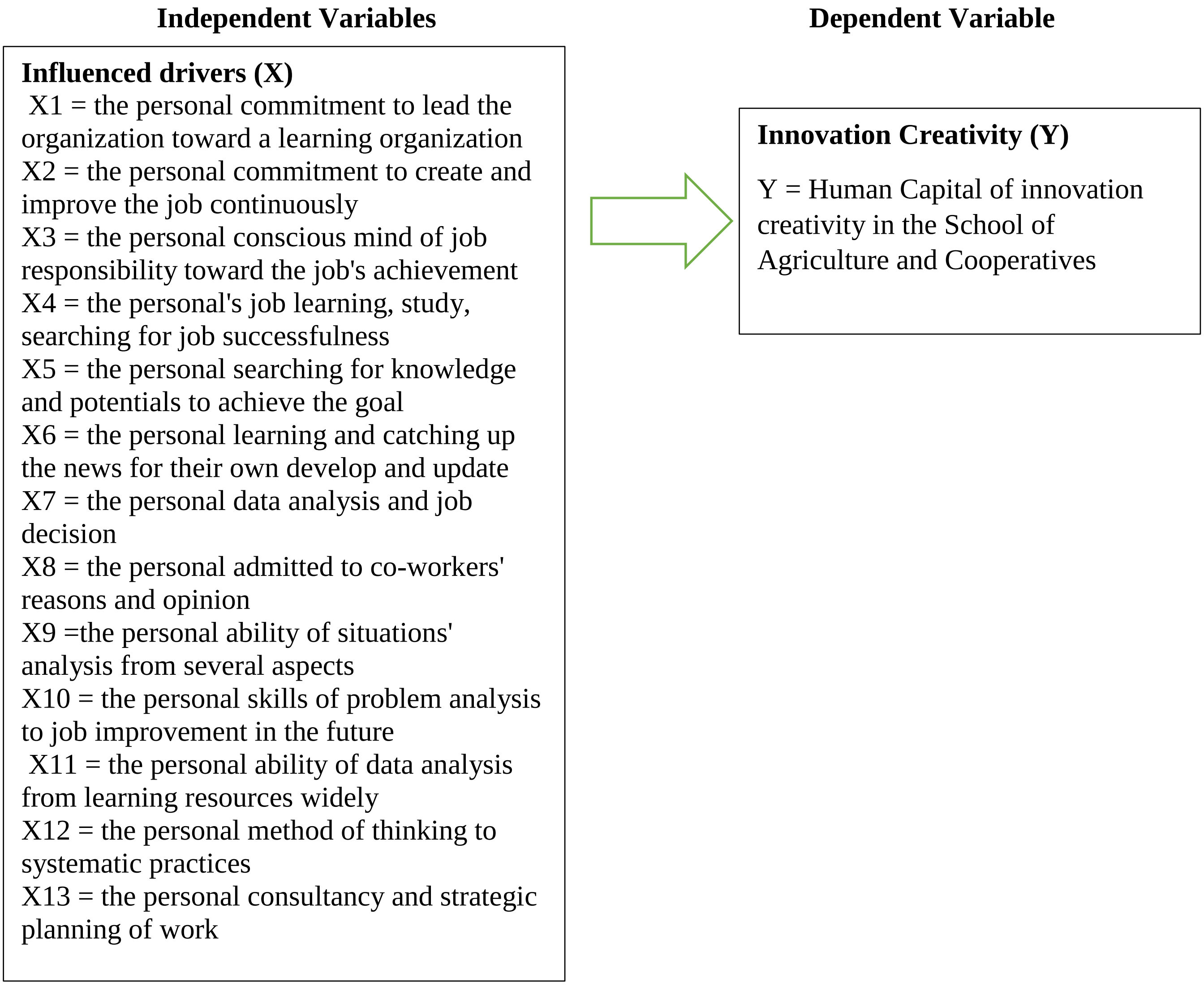
A distant education organization means the School of Agriculture and Cooperatives, Sukhothai Thammathirat Open University.

Scope of the Study

The research focused on human capital in the School of Agriculture and Cooperatives, Sukhothai Thammathirat Open University in the year of 2017.

Conceptual Framework

In this research, researcher examined out the influenced drivers of human capital of innovation creativity in School of Agriculture and Cooperatives, Sukhothai Thammathirat Open University as a distant education organization. The conceptual framework would be expressed as:



Independent Variables **Dependent Variable**

Influenced drivers (X)
X1 = the personal commitment to lead the organization toward a learning organization
X2 = the personal commitment to create and improve the job continuously
X3 = the personal conscious mind of job responsibility toward the job's achievement
X4 = the personal's job learning, study, searching for job successfulness
X5 = the personal searching for knowledge and potentials to achieve the goal
X6 = the personal learning and catching up the news for their own develop and update
X7 = the personal data analysis and job decision
X8 = the personal admitted to co-workers' reasons and opinion
X9 =the personal ability of situations' analysis from several aspects
X10 = the personal skills of problem analysis to job improvement in the future
X11 = the personal ability of data analysis from learning resources widely
X12 = the personal method of thinking to systematic practices
X13 = the personal consultancy and strategic planning of work

Innovation Creativity (Y)

Y = Human Capital of innovation creativity in the School of Agriculture and Cooperatives

Research Methodology

Population: since the school of Agriculture and Cooperatives, Sukhothai Thammathirat is divided into 4 divisions which are 1) agricultural extension, 2) crop production management, 3) animal production management, 4) agribusiness management, 5) forestry and environment management, and 6) cooperatives. The total number of 37 employees who work for the school of agriculture and cooperatives, Sukhothai Thammathirat Open University. There are 29 employees work as academic staff while 8 employees work as academic service staff.

Sample size: The sample size focused on persons who are the full-time workers both academic staff and academic service staff in the school of agriculture and cooperative. The total number of sample size were 37 employees composed of 29 persons from academic staffs while 8 persons from academic service staffs. The total number of sample size is 37 persons. Since 2 academic staff are now on leave for higher education.

Data collection: the primary data collection was applied by the questionnaire while the secondary data was collected from the official documents and website. The questionnaire was verified content validity as the index of item objective congruence (IOC). It turned out of 0.79. The internal consistency was measured by Cronbach's alpha. It turned out of 0.87.

Data analysis: Descriptive statistics was applied as arithmetic mean, standard deviation while the inferential statistics were applied multiple regression. The estimated parameter was applied by Ordinary Least Square (OLS), t-test, F-test as well as the Coefficient of Determination(R^2)

Results

According to the 2-research objectives, I would like to express the research results following the objectives as below:

Part I: the personal characters of human capital in the school of agriculture and cooperatives, Sukhothai Thammathirat Open University which could be expressed as Table 1:

Table 1 Numbers and Percentage of Personal Characters of Human Capital in the School of Agriculture and Cooperatives, Sukhothai Thammathirat Open University

The General Information of Human Capital in School of Agriculture and Cooperatives	Numbers	Percentage
1. Gender		
Male	15	40.54
Female	22	59.46
Total	37	100.00
2. Age		
Less than 25 Years Old	0	0
25-34 Years Old	6	16.22
35-44 Years Old	12	32.43
More than 45 Years Old	19	51.35
Total	37	100.00
The General Information of Human Capital in School of Agriculture and Cooperatives	**Numbers**	**Percentage**
3. Educational Level		
Bachelor Degree	0	0
Master Degree	14	37.84
Doctoral Degree	23	62.16
Post-Doctoral Degree	0	0
Total	37	100.00
4. Position		
Lecturer	9	24.00
Assistant Professor	10	27.00
Associate Professor	18	49.00
Professor	0	0
Total	37	100.00

The General Information of Human Capital in School of Agriculture and Cooperatives	Numbers	Percentage
5. Status		
Government Servant	18	49.00
Officer	19	51.00
Total	37	100.00
6. Duration of Employment		
Less than 2 Years	1	2.70
2-5 Years	5	13.52
6-9 Years	7	18.92
10 – 15 Years	5	13.51
16 – 20 Years	4	10.81
21 – 25 Years	8	21.62
More than 25 Years	7	18.92
Total	37	100.00

Source: Survey

According to table1: the research results expressed that the human capital working in the school of agriculture and cooperative, Sukhothai Thammathirat Open University following learning organization discipline found that:

Gender: human capital working for school of agriculture and cooperatives, Sukhothai Thammathirat Open University, the majority of employee was more than 45 years old with the numbers of 19 persons accounted for 51.35 percent following by the age range from 33-44 years old accounted for 32.43 percent and the age range from 25-34 years old accounted for 16.22 percent.

Age: human capital working for school of agriculture and cooperatives, Sukhothai Thammathirat Open University, the majority of employee was more than 45 years old with the numbers of 19 persons accounted for 51.35 percent following by the age range from 33-44 years old accounted for 32.43 percent and the age range from 25-34 years old accounted for 16.22 percent.

Educational Level: human capital working for the school of agriculture and cooperatives, Sukhothai Thammathirat Open University, majority of employee earned a doctoral degree with the numbers of 23 persons accounted for 62.16 percent following by master degree with the numbers of 14 persons accounted for 37.84 percent.

Position: human capital working for school of agriculture and cooperatives, Sukhothai Thammathirat Open University, the majority of employee earned associate professor position with the numbers of 18 persons accounted for 49.00 percent following by assistant professor position with the numbers of 10 persons accounted for 27.00 percent and lecturer position with the numbers of 9 persons accounted for 24 percent.

Status: human capital working for the school of agriculture and cooperatives, Sukhothai Thammathirat Open University, there were 18 persons who were the government servant accounted for 49.00 percent while 19 persons were officers accounted for 51.00 percent.

Duration of Employee human capital working for school of agriculture and cooperatives, Sukhothai Thammathirat Open University, the majority of employee had a duration more than 20 years with the numbers of 8 persons accounted for 21.62 percent, more than 15 years with the numbers of 4 persons accounted for 10.81 percent, more than 25 years with the numbers of 7 persons accounted for

18.92 percent, more than 10 years with the numbers of 5 persons accounted for 13.51, the duration of 6-9 years with the numbers of 7 persons accounted for 18.92 percent, the duration of 6-9 years with the numbers of 2-5 years with the numbers of 13.51 percent, and less than 2 years with the numbers of 1 person accounted for 2.70 percent.

Table 2: The influenced drivers of the human capital of innovation creativity in the School of Agriculture and Cooperatives, Sukhothai Thammathirat Open University as a distant education organization.

(Y)

			Dependent Variable: Y
Independent Variables	Estimated Parameters	T-Value	P-Value
(Constant)	-30.114	-151.401	0.0001**
X1	1.731	97.061	0.00001**
X2	0.586	19.79	0.00001**
X3	-5.245	-116.436	0.216
X4	6.049	197.504	0.00001**
X5	1.037	70.341	0.00001**
X6	0.647	31.749	0.00001**
X7	-0.33	-36.377	0.168
X8	4.844	134.166	0.00001**
X9	-0.99	-64.563	0.175
X10	3.342	205.8	0.00001**
X11	-1.181	-48.76	0.116
X12	-5.721	-177.694	0.124
X13	2.317	213.307	0.00001**
F = 158.692			
R-Square = .762			

**Statistically significant at the 0.01 level.

Source: Calculation

The statistical results could be expressed as equation (1):

$$\hat{y} = -30.114 + 1.731\ (x_1) + 0.586\ (x_2) -5.245\ (x_3) + 6.049\ (x_4) + 1.037\ (x_5) + 0.647\ (x_6) -0.33\ (x_7) + 4.844\ (x_8) -0.99\ (x_9) + 3.342\ (x_9) -1.181\ (x_{10}) -1.181\ (x_{11}) -5.721\ (x_{12}) + 2.317\ (x_{13}) \text{ -- } (1)$$

$$R^2 = .762$$

According to A.H Studenmund (2014, p 273), the Variance Inflation Factor (VIF) is a means to detect multicollinearities between the independent variables of a model as equation (2):

$$\text{VIF} = \frac{1}{1-R^2} \text{ -- } (2)$$

$$= \left(\frac{1}{1-.762}\right)$$

$$= 4.2016$$

The calculated variance inflation factor (VIF) is equal to 4.2016 which is less than 5. This means that there is no multicollinearity.

According to table 2, there were 8 personal characters defined as the influenced driver of the human capital of innovation creativity which had a positive impact on innovation creativity. There were 8 influenced drivers which comprised of X1, X2, X4, X5, X6, X8, X10, and X13 where X1 was the personal commitment to lead the organization toward learning organization, X2 was the personal commitment to create and improve the job continuously, X4 was the person's job learning, study, searching for job successfulness, X5 was the person searching for knowledge and potentials to achieve the goal, X6 was the personal learning and catching up the news for their own development and update, X8 was the person admitted to co-workers' reasons and opinion, X10 was the personal skills of problem analysis to job improvement, and X13 was the personal consultancy and strategic planning of work.

Conclusion and Discussion

According to the research results, the conclusion would be as follow:

1. The personal characters of human capital in the school of agriculture and cooperatives, Sukhothai Thammathirat Open University, The majority of employees working in the school of agriculture and cooperatives as human capital were female with their own age more than 45 years old. The majority of employees held a doctoral degree with an associate professor position. Most of them earned the position of government officers. Most of them held the duration of the employee for more than 20 years.
2. There were 8 personal characters of human capital in the school of agriculture and cooperatives, Sukhothai Thammathirat Open University, defined as the influenced drivers of human capital of innovation creativity that had positive impact on innovation creativity which was 1) the personal commitment to lead the organization toward learning organization, 2) the personal commitment to create and improve the job continuously, 3) the person's job learning, study, searching for job successfulness, 4) the personal searching for knowledge and potentials to achieve the goal, 5) the personal learning and catching up the news for their own develop and update, 6) the personal admitted to co-workers' reasons and opinion, 7) the personal skills of problem analysis to job improvement, and 8) the personal consultancy and strategic planning of work.

Discussion

According to the research results, the innovation creativity of human capital in the school of Agriculture and Cooperatives, Sukhothai Thammathirat (STOU) is very important. Over 40 years, STOU, as the distance education institute, operates themselves with distant education such as e-learning. Human capital should have their innovation creativity to deal with distance education and disruptive technology. Innovation in distance education as the process of making a change to something new. It applies to radical or incremental changes to the educational products for distance educational products, processes, and services. People who are searching for distance education are a lookout for challenges and opportunities that helps them explore and connect to the outside world for better opportunities. In addition, they challenge educators to be innovative and to make learning environments interesting, exciting and rewarding for them.

Acknowledgement

I would like to thank Sukhothai Thammathirat Open University for the research grant. Thanks to my father and mother for their endless love which is the greatest love of all. Thanks to my professors both in Thailand and the USA, my beloved family "***Wittayakorn***" and "***Puripunpinyoo***".

References

Adelzadeh, P., et. al. (2014).Relationship between Learning and Organizational Performance. International Journal of Innovative Research in Science, Engineering and Technology, 3 (4), 34-42.

Ellinger, A.D., Ellinger, A.E., Yang, B., & Howton, (2002). The relationship between the learning organization concept and firms' financial performance: An empirical assessment. Human Resource Development Quarterly, 13(1), 23-29.

Elolton, E.F., & Kaiser, S.M. (2000). Relationship between learning organization strategies and performance driver outcomes. Proceedings of the Academy of Human Resource Development, USA.

Knowledge Management Tools. (2018). Learning Organization. (2018, April 10) Retrieved from https://www.knowledge-management-tools.net/leadership-and-the-learning-organization.php

Kontoghiorghes, C. et. al. (2005). Examining the Relationship between Learning Organization Dimensions and Change Adaptation, Innovation as well as Organizational Performance. Human Resource Development Quarterly, 2 (16), 185-212.

Marquart, M. J. (2002). *Building the Learning Organization: Mastering 5 Elements for Corporate Learning,* 2 edition. London: Nicholas Brealey, UK.

Mojab,, & Gorman, R. (2003). Women and consciousness in the "learning organization": Emancipation or exploitation? Adult Education Quarterly, 53(4), 228-241.

Moralesa, V.J., Montesa, F.L., and Joverb, V. A., (2007). Influence of personal mastery on organizational performance through organizational learning and innovation in large firms and SMEs. Journal of Technovation, 27 (2007), 547–568.

Rajapathirana, J., and Hui, Y. (2018). Relationship between innovation capability, innovation type, and firm performance. Journal of Innovation & Knowledge, 3 (2018), 44–55.

School of Agriculture and Cooperatives, Sukhothai Thammatitrat Open University. (2018). (2018, April 10) Information of School of Agriculture and Cooperatives Retrieved from http://agri.stou.ac.th/page/home.aspx

Senge, P. M. (2006). *The Fifth Discipline: The Art and Practice of Learning Organization.* New York City: Doubleday.

Senge, PM. (1996). Leading learning organizations. Training & Development, 50(12), 36-37.

Studenmund, A. H. (2014). *Using Econometrics: A Practical Guide 6th edition*. Edinburgh: Pearson Education.

Watkins, K.E., & Marsick, V.J. (1993). *Sculpting the learning organization: Lessons in the art and science of systemic change*. San Francisco: Jossey-Bass.

Westbrook, T. (2002). Our two-tiered learning organizations: Investigating the knowledge divide in work-related learning. Proceedings of the Academy of Human Resource Development, USA.

Yuhfen Diana H. and Connie K. Haley Dr. The Relationship Development and Learning Organization Dimensions. Journal of Library and Information Science, 12 (5), 146-165.

List of Dependent Variables

Dependent Variable	Variable Name
X1	the personal searching for knowledge and potentials to achieve the goal
X2	the personal commitment to create and improve the job continuously
X3	the personal conscious mind of job responsibility toward the job's achievement
X4	the personal's job learning, study, searching for job successfulness
X5	the personal searching for knowledge and potentials to achieve the goal
X6	the personal learning and catching up the news for their own develop and update
X7	the personal data analysis and job decision
X8	the personal admitted to co-workers' reasons and opinion
X9	the personal ability of situations' analysis from several aspects
X10	the personal skills of problem analysis to job improvement in the future
X11	the personal ability of data analysis from learning resources widely
X12	the personal method of thinking to systematic practices
X13	The personal consultancy and strategic planning of work

Ubiquitous Education: Platform and Environment for Future Education

Dr. Wachira Brahmawong

Office of Educational Technology, Sukhothai Thammathirat University, Wachira1984@gmail.com

Abstract

This article presents the concept of ubiquitous education (UE) as the new platform and environment of future education integrating traditional classroom learning environment and distance and open learning making knowledge and experience to be available everywhere and at any times via the use of electronic and non-electronic media to enable students to learn by themselves anywhere and at any time. Ubiquitous education comprise 7 components: (1) Systems Approach; (2) Relevant Behavior; (3) Delivery Systems; (4) Communication; (5) Environment Management; (6) Teaching and Learning Management; and (7) Assessment. Ubiquitous-Based Instructional System (UBIS) comprises eight steps: Step 1 Study the curriculum; Step 2 Conduct Content analysis; Step 3 Do Teaching planning; Step 4 Prepare knowledge sources and experiences sources; Step 5 Provide Instructional media; Step 6 Arrange instructional environment; Step 7 Conduct instructional management; and Step 8 Conduct assessment.

Keywords*: Ubiquitous learning, Self-directed learning, Future education, Platform and future education*

Introduction

The Internet continues to make learning more comfortable, more effective, and more borderless. Educational institutions at all levels should make learning materials even more available. The shift from Teacher Directed Learning (TDL) to Self-Directed Learning (SDL) does not just represent an evolution of tools used, but also of capabilities realized. Ubiquitous education (UE) is eliminating and reducing many barriers to education, including distance and cost.

The term “ubiquitous computing” was first created by Mark Weiser during his years as a researcher at Xerox PARC over thirty years ago. Though the philosophical underpinnings and physical signs of this concept continue to be debated and refined, the world is at the tipping point for the total cultural embracing of ubiquitous computing as a vital technology for making data, information, and knowledge accessible everywhere at all times. Most of students walk around with smartphones in their pockets, and the Internet is increasingly found in all of the devices we interact with, from our classroom to our home to our bedroom appliances, and so on.

Ubiquitous education refers to the departing of knowledge and experience via innovative approach blending Experiences-Based Approach (EBA) and social media via the Internet connectivity. Providing learning to take place anywhere at any time is achievable through Ubiquitous Learning (UL). UL can provide an opportunity for learning, with computers, tablets, smartphones, and portable devices. The increased availability of the Internet means any situation can become a purposeful learning experience; not only can students learn at any time, but also they can choose many types of media that they want to use for their learning. The right course delivered at the right time and place can make better outcomes than traditional classroom-based learning. Ubiquitous educational means learners will never miss the opportunity to study any courses.

Thailand is experiencing problems in educational management. How will the teaching and learning system be aligned with the rapidly changing social context? To be most effective and efficient, the answer is Thailand must develop the instructional system that is easily accessible to learners so that they are able to study anywhere at any time. Thus, Ubiquitous Learning System may be the best answer for Thai education for people from all walks of life when the 5G and global WIFI networks are available in any geographical environments.

This article presents concept of Ubiquitous education System to make available new platforms and environment with introduction of some delivery methods for education institutions to begin building Ubiquitous Learning Systems of their own.

Definition

“Ubiquitous” is a Latin word meaning “anytime and anywhere” or “exist instantaneously”. The term is currently used to describe computing environment in which users can communicate information using any device on any network (portable). The knowledge and information are transmitted in the optimal methods. The context of users’ requirements are autonomously recognized while the users are not aware of the complexity of the system. In ubiquitous environment, information service is highly mobile and embedded that information users become dynamic and computer devices become diversified.

Mark Weiser wrote an article entitled "The Computer for the 21st Century" by recognizing the importance of Ubiquitous Computing referring to the integration of the computer devices and the physical world, such as Desktop PC, Notebooks, PDA, mobile phones to enable the users to retrieve the information and knowledge through the Internet.Ubiquitous computing refers to the computer system as part of the everyday environment in which users can interact with the system at any time. With the application of ubiquitous computing in learning, ubiquitous learning occurs all around the students regardless of whether they are aware of it or not (Weiser, 1991, 1998; Weiser, Gold, & Brown, 1999)

Brahmawong defines "Ubiquitous" as spreading around from the origin, near or far depending on the strength of the signal that is sent wirelessly or along the line, such as television signals, telephone signals, radio signals, and Internet signals. (Brahmawong, 2009).

Ubiquitous (Existing everywhere) means spreading and making appearances everywhere so that data and information, sound or images can be listened to, watched and perceived at any time. It is also known as Pakawantapab spreading knowledge and information via ubiquitous technology called Pakawantology or Ubiquitology (Chaiyong Brahmawong, 2009)

Several educators have developed learning systems that apply ubiquitous computing technology. For instance, Jones and Jo (2004) presented the advantages of distributing learning materials to students via mobile devices using ubiquitous education systems. Ogata and Yano (2004) developed a collaborative learning support system with a ubiquitous environment called CLUE, which allows individuals to share knowledge and to learn collaboratively.

Although many educators define the meaning of ubiquitous education according to technology progress, this article shall define the term Ubiquitous education (UE) as an educational system in the future that uses integrating classroom learning and distance learning via electronic to enable for students to learn by themselves anywhere and at any time.

Characteristics

Several empirical studies have developed learning system that apply ubiquitous computing technology. Five primary characteristics of ubiquitous education are (1) Permanency: learning processes are recorded and stored daily; (2) Accessibility: learners can access information immediately from any location; (3) Immediacy: learners can immediately access useful information, regardless of time; (4) Interactivity: learners can interact with experts, teachers, or peers through synchronous or asynchronous communication; and (5) Convenient situation of instructional activities: learning can be integrated into daily life (Chen 2003; Ogata, Akamatsu, & Yano, 2004; Li 2005).

A Business Model (BM) defines four characteristics of ubiquitous education: (1) inexpensive; (2) robust networked processing devices; (3) distributed at all scales throughout everyday life; and (4) generally turned to distinctly common-place ends (Choon 2005)

Daniel K. Schneider explains six main characteristics of ubiquitous education as follows: (1) Permanency: Learners never lose their work unless it is purposefully deleted. In addition, all the learning processes are recorded continuously every day; (2) Accessibility: Learners have access to their documents, data, or videos from anywhere. That information is provided based on their requests. Therefore, the learning involved is self-directed; (3) Immediacy: Wherever learners are, they can get any information immediately. Thus, learners can solve problems quickly. Otherwise, the learners can record the questions and look for the answer later; (4) Interactivity: Learners can interact with experts, teachers, or peers in the form of synchronies or asynchronous communication. Hence, the experts are more reachable and the knowledge becomes more available; (5) Situating of instructional activities: The learning could be embedded in our daily life. The problems encountered as well as the knowledge required are all presented in their natural and authentic forms. This helps learners notice the features of problem situations that make particular actions relevant. (6) Adaptability: Learners can get the right information at the right place with the right way. Moreover, ubiquitous education can be empowered by Computer Supported Collaborative Learning (CSCL) environments that focus on the socio-cognitive process of social knowledge construction and sharing. There are also trends to incorporate other than computers, PDAs or smart phones.

Inclusion, the characteristics of Ubiquitous Learning may be summarized as follows:

(1) Low costs for learners: UL can reduced learners' costs of learning because they can study anytime and anywhere; thus, saving transportation cost or activities costs as do the students at school, colleges and universities.

(2) Flexibility: Learners no need to travel to school or academic. No time fixing for learning so learners can study while they are having jobs or doing other activities.

(3) Durability: Teacher and Learners can reserved data and information technology from learning system for a long time.

(4) Communication and Interactivity: Learners can interact with experts, teachers, or peers in the form of synchronous or asynchronous communication. Learners are able to reach knowledge more easily from the experts than traditional learning.

(5) Integrated Learning into daily life: Ubiquitous educational must implanted the knowledge and information in the learners' daily life. The problems encountered as well as the knowledge required are all presented in learners activities. This helps the learners gain learning experience about the features of problem situations that make particular actions relevant.

(6) Anywhere and anytime: Learners can get the right information and knowledge Just In Time (JIT) at the right place with the right way.

(7) Future Learning system: Ubiquitous education could integrate classroom with distance learning. In the future there will be no more classroom or distance learning but it will be borderless learning system .No limitation about distributing education, no traditional barriers, no transportation problems, everyone can study anywhere and anytime.

Ubiquitous Learning System

Ubiquitous Learning System comprises components and logical steps:

1. UL Systems Components: Ubiquitous education comprises seven components based on systems approach: (1) Inputs, (2) Relevant behavior; (3) Instructional methods; (4) Medias; (5) Environment; (6) Instructional management; and (7) Assessment

2. Inputs: Inputs needed for UL comprise concepts and ideology (philosophy, mission, visions, and commitments needed for implementation of the proposed UL system), and the 6Ms (man, machines, materials, methods, money and management).

3. Relevant behavior: Relevant behavioral performances of UL users comprise three components: (1) Teacher's role; (2) Parent's role; and (3) Student's role

Student's role plays the most important role in relevant behavior. Students in UL learns without borders. Borderless students are learners in the integrated learning system both classroom and distance education. They can study any situation, anytime and anywhere.

4. Instructional methods: Instructional methods in Ubiquitous education is the approaches used to deliver or provide knowledge and information for the learners anytime and anywhere.

Ubiquitous Learning's methods comprise four components: (1) Family Directed Learning (FDL); (2) Teacher Directed Learning (TDL); (3) Peer Directed Learning (PDL); and (4) Self-Directed Learning (SDL)

The most important methods in Ubiquitous Learning is Self-Directed Learning (SDL). The learner could be learn full syllabus by himself/herself or join Teacher Directed learning in class, or learning with his/her friend by using Peer Directed Learning, or learn from their parents. Every Instructional methods must be flexible scheduling so students can learn what they want and when they want.

5. UL Media

Media are the heart of UL. Media consist of (1) Electronic media such as The Internet, Intranet/Extranet, smartphone, tablets, computer assistance instructional (CAI), CD/DVD; (2) Mass media such as books, textbooks, films, radio programs and television programs; (3) Indigenous media such as Local wisdom, temples, Indigenous expert, Education park, etc.; and (4) social media such as Facebook, YouTube, WeChat, Line, and Whatsapp.

6. Environment

Ubiquitous Learning environment comprises four component: (1) Physical environment is the source of knowledge and facilities for learners. Students could be learn at any time at home, in the classroom or workplace; (2) Psychological environment is atmosphere, feeling, emotion of learners. Teachers and parents must focus on morality and ethical; (3) Social environment provides basic interaction between students and teacher or students and students; and (4) social media environment focusing on the interaction online between teacher and learners via the Internet network.

7. Instructional management: UL instructional management comprise two component: (1) Learning management system (LMS) and (2) Knowledge Management (KM).

8. Assessment; Assessment of UL comprise (1) Evaluation of Instructional system comprises evaluation of Context, Input, Process, Output and Outcome, Feedback and Impact; and (2) Evaluation of Learning achievement comprise Pre-test, Learning activities and Post-test.

Steps of Ubiquitous Learning System

Ubiquitous education comprises eight steps: Step 1 Study the curriculum; Step 2 Conduct Content analysis; Step 3 Do Teaching planning; Step 4 Prepare knowledge sources and experiences sources; Step 5 Provide instructional media; Step 6 Arrange learning environment; Step 7 Conduct instructional management; and Step 8 Conduct assessment.

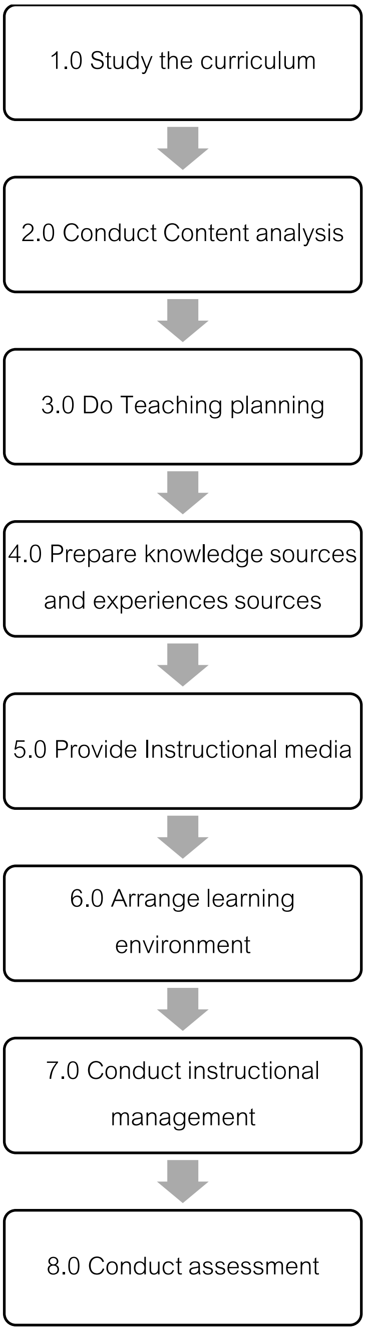

1.0 Study the curriculum
2.0 Conduct Content analysis
3.0 Do Teaching planning
4.0 Prepare knowledge sources and experiences sources
5.0 Provide Instructional media
6.0 Arrange learning environment
7.0 Conduct instructional management
8.0 Conduct assessment

Fig. 1 Flowchart showing Ubiquitous Learning System

Conclusion

Ubiquitous education can provide an opportunity for learning with computers, tablets, smartphone etc.; the increased of the Internet means any situation can become a purposeful learning experience; not only can students learn at any time, but they can choose many types of media that they want to use for their learning. The right course delivered at the right time and place can make better outcomes than traditional learning. Ubiquitous educational means learners will never miss the opportunity from the course.The characteristics of Ubiquitous Learning may be summarized as follows: (1) Low costs for learners; (2) Flexibility; (3) Durability; (4) Communication and Interactivity; (5) Integrated Learning into daily life; (6) Anywhere and anytime; (7) Future Learning system.

Reference

Ashish, Rangnekar. (2015) Ubiquitous education: What Every Education Organization Needs To Know. https://elearningindustry.com/ubiquitous-learning-every-education-organization-needs-know. access on July 4, 2019.

Brahmawong, Chaiyong. (2009) e-Learning Principles and Methodologies. Bangkok: College of Internet Distance Education, Assumption University.

Chen. (2003). A mobile learning system for scaffolding bird watching learning. Journal of Computer Assisted Learning, 19(3), 347 – 359.

Choon Seong Leem, Nam Joo Jeon, Jong Hwa Choi, and Hyoun Gyu Shin. (2005) “A Business Model (BM) Development Methodology in Ubiquitous Computing Environments”, ICCSA 2005, LNCS 3483, pp. 86 – 95.

http://edutechwiki.unige.ch/en/Ubiquitous_learning. access on July 4, 2019

Li, L., Zheng, Y., Ogata, H., & Yano, Y. (2005). A conceptual framework of computer-supported ubiquitous education environment. Journal of Advanced Technology for Learning, 2(4), 187 – 197.

Jones, V., & Jo, J. H. (2004). Ubiquitous education environment: An adaptive teaching system using ubiquitous technology. In R. Atkinson, C. McBeath, D. Jonas-Dwyer, & R. Phillips (Eds.), Proceedings of the 21st ASCILITE (Australasian Society for Computers in Learning in Tertiary Education) Conference, 468 – 474. Perth, Australia: ASCILITE.

M. Weiser.(1993) The Computer for the 21st Century. http://nano.xerox.com/hypertext/weiser/SciAmDraft3.html. access on March 20, 2009.

Ogata, H., & Yano, Y. (2004). CLUE: Computer supported ubiquitous education environment for language learning. Transactions of the Information Processing Society of Japan, 45(10), 2354 – 2363.

Weiser, M., Gold, R., & Brown, J. S. (1999). The origins of ubiquitous computing research at PARC in the late 1980s. IBM Systems Journal, 38(4), 693 – 696.

Strengthening Civil Rights and Civic Duties in the Democracy on Election for People with Autism

Sita Yiemkuntitavorn[1], **Benjawan Vivattanawongsiri**[2]
Jarungjit Rujiviphat[3], **Ornchulee Wisitthadakul**[4]

[1]King Prajadhipok's Institute, sita_1383@hotmail.com
[2] King Prajadhipok's Institute, benjawan.v@gmail.com
[3] King Prajadhipok's Institute, j.rujiviphat@gmail.com
[4] King Prajadhipok's Institute, ornchulee.wi@gmail.com

Abstract

Voting is a fundamental right for all Thai citizen but there are some groups of Thai people who are not taught about their rights and duties to vote in an election, we also have no idea whether they can go through the election processes. One of the groups is people with Autism. The objectives of this study were 1) to use the"ASDemocracy" toolkit to encourage people with autism to realize their Civil Rights and Civic Duties on election as a Thai citizen, 2) to apply the"ASDemocracy" toolkit to help them go through the simulation of election processes without making any mistakes or breaking the law. The samples of this study were 10 people with autism in a school in Bangkok and its vicinity who were 15-35 years old. The tools used in this study were pretest, posttest on election and "ASDemocracy" toolkit which were flash cards, motion graphic and music video along with a teachers' handbook.

The results of the study were 1) people with autism realized their own Civil Rights and Civic Duties on election, the learning achievement was higher than before using the toolkit, 2) people with autism could be able to go through the simulation of election processes without breaking the law after using the toolkit. Besides the results according to the objectives of the study, the researchers noticeably found that people with autism were very satisfied learning with the media tools the researchers made. They could still remember the content and music along with the gestures quite well even though the teaching processes has ended. Therefore, teachers can be able to use this toolkit to encourage people with autism to realize their Civil Rights and Civic Duties on election and use this toolkit to help them go through the simulation of election processes. Moreover, teachers can apply toolkits to teach about the election in schools for people with autism and elementary education.

Keywords: *People with Autism, Toolkit, Civil Rights and Civic Duties in the Democracy, Election*

Introduction

People with autism spectrum disorder (ASD) are a citizen; so they have the same civil rights and responsibilities as other adults to be part of the community, participate in education, work and to access the services they need, they also have the civic duties to do as other citizens. The question to concern is that “do they realize their civic rights and civic duties they have?

One of the rights and duties they have is “to vote” in a general election. In other words, all citizens at the age of 18 obtain the legal right to vote, including those on the autism spectrum. Interestingly, there are 370,000 people with ASD in Thailand but we have no idea whether they all go to the poll. People with ASD who never voted by themselves before might not aware of their rights and duties and had no idea how to go through the election processes without breaking the laws. There were a lot of information in terms of working out why they need to vote, who to vote for where they need to be at what time. Parents and teachers have to educate them; however, people with ASD may have different educational needs that need to be met to allow them to develop their full potential. They need to have someone to repeat and explain so that they can process it; nevertheless, as Saggers (2016) stated that students with autism often present unique challenges to schools, and teachers can often find it difficult to meet their needs effectively.

Talking about ‘Learning styles’, normally people can learn through seeing (visually), hearing (auditorily), and/or through touching or manipulating an object (kinesthetically or ‘hands-on’ learning) (Stephen, 2019). People with ASD often have difficulties in recognizing, understanding and expressing their emotions; nevertheless, people with ASD are often strong in visual learning as Grandin (1995), an autistic author, stated that people with ASD are a visual learner. “They think in pictures. Words are like a second language.” In other words, they are able to process visual information better than information that is purely in auditory form. Sarah Omar, Azman Bidin, (2015) stated that autistic learner are visual they can decode colored before language. Autism children are more looking to the colored than the shapes, colors such as yellow, blue and green or color overlay are used in cognitive theory of multimedia which has been proven to be effective in improving reading and attention accuracy. Therefore, to teach people with ASD, we have to apply the form of pictures, icons (black and white cartoon like images), photographs or gestures to enhance the understanding of spoken word/s communicating an idea. The use of visual systems can strengthen the child’s understanding of the communication in his or her environment (Peeters 1997; Quill 1997).

However, there were some research stated that it was unnecessary that people with ASD were visual learners. Stephen, (2019) stated that if one is not sure which learning style a child has or is teaching to a group with different learning styles, then the best way to teach could be to use all three styles together. For example, when teaching the concept ‘jello,’ one can display a package and bowl of jello (visual); describe its features such as its color, texture, and use (auditory); and then let the person touch and taste it (kinesthetic).

Hence, in this study the researchers used the visual strategies as the main approach to teach students with ASD to realize their civil rights and civic duties, learn the basic knowledge of a general election and make them go to the election poll by themselves. However, the researchers also used auditory learning and kinesthetic learning approach along with visual learning approach to develop the media in the study. The researchers developed three learning tools which were flashcards (visual) on civil rights and civic duties, motion graphic (visual + auditory) on basic knowledge of a general election and a music video (visual + auditory + kinesthetic) on the election processes. At the end the researchers used the simulation on election processes (kinesthetic) to practice and test them.

Objectives of the study

1) To use the“ASDemocracy” toolkit to encourage people with autism to realize their Civil Rights and Civic Duties on election as a Thai citizen.

2) To apply the“ASDemocracy” toolkit to help them go through the simulation of election processes without making any mistakes or breaking the law.

Research Method

Research design

This study was a mixed methods research. An experimental design with a one factor pre-test

and post-test control group was used.

Participants of the research

The sample for the efficiency testing consisted of 10 people with autism in a school in Bangkok and its vicinity, obtained by purposive sampling. They were 15-35 years old and have a medical certification on Autistic disability. They must be able to communicate and would like to participate in activities.

Research Procedure

1. The researchers studied text and research;

    1.1 The researchers on ASD then talked to the ASD experts. Next the researchers talked to people with ASD who were the participants in the study.

    1.2 The researchers studied the text on civic right and duties along with a general election information.

2. The researchers developed the “ASDemocracy” toolkits which consisted of a teacher handbook and 3 learning tools; flashcards, motion graphic and music video. The researchers developed pretest and posttest as parallel tests.

3. The researchers discussed with the experts about the toolkits and the teacher handbook. Then the researcher fix the handbook, the toolkit and parallel tests.

4. The researcher used the research tool with people with ASD who were not the participants in the study.

5. The researchers used the research tools with the participants of the study.

    5.1 The participants took the pretest.

    5.2 The participants were taught with Module 1: flashcards on Civil Rights and Civic Duties for 1 weeks.

    5.3 The participants were taught with Module 2: motion graphic on the basic knowledge of an election. It includes a dictionary of voting terms, what to expect at the polling place, and questions that many on the spectrum may ask.

    5.4 The participants were taught with Module 3: music video on the election processes.

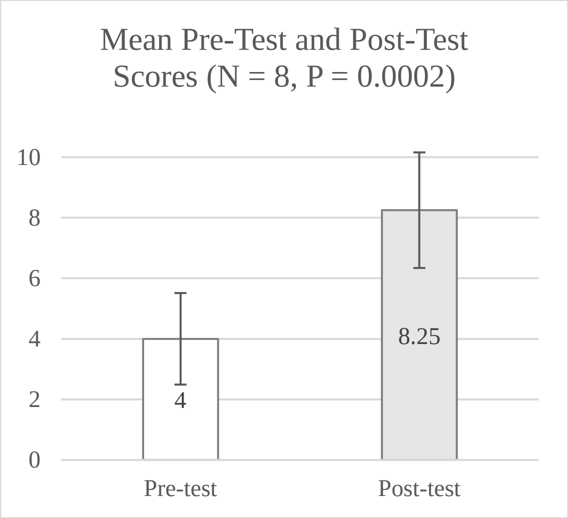
6. The researcher used election simulation processes to test people with ASD.

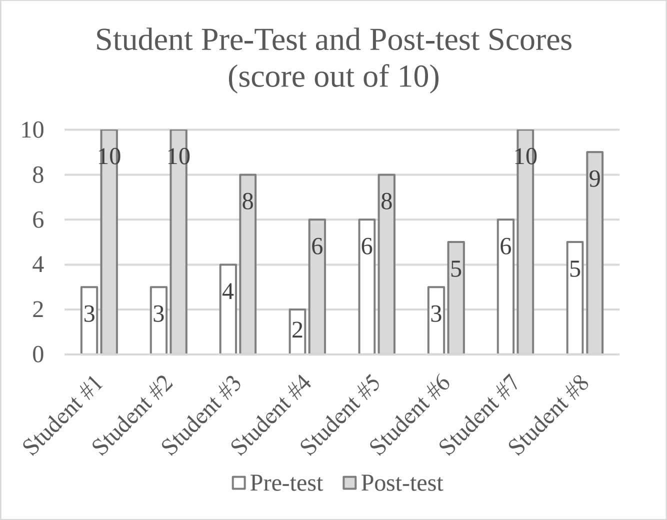
7. The participants took the posttest.

8. The researchers collected and analyzed all data.

Findings and discussion

1. After using the ASDemocracy toolkit, the learning achievement of people with ASD was significantly higher than the pretest. The pretest average score was 4 and the posttest was 8.25. The researchers also interviewed the participants about Civil Rights and Civic Duties on election as a Thai citizen. They all could be able to answer all questions. They could explain the fundamental of an election and tell the researchers about how important of an election. People with Autism who were 18 and above insisted to go the upcoming election.





Since Hodgdon (1999) concluded that students on the autistic spectrum don’t understand their world very well, ‘they tend to be visual learners living in a very auditory world.’ The use of visual strategies can help rectify the situation and make better sense of the world around them.

Although people with ASD are better to learn with their eyes, but it doesn’t mean that we have to teach them by using only visual strategies approach, it also needs to be borne in mind that people with ASD might not have one preferred learning style. Besides visual strategies as the main approach to develop media in this study, the researchers apply three learning styles; visual, auditory and kinesthetic in the study as well; so people with ASD can learn through seeing (visually), hearing (auditorily), and/or through touching or manipulating an object (kinesthetically or ‘hands-on’ learning), as an example of Stephen (2019) she stated in her article that, looking at a picture book or reading a textbook involves learning through vision; listening to a lecture live or on tape involves learning through hearing; and pressing buttons to determine how to operate a VCR involves learning kinesthetically.

Therefore, after using the toolkit for a while people with Autism learned the importance of an election and learned about Civil Rights and Civic Duties on election as a Thai citizen. From the observation of their teachers and the researchers, people with Autism had lots of fun learning with the toolkits, they came to class every day without hesitation and paid attention to all activities.

2. After using the toolkits, the participants could be able to explain the election processes very well, they could also be able to tell if their teachers and the researchers did some errors going through the election processes simulation. Later they could be able to go through the election simulation processes without breaking the laws. This is because the researcher used simulation along with the

toolkits which were music video or the video modeling to be the model for those people. As many practitioners are recognizing the value in using video modeling and structured. Teaching as a means to develop both life and social skills (Franzone & Collet-Klingenberg, 2008).

Conclusion

Being in a minority group doesn't make them be forgotten. Encouraging those on the autism spectrum to vote is one of our duties as a Thai citizen. Without their vote, who will represent the autism community and advocate for their rights and needs in the future? For us, teaching individuals to vote was important and worthwhile and that instructional materials could be prepared for them to learn. If people with Autism spectrum Disorder feel prepared to vote, their time to have a say is now or never.

Limitation of the study

As Zander (2004) concluded that the level of seriousness in autistic children varies from one individual to another in terms of intelligence and learning ability; therefore the study period of each Autism people might be different. Moreover to teach who to vote for is the next step for parents and teachers to explain continually to make them have a critical thinking.

Acknowledgements

This study was a part of ASDemocrazy project of Certificate Courses on Youth Leader Training of King Prajadhipok's Institute's students. There were 12 people doing the project which were:
Sita Yiekuntitavorn, Benjawan Vivattanawongsiri, Jarungjit Rujiviphat, Ornchulee Wisitthadakul, Tossapol Monaraks, Kittinee Jaggabatara, Ratsarin Ratsirajirakul, Pundit Rattanasirisub, Sila Tantrakul, Tanaprach Kongpan, Juckawan Suksupolsiri and Suthatip Boonyakiat. We also would like to thank the advisor, Dr. Thawinwadee Burikul, and experts assisting with the ASD data and supporting this project.

References

Franzone, E., & Collet-Klingenberg, L. (2008). Overview of video modeling. The National Professional Development Center on Autism Spectrum Disorders, Waisman Center, University of Wisconsin.

Grandin, T. (1995). Thinking in Pictures : And other reports from my life with autism. New York, Doubleday.

Hodgdon, L. (1999). Solving Behavior Problems in Autism: Improving communication with visual strategies. Troy, Michigan, Quirk Roberts Publishing.

Peeters, T. (1997). Autism: From theoretical understanding to educational intervention. San Diego, CA, Singular Pub. Group.

Quill, K. (1997). "Instructional considerations for young children with autism: the rationale for visually cued instruction." Journal of Autism and Developmental Disorders 27(6): 697-714.

Saggers, B. (2016). Supporting students with autism in the classroom: what teachers need to know. The Conversation, p. 1. Retrieved on 4 June,1019 from https://theconversation.com/supporting-students-with-autism-in-the-classroom-what-teachers-need-to-know-64814.

Sarah Omar, Azman Bidin. (2015). Universal Journal of Educational Research 3(12): 989-996, 2015. DOI: 10.13189/ujer.2015.031206

Stephen, M. Edelson. (2019). Learning Styles & Autism. Retrived from https://www.autism.org/learning-styles-autism/ on 4 June , 2019.

The Research and Development of a Non-Human Proctored Online Assessment Platform

Jean A. Saludadez[1], Kunchon Jeotee[2], Reinald Adrian dL. Pugoy[1], Mari Anjeli L. Crisanto[1], Joshua David C. Sta. Rita[1], Manuel Antonio D. Saludadez[1], Roque V. Almodiel, Jr.[1], Dona Lyn M. Piamonte[1]

[1]University of the Philippines Open University
[2]Sukhothai Thammathirat Open University

Abstract

This paper intends to share the research and development process of a non-human proctored online assessment platform (OAP) at the University of the Philippines Open University (UPOU). A non-human proctored OAP is intended to address the limitations of the traditional paper and pencil examination with human proctors and the issue of credibility of assessment in online learning. This type of OAP enables individual monitoring of students; verifiability of performance in extended period of time; and efficient management of resources on the side of the institution and at the same time, it offers convenience and accessibility in terms of time and location and real-time feedback on the side of students. The research and development of the UPOU's OAP had gone through five phases: Phase 1: Requirements Gathering & Analysis where user needs were determined and analyzed and developed into functional requirements; Phase 2: Design where the proposed features were described in detail, with a focus on how to deliver the required functionalities; Phase 3: Development where the requirements and design were converted into a complete information system, software, or application; Phase 4: Testing where various tests (such as usability testing and integration testing) were conducted to determine whether the developed platform adheres to the functional requirements; and Phase 5: End-Users Training where potential end-users were trained in using the platform just before deployment. The paper will end by sharing innovations in the process and the product which may be useful to universities and institutions which are considering to implement their own assessment platform.

Keywords: *Online Assessment Platform; Research and Development; Online Learning*

Rationale and Purpose of the Online Assessment Platform

Assessment is an integral and vital part of the teaching and learning process. Assessment of learning outcome is a valuation process where the learner's value is judged by the educator. Assessment, as we know, is a process of collecting information and making a judgement fairly based on the learning objectives.

Credible online assessment is important especially for programs seeking to offer quality education via Open and Distance e-Learning (ODeL). While the principles involved in assessment of learning such as credibility, validity and reliability, remain the same, there are unique challenges in assessment for ODeL. In addition to the given assessment features, the nature of and potential massive reach of online learning has to be taken into consideration, thus requiring appropriate administration processes. It is recognized that while technology provides us with a huge advantage in reaching our intended learners, it also has vulnerability associated with establishing the identity of the person undergoing assessment.

Quality online assessment may be achieved through the following (Booth et al., 2003):

1. Using the online environment to find more possibilities for learning and assessment;
2. Creating methods to make sure that online assessments yield evidence relevant to the skills being assessed are valid and authentic; and
3. Ensuring authentic learner performance by controlling cheating.

To add to these, the credibility of trust in online courses is found to be affected by the credibility of online assessments (Richardson and North, 2013). Trust in an online course can grow if the trust in an online assessment can be the same as that in the classroom assessment environment. Richardson and North (2013) compared and contrasted proctored exams against identical non-proctored exams and have found out that proctoring seems to be an effective approach to strengthen trust in online courses and distance education.

Research and Development Process of the Online Assessment Platform

The Research and Development went through five phases:

1. *Requirements gathering & analysis*;
2. *Design*;
3. *Development*;
4. *Testing*; and
5. *End-Users Training*.

1. Requirements Gathering and Analysis Phase

An iterative approach of software implementation was used to develop the Online Assessment Platform. In an iterative model, the final software is developed incrementally (Stephens, 2015). Here, the main task is predefined through requirements gathering and analysis but details may advance with time.

Initial requirements gathering and analysis was conducted through interviews with twenty-five individuals from the UP Open University (UPOU) in the Philippines and Sukhothai

Thammathirat Open University (STOU) in Thailand. These individuals were asked the following questions:

- Do you know online assessment or online examination?
- What do you think should be the features of an online platform?
- What are the risks/problem to be watched out for?

Common themes were identified from their responses. These formed the basis of the initial system design and architecture of the platform.

Using this initial design, ten months of software development took place. Major programming was done by two junior programmers using Python and the Django web framework. The lead programmers made sure that the software development process was on track and online meetings with the junior programmers who were based in Los Baños and Cebu City were conducted on a regular basis. Refinements through team meetings with the project team leads was also done, coming up with the Online Assessment Platform's initial release.

The walkthrough of this initial release was presented at a seminar on online assessment to faculty members of UPOU, lecturers from the STOU, and members of the Office of Student Affairs Examination Personnel. Feedback was obtained from the audience so that these can be integrated to a new release developed. The audience asked questions and gave comments, all of which were digitally recorded by the project staff. Suggestions were drawn from those questions and comments.

2. Design and Development Phases

As in the practice of the iterative method, the team decided which of those suggestions could be taken into account for the refined new release. It should be noted that the iterative model is repetitive which allows new versions of the software to be created for every cycle.

The finished system has four main user roles: the system administrator; examinee; Faculty In-Charge (FIC); and Checker. Table 1 shows the functions and definitions of each role.

Table 1. Users of the Online Assessment Platform.

System Administrator	The person with the highest privileges; manages the whole system and all user accounts.
Examinee	The student enrolled in a program who will use the platform to take an exam.
Faculty In-Charge (FIC)	Encodes exams into the system.
Checker	Verifies and checks exams.

These roles come together in a unified system integrating three different components:

- A Web Information System for encoding done by the FIC;
- Stand-alone/client program for the examinee to take an exam securely with a non-human proctor; and
- A Web Information System for verifying/checking the exams done by the checker.

The Web Information System utilizes a simple website as its interface. All user roles, except for the examinee, can log in by using any browser. Once they are logged in, the FIC can encode exams into the system which they can then assign to students enrolled in a specific program, while the Checker can view and assess the student submissions.

A client program developed in Python is provided to the students for them to install in their own personal computers. This program enables the students to access the system and take their exams. Following are the key features of the latest iteration of this program:

- **Privacy/Security Consent**
  Before the student takes the exam, he/she will be asked whether he/she agrees that the whole exam will be recorded, in light of the recently passed Data Privacy Act.

- **Examinee Authentication**
  After consenting, the student will be asked to: take a photo of himself/herself; take a photo of his/her ID; and take a recording of his/her room 360 degrees. These files shall be stored in a cloud server (Google Drive) which can be viewed later for verification purposes.

- **Unmanned Proctoring: Video Recording**
  The exam has no human proctor. The system itself serves as the proctor by recording the whole exam session of the student, which can be viewed later.

- **Security: Encryption**
  The recordings are encrypted by using the algorithms of Digital Image Processing. The purpose of encryption is to make the meaningful images meaningless.

- **Student's Exam Proper: Lockdown**
  The system locks the computer so that the student only has access to the exam. In other words, the system does not allow the student from accessing any other apps on his/her computer. The system also disables related features such as pasting text into the exam input fields.

- **Student's Exam Proper: Exam can be taken even if Internet is intermittent**
  Internet connection is required only: (a) at the beginning of the exam to get questions/item from the server, and; (b) at the end to upload exam answers and recordings. The system tries to adjust in case of intermittent Internet connection. The best case is a stable Internet connection all throughout so that the recordings can be uploaded even during the exam proper.

- **Student's Exam Proper: Support**
  An interface for the student to contact the administrator or FIC is provided inside the

program. This is mainly to address technical issues or concerns that the student may have regarding the use or performance of the program.

3. Testing and End-users Training

Various tests were conducted to determine whether the developed platform adheres to the functional requirements. The end-users training participated by the staff of the examination services and the information and communication technology development, and the faculty of the university were conducted to:

a. Orient the faculty and staff who will be using the online assessment platform;
b. Enable the users to practice the use of the platform; and
c. Test the usability of the platform.

As resource material and integral part of the platform, Online Assessment Training manuals on how to create an exam and manuals for students were also included in the testing. Based on the comments during the comprehensive testing and training, minor revisions are being carried out before the full implementation of the online assessment platform.

Innovations in the Research and Development Process

The research and development process of the UPOU non-human proctored Online Assessment Platform spanning a period of three years has yielded several innovations that may be useful to universities and institutions which are considering to implement their own assessment platform:

- Enabling non-human proctored online examinations
    - Existing alternatives do not address the issue of a credible online assessment platform thoroughly. Others lack features that deals with the issue of authentication and security, while exam monitoring done through human proctors with the use of webcams and video calls limits flexibility on both sides and requires a huge amount of resource/manpower for the institution.

    - By designing in the platform a credible measure of verifying the authenticity of the student's answers, institutions who use it can then have confidence to allow students to take their exams in any place that they are comfortable with, without compromising credibility. They can choose to do it in a coffee shop, in a park, or in the comfort of their homes. Students each have different learning strategies and styles.

- Incorporating Data Privacy measures
    - There are (little or) no examination platforms that incorporate a consent/agreement form at the beginning of an online exam. If the student refuses, he/she will not be able to take the exam.

- Leveraging Google's powerful server farms for the storage of the examination video recordings[University's Google Drive account]
    - By using Google Drive, the platform bypasses the need for the institution to provide and maintain their own powerful servers to handle the huge network requirements of uploading and downloading video files for the recording. It also solves the issue of storage space required for videos as Google provides virtually unlimited storage capabilities.

- Flexibility in taking the exam
    - By being aware of and addressing the issue of intermittent connection, the design of the system is then able to cater to students in areas with limited connectivity. They would only need to download the exam at the start and can then proceed offline until the end where they would need to upload their answers and video recording. This is useful for an assessment platform geared towards distance education as there is great diversity in students, especially with their geographical circumstance.
    - The vision for the system also includes cross-platform support so that students are not limited to computers or laptops, but also the more prominent mobile devices such as phones and tablets.

- Laying the groundwork of a system which can improve or transform the online mode of teaching and learning by introducing pedagogical elements such as learning objectives/outcomes, and new (non-traditional) assessment approaches or test items (audio-based questions, drawing on the screen, etc.)

References

Booth, R., Clayton, B., Hartcher, R., Hungar, S., Hyde, P., & Wilson, P. (2003). *The Development of Quality Online Assessment in Vocational Education and Training. Volume 1 [and] Volume 2*. National Centre for Vocational Education Research, 252 Kensington Road, Leabrook, South Australia 5068, Australia.

Richardson, R., & North, M. (2013). Strengthening the trust in online courses: A common sense approach. *Journal of Computing Sciences in Colleges*, *28*(5), 266-272.

Saludadez, J. A., Jeotee, K., Alfonso, G. J., & Lumanta, M. F., (2018). Towards an Assessment System for Open and Distance e-Learning: The Case of the ASEAN Studies Graduate Program. In M.F. Lumanta & L.C. Carascal (Eds.), *Assessment Praxis in Open and Distance e-Learning: Thoughts and Practices in UPOU* (pp.45-52).

Stephens, R. (2015). *Beginning Software Engineering.* Indianapolis, Indiana: John Wiley & Sons, Inc.

SUB-THEME 4

LIFELONG SKILLS DEVELOPMENT FOR A DIGITAL SOCIETY

Study of the Potential of Community Learning Resources and the Learning Needs and Opinions of People toward the Development of the 21st Century Smart Community Learning Resources to Enhance Lifelong Learning Characteristics of People

Thanathnuth Chatpakkarattana

Office of Educational Technology, Sukhothai Thammathirat Open University
Chaengwattana Road, Nonthaburi, Thailand,
thanathnuth.cha@stou.ac.th, thanathnuth.cha@g.stou.ac.th

Abstract

The purposes of this research have two objectives. The first is the survey and analysis of the potential of community learning resources in Sam Khok Municipality, Pathum Thani Province. Key informants (15 people) were selected by criterion-based selection and interviewed. It was found that there are four types of community learning resources that can be developed as media and digital learning resources: persons, places, learning materials, and cultural activities. The second is the study of the community learning needs and opinions about the development of the 21st century smart community learning resources to enhance lifelong learning characteristics of people. The sample group of 362 people was selected by cluster sampling. Questionnaires were used to collect data. It was found that: (1) Participants had the behavior of using the internet via smart phone devices the most. The internet was used for communication, entertainment, and professional development the most. Most popular social media included Facebook, Line, and YouTube, respectively. (2) Participants had basic skills to use ICT at a moderate level (Mean = 3.18, SD = 0.90) and had the needs to use ICT effectively at a high level (Mean = 3.56, SD = 0.82). (3) Participants had the needs and goals to use community learning resources at a moderate level (Mean = 3.42, SD = 0.74). The required knowledge was culture activities and persons. (4) Participants had opinions on the development of the model of the 21st century smart community learning resources at a high level (Mean = 3.85, SD = 0.57), thinking that cooperation network was the most important thing in developing the model.

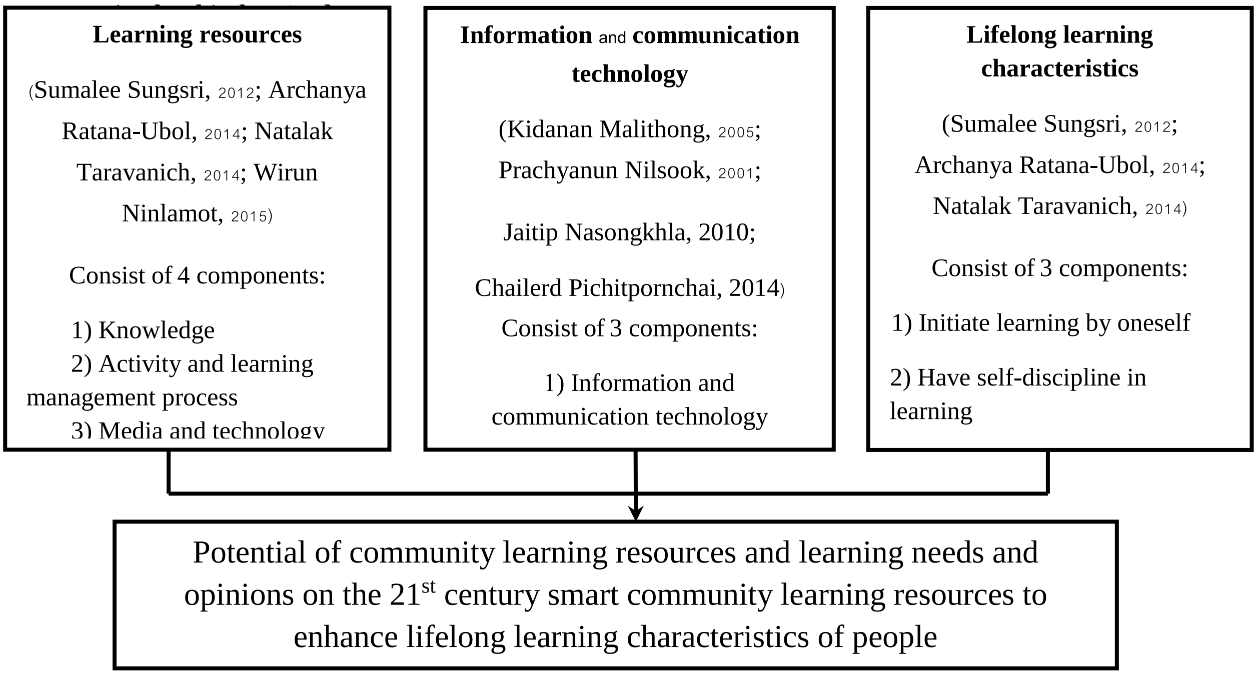
Keywords: *Distance education, Self-directed learning, Adult learning theory, Lifelong learning*

Rationale and objectives of the study

The challenge of Thailand to escape the middle income trap and reduce inequality has led to the establishment of Thailand Digital Economy and Society Development Plan 2016. One of the key strategies to achieve the vision to transform towards Digital Thailand is the Third strategy: Create a knowledge-driven digital society. One of the plans to drive the strategy is to create media, media library, and digital learning resources that people can access easily for lifelong learning. To develop digital community learning resources, it is necessary to study the potential of existing community learning resources to collect and convert knowledge into digital form for further use. Also, it is necessary to conduct the study on the learning needs and opinions of people to design a digital information platform that people can access easily and conveniently.

Therefore, this research aims to explore and analyze the potential of community learning resources and the second is to explain the learning needs and opinions on the 21st century smart community learning resources to enhance lifelong learning characteristics of people. The study of the potential of community learning resources and the learning needs and opinions on the 21st century smart community learning resources is a basic step leading to the opportunity for people to access and utilize digital technology equally. People can access digital media and community learning resources, then apply the knowledge to enhance and develop skills, including 1) learning and innovation skills, 2) ICT skills, and 3) life and work skills (Sumalee Sungsri, 2012; Natalak Taravanich, 2014). Also, knowledge from digital learning community resources can be carried on and extended with the goal of developing people in the community to have knowledge and understanding in their own community which can lead to professional development to live together in society, improve the quality of life, and create the sustainability of the community.

Theoretical framework



Learning resources

(Sumalee Sungsri, 2012; Archanya Ratana-Ubol, 2014; Natalak Taravanich, 2014; Wirun Ninlamot, 2015)

Consist of 4 components:

1) Knowledge
2) Activity and learning management process
3) Media and technology

Information and communication technology

(Kidanan Malithong, 2005; Prachyanun Nilsook, 2001;

Jaitip Nasongkhla, 2010;

Chailerd Pichitpornchai, 2014)

Consist of 3 components:

1) Information and communication technology

Lifelong learning characteristics

(Sumalee Sungsri, 2012; Archanya Ratana-Ubol, 2014; Natalak Taravanich, 2014)

Consist of 3 components:

1) Initiate learning by oneself

2) Have self-discipline in learning

Potential of community learning resources and learning needs and opinions on the 21st century smart community learning resources to enhance lifelong learning characteristics of people

Learning resources refer to resources, both natural and man-made, that provide knowledge and learning experience to people in the community. Resources include people in the community, life activities, religious activities, traditions, and information resources to create lifelong education of people in the community (Sumalee Sungsri, 2012; Natalak Taravanich, 2014; Wirun Ninlamot, 2015).

Information and Communication Technology is a tool that facilitates learning anywhere and anytime for lifelong learning from both physical and virtual learning sources. It can be divided into 3 parts: Part 1: Information and Communication Technology, Part 2: Communication and interaction, and Part 3: Learning technology (Kidanan Malithong, 2005; Prachyanun Nilsook, 2001; Chailerd Pichitpornchai, 2014; Jaitip Nasongkhla, 2010).

Lifelong learning characteristics means characteristics that reflect in a person who can learn continuously throughout life amidst the changing world. These characteristics are 1) initiate learning by themselves by setting clear objectives and goals; know how to seek knowledge by themselves; and continuously search for knowledge, 2) have self-discipline in learning; can control themselves by being able to handle situations that occur in order to achieve the goals set, 3) develop themselves continuously; have the desire to learn; be enthusiastic to learn to improve the quality of life and transfer knowledge to others; and have confidence in lifelong learning (Sumalee Sungsri, 2012; Archanya Ratana-Ubol, 2014; Natalak Taravanich, 2014).

Methods

The study methods of the potential of community learning resources and the learning needs and opinions on the 21st century smart community learning resources to enhance lifelong learning characteristics of people were divided into 2 procedure as follows.

Study the potential of community learning resources.

This phase of research is a field visit to explore and interview about community learning resources to gather and collect knowledge in the 21st century smart community learning resources. It consists of 4 steps: 1) planning a survey of community learning resources, 2) conducting the survey of community learning resources, 3) analyzing the survey of community learning resources, and 4) presenting the survey results of community learning resources in Sam Khok Municipality, Pathum Thani Province. Criterion-based selection method was used to select 15 key informant for the interview on community learning resources. The research tools were a survey and structured interview form on community learning resources to study the potential of learning resources.

Study the learning needs and opinions of people toward the development of the 21st century smart learning community to enhance lifelong learning characteristics of people.

People were interviewed on issues related to (1) basic information and internet usage behavior, (2) ICT abilities and needs, (3) needs and goals of using community learning resources, (4) opinions on the development of the model of the 21st century smart community learning resources to enhance lifelong learning characteristics of people. A research tool was a questionnaire on the learning needs and opinions of people. Participants were 362 people who lives in Sam Khok Municipality, Pathum Thani Province, selected by using the complete table of Taro Yamane (Yamane, 1973) with an acceptable margin of error at Clustered sampling method was used by dividing participants according to the residential areas in 8 communities of Sam Khok Municipality.

Results and conclusions

The results of the study on the potential of community learning resources and the learning needs and opinions on the 21st century smart community learning resources to enhance lifelong learning characteristics of people can be divided into 2 parts.

The study results of the potential of community learning resources.

The results of learning community resource survey found that the study area (Sam Khok Municipality, Pathum Thani Province) had 4 types of community learning resources: persons, places, learning materials, and activities. These resources can be collected and developed as knowledge in smart learning community resources to enhance lifelong learning of people which can respond to formal, non-formal and informal education. The overall opinions of the key informants found that community learning resources of Sam Khok Municipality, Pathum Thani Province had the potential and readiness to develop to be smart community learning resources at a high level. The study of key informants' opinions about the 21st century community learning resource model to enhance lifelong learning characteristics of people found that 1) Knowledge that should be reserved in the smart community learning resources for people in the community to learn consisted of knowledge in architecture, handicraft, culture, tradition and folk play, local history, Buddhism, health therapy, and the way of life of the Mon community. 2) Guidelines for the development of the 21st century smart community learning resources to be in line with the needs of people in the community can be divided into 5 areas: 2.1) Community relations, 2.2) Promoting people to know and understand the benefits, 2.3) Using media and technology to facilitate access to learning resources, 2.4) Organizing activities to promote and create learning atmosphere, 2.5) Creating networks and cooperation. 3) Important components for the development of the 21st century smart community learning resources included the knowledge that people need, the use of media and technology that attracts attention and responds to everyday life, challenging learning activities, and a central agency to coordinate and create better understanding with the public. 4) Methods to promote and encourage people in the community to use the 21st century smart community learning resources included public relations through community media, community meetings, and the use of new media. 5) Factors affecting the success of the development of the 21st century community learning resources included creating a shared vision, fulfilling the real needs of people, giving opportunity for the community to participate, developing gradually, and having an example of successful persons from using smart community learning resources to develop themselves.

The study results of the learning needs and opinions of people toward the development of the 21st century smart learning community resources to enhance lifelong learning characteristics of people. The results can be divided into 4 sub-sections as follows.

The first, the study results of the basic information and internet usage behavior found that most community members had education lower than bachelor's degree level, monthly income less than 10,000 baht, and freelance job. Most participants (93.92 percent) can use the internet. The experience of using the internet was between 1-3 years. Most participants used the internet via smart phones for 1-3 hours per day and used the internet at home. The purposes were to communicate and watch news and entertainment programs. Most participants used Facebook and Line application. Problems encountered were the delay in downloading data and too high internet service cost.

The second, the study results of the basic skills to use ICT found that most members of the community had skills to use ICT at a moderate level (Mean = 3.18, SD = 0.90). The level of the needs to use ICT was at a high level (Mean = 3.56, SD = 0.82). Considering the Priority Needs Index which is the difference of the needs and abilities of the participants found that the overall PNIModified was 0.12. The highest 3 PNIModified were using computers, smartphones, and tablets to find and access information (Question 1), accounted for 0.16, followed by searching for accurate, up-to-date and reliable information (Question 2), and learning via websites or internet network (Question 4), accounted for 0.15 equally. The level of abilities and needs in using ICT were summarized based on question items and overall questions and compared with the Priority Needs Index as shown in Figure 1.1 and 1.2 respectively.

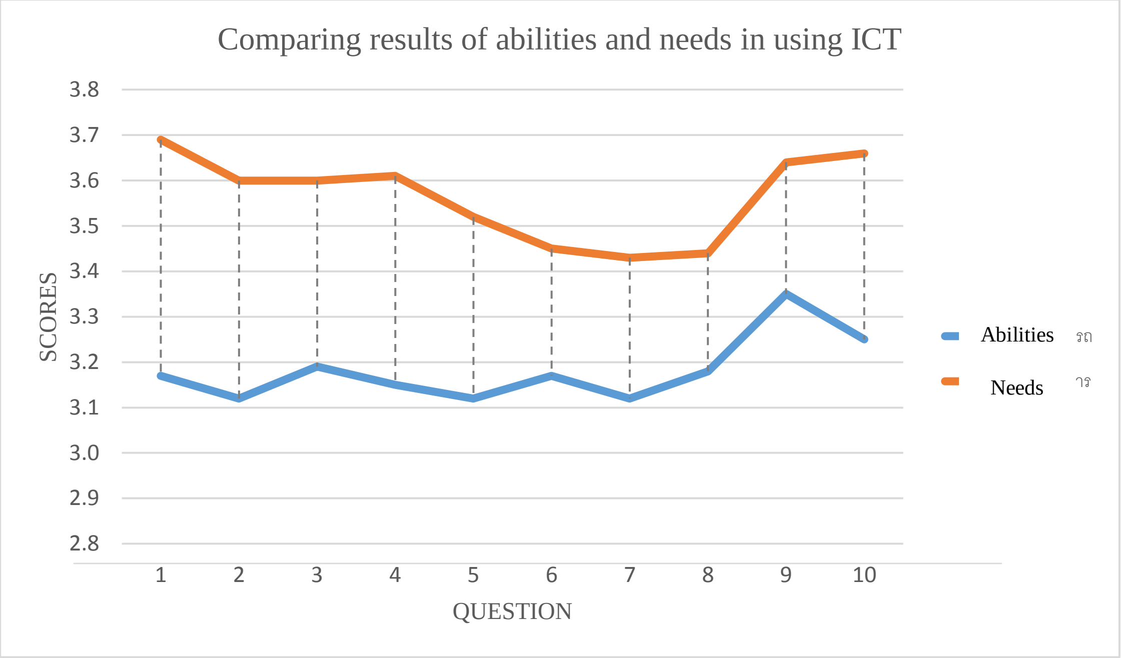


Figure 1.1 Comparing results of abilities and needs in using

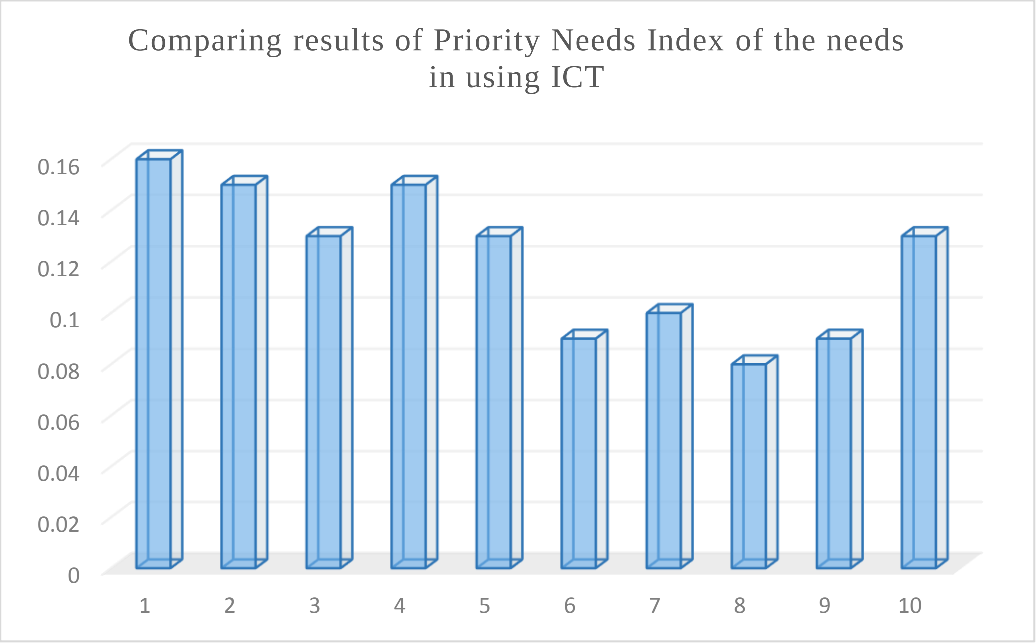


Figure 1.2 Comparing results of Priority Needs Index of the needs in using ICT

The third, the study results of the level of needs and goals in using community learning resources were at a moderate level (Mean = 3.42, SD = 0.74). The top 3 learning needs from community learning resources of Sam Khok Municipality, Pathum Thani Province were the water-drowned tradition, Buddhist teachings on morality and ethics leading to good behavior and practice, and the tradition of giving alms around the temple main hall. Participants had a learning goal to gain knowledge and understanding the most, followed by learning for profession, living together, improving the quality of life, and sustainable development, respectively. Learning resources that participants wanted to be stored in digital format to be accessed and used in self-development and community development were divided into 4 types: persons, places, learning materials, and activities.

The last, the study results of the level of people opinions towards the development of the model of smart community learning resources were at a high level (Mean = 3.85, SD = 0.57). Items with the top 3 mean scores were cooperation network, content and knowledge, and media and technology respectively. It can be summarized as shown in Figure 1.3.

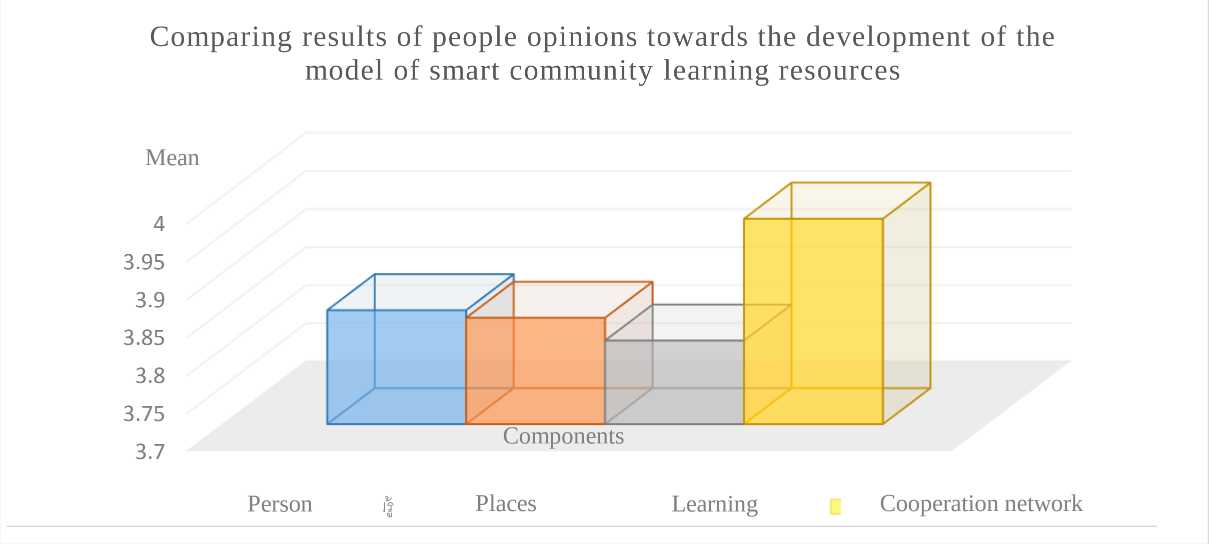


Figure 1.3 Comparing results of people opinions towards the development of the model of smart community learning resources

The overall level of people opinions towards the development of the smart community learning resources model regarding the network of cooperation was at a high level. Items with the top 3 mean scores were there should be a coordinator to coordinate and create better understanding with people in the community, skills in ICT should be promoted for people in the community, and advice should be given to achieve cooperative work, respectively.

Discussion

The study results of the potential of community learning resources in Sam Khok Municipality found that members in the community have the needs to collect knowledge from persons, places, learning materials, and activities to develop the 21st century community learning resources. The four learning resources are in accordance with the classification of learning resources of the Office of the Education Council (2006), Sumalee Sungsri (2003), and Viroj Nilamoj (2015). It was mentioned that learning resources as persons were those who have been recognized by people in the community as being village scholars and religious leaders. Learning resources as places were places that have been recognized as a community center for religious ceremonies, culture and arts conservation, and tourist attractions. Learning materials are media that create knowledge, understanding, experience, and knowledge transferring from people who are knowledgeable and respectable, for example, documents, books, etc. Learning resources as activities were the ways of life of people in the community and local traditions that have been accumulated for a long time and may be influenced by religion.

The research results found that the internet usage behavior of members in the community used the internet via smart phone devices the most, followed by personal computers, and portable computers respectively. This is consistent with the Thailand Internet User Profile 2016 that the device used to access the internet the most was smart phone devices, followed by personal computers, and portable computers, respectively. The top purpose of the internet usage was to communicate, followed by to watch news and entertainment, and to search for information. This is in accordance with the Thailand Internet User Profile 2017 that activities of internet users in Thailand were to communicate in social media, followed by to search for information, to send and receive e-mails, and to watch television and listen to music, respectively. As for the social media, it was found that most community members used Facebook, followed by Line and YouTube, respectively. This is consistent with the results of the Thailand Internet User Profile 2017 that the top 3 social media/online communities that internet users used were YouTube, Facebook and Line, respectively. The study of the needs and opinions of people towards the development of the model of smart community learning resources found that it should be emphasized on cooperation network the most, i.e. the coordinator must be a person who creates a good understanding for people in the community, followed by the promotion of ICT skills for people in the community, and providing advice and promotion in order to create a cooperative work. This is in accordance with Archanya Ratana-Ubol, (2014) stating that the development of community resources was a task that required a network. Therefore, it is necessary to allow every network to participate in comments, planning, and implementing resources.

References

Electronic Transactions Development Agency (ETDA). *Thailand Internet User Profile 2016*. Retrived November 28, 2016, from https://www.etda.or.th/publishing-detail/thailand-internet-user-profile-2016-th.html

Electronic Transactions Development Agency (ETDA). *Thailand Internet User Profile 2017*. Retrived December 8, 2017, from https://www.etda.or.th/publishing-detail/thailand-internet-user-profile-2017.html

Malithong, K. (2005). *Technology and Communication for Education.* Bangkok: Arun Printing.

Ministry of Digital Economy and Society. *DIGITAL THAILAND, 2016*. Retrived June 24, 2017, from https://issuu.com/digitalthailand2016/docs/20160510_final_de_plan_complete.

Na - Songkhla, J. (2010). *Design of Web-based Instruction in E-Learning system*. Bangkok: Faculty of Education, Chulalongkorn University.

Nilsook, P. (2002). *Information Technology in Education*. Bangkok: Textbook Production Center, King Mongkul's University of Technology North Bangkok.

Ninmoj, W. (2015). Local wisdom and community resources for lifelong education. In *Professional Experience in Non-formal Education*, Nonthaburi: Faculty of Education, Sukhothai Thammathirat Open University Printing House.

Office of the Education Council. (2006). *Research Report on Learning Management of Lifelong Learning Resources: Museum*. Bangkok: Parbpim Printing

Pichitpornchai, C. (2014). ICT in Medical Field. In *Professional Experience in Infomation and Communication Technology*, Nonthaburi: Faculty of Science and Technology, Sukhothai Thammathirat Open University.

Ratana-ubol, A. (2014). Definition of concepts and lifelong educational characteristics. In Charungkaittikul, S. (Ed.), *Lifelong Education and Lifelong Learning*. Bangkok: Chula Press

Sumalee, S. (2012). *Lifelong Learning in Thailand*. Nonthaburi: Sukhothai Thammathirat Open University Printing House.

__________ (2003). *Non-formal education management for lifelong education in accordance with the Education Act BE 2542*. Bangkok: Office of the Non-Formal and Informal Education

Taravanich, N. (2014). The 21st Century Community Learning Resources to Enhance Lifelong Learning Characteristics of People. In Charungkaittikul, S. (Ed.), *Lifelong Education and Lifelong Learning*. Bangkok: Chula Press

Yamane, T. (1973). *Statistic: An Introduction Analysis*. Third edition. New York: Harper and Row Publication.

Creating Webpages as an Electronic Portfolio Foundation for Academic and Lifelong Learning Applications

Dr. Bob Barrett

American Public University
docjob00@msn.com

Abstract

As more educational institutes are moving towards the use of online learning as another form of learning, in addition to their traditional classroom environments, there is an increasing need for more technology. Equally important is the need for both educators and learners to improve their computer literacy and mastering of necessary computer applications and presentation skills. As educators become more computer literate, they also need to continue as forward thinkers and consider the continuing education of their students beyond their own course. Consequently, this paper will examine how certain undergraduate and graduate business and management courses are incorporate the use of webpages as a foundation for electronic portfolios, also known as e-Portfolios, for presenting their learning activities and assignments for both academic credits, as well as for future use as their professional portfolios. In particular, this paper will explain how educators are helping students with varying levels of computer literacy to create their first webpage in two hours or less and incorporate their learning assignments as links to these new webpage portfolio documents. Further, this paper will examine how over a period of several years, this particular learning activity has been used to help all students to reexamine their technical and presentation skills, as well as to learn a valued skill for webpage creation and maintaining this new e-Portfolio portal as a representation of their current skills and abilities in the framework of various assignments for future employers to review during job interviews and promotions.

***Keywords**: computer literacy, electronic portfolio, lifelong learning, webpage creation.*

Introduction

Where does learning begin and end for most adult learners? Many believe that many learners depart education due to a variety of reasons, namely, due to lack of interest, bad learning experiences, and completely boredom. However, can this change for learners with the new wave of technology which has affected both of the worlds of business and academia? Besides the impact of technology, adult learners may have a greater need today than ever before to obtain more education for job advance, career development, and/or lifelong learning. However, the key is how can teachers today engage, motivate, and energize today learners for both learning in the academic plain, as well as preparing to continue their learning throughout their lifetime.

Life does not happen in a vacuum; thus, learning should not happen otherwise. Knowles noted that "adult [learners] see education as a process of developing increased competence to achieve their full potential in life. They want to be able to apply whatever knowledge and skill they gain today to life more effective tomorrow." [1] Consequently, teaching has changed drastically in the past two decades with the movement from the historical era of distance education stemming back to 1836 with the first correspondence course with Pittman Shorthand [2] to the more modern and technological world of online learning or also called virtual learning. However, despite the changes in technology and the classroom's structure, whether it be a physical traditional learning environment or one on a virtual plain, the rate of learning and teaching approaches has to move even more quickly than ever before. Teachers in today's new world of education need to make more adjustments, acquire more learning, and be able to be more "proactive than reactive" in today's learning environments and with today's new breed of adult learners. [3]

While learning is a "centuries-old set of learning events or a ritual" for some, it has become more of a just-in-time approach for many learners to obtain necessary education and/or learning needed for their current immediate needs rather than just long-term future educational opportunities. Thus, there is a need to make changes in both the educational process and the type of learning activities for adult learners can use to not only show their mastery of course content knowledge, but also how to apply it in today's workplace. However, there are a number of factors contributing to this "positioned" aim of learning, which may range from economic, societal, personal, professional, academic and more. Consequently, this paper will look at how educators can address the current and future learning and training needs of the just-in-time learner to help win them over and motivate them to be more of "in the moment learners" and segue eventually to the lifelong learning position with the use of web page creation to bridge the gap between traditional learning methods to modern-day computer literacy and technological application. While some academicians and writers in the literature may argue as to who is to blame and who should change, perhaps the change should occur "in the moment" with the educator who has been solely "placed" in the learning environment and should be more "invested in the learning moments", as well as focused on reaching those famous "Aha and teachable moments" to enable and empower their learning charges to see first-hand what education can be like and how it can inspire. Finally, this paper will examine how some teacher characteristics, qualifications, technological and communications skills in terms of how they can use these skills sets to construct a more stronger bridge of learning and communication in their classroom can help determine their teaching approach and style, as well as how they might adapt various learning activities, such as a web page application into their classrooms as a bridging effect on content learning and application overall. Further, such changes in the traditional and online learning environments can help to change those "in the moment" events in the learning experience to capture, not limit or criticize student participation, but to motivate learners to help increase their connectivity to their own "learning" future and interaction with their own current educational, social, and professional networking opportunities. Consequently, this paper will explore how the creation of webpage as part of the learning process by effective and technologically-minded instructors can help to bridge the learning divides, and yet increase the probability of more student participation and motivate them for lifelong learning. In the following section, we will look at teaching methods to set the stage as to how teaching has been presented in the traditional classroom, but a stronger emphasis in this paper will focus on online learning, as demonstrated later in the paper.

Teaching Methods, Strategies, and Techniques

While teaching methods, strategies, and techniques have evolved over the centuries, the teaching profession has required more and more from current and incoming instructors, especially in light of the changing workplace and today's learning environments. Further, Harris noted that the "new workplace requires a new type of employee, one who is highly skilled, flexible, creative, and attuned to working as a member of a team" [4]. In order to prepare current and future instructors for this type of new employee, educational institutions need to offer different types of recruiting and hiring methods to find the best-qualified instructors. Therefore, they need to focus on training online instructors to be able to work with the training entity, whether it be an institution of higher education or training learning center, in order to develop, design, implement, and evaluate current and future educational and/or training offerings. In addition, they need to focus more on training online instructors to be able to work with the training entity and transition into current and future online course offerings, as well as encouraging institutions of higher education or training learning center, in order to develop, design, implement, and evaluate current and future educational and/or training offerings. Education and training for the workplace has changed drastically, and academia will have to make concessions and implement changes. Thus, education has to move from the traditional paper and pencil note-taking sessions to a more technically enhanced format.

According to recent a Babson study, one out of every three American college students are taken one or more online learning courses. The reasons for taking online courses versus traditional Face-to-Face (F2F) classes can range from time/scheduling issues, work and family issues, and the use of many new technologies in the adult learning environment. [5] As a result, academic institutions have to be cognizant of the changes in the demographics of the students, instructors, and classrooms in today's world of academia and business needs. The "preconceived ideas" of learners have also changed. Pappas (2013) summed up 8 learning characteristics of today's adult learner. Here is an overview of his noted characteristics that today's educational faculty and staff need to keep in mind not only in the design and development of courses, but also how the teaching is delivered to these new breed of learners, as well as the teaching methods and strategies should be adjusted to help match up with these learners' characteristics and drive for learning.

- Self-direction
- Practical and results-oriented
- Less open-minded and therefore more resistant to change
- Slower learning, yet more integrative knowledge
- Use personal experience as a resource
- Motivation
- Multi-level responsibilities
- High expectations [6]

While the learning characteristics have changed over the past two decades, the need for instructors with various skills and abilities have also changed in order to meet the growing needs of today's learners, as well as the technological applications needed to better prepare our learners for the needs of jobs in the workplace and overall development in their society. The next section will provide an overview of instructor requirements and expectations by the academic field.

Teaching Requirements and Expectations

Teaching requirements have changed over the years, but with the onset of the online learning format, qualifications for instructors, especially part-time educators, has also changed. According to a WEA and AFT Taskforce report (2005), "Part-time instructors bring unique skills and expertise into workforce preparation and academic classrooms. Employing part-time instructors allows colleges to offer more classes, when and where students need them and the ability to respond to emerging student, community and business needs. However, low salary levels, variable working conditions and over-reliance on part-time faculty have contributed to staffing concerns in Washington State and nationally - as colleges and universities absorb greater numbers of students without appropriate funding" [7]. Historically, the recruiting and hiring have had to change to attract more technologically savvy educators, as well as finding instructors who are interested in going beyond the traditional method of teaching. Many educational institutions have changed their traditional methods of recruitment and hiring, especially for candidates for online learning. Besides reviewing the traditional forms of resumes, they are looking beyond just contacting references only and looking at transcripts, but rather they are testing candidates for aptitude towards modern teaching and asking them to present teaching presentations as another form of teacher selection. Thus, this has helped many educational institutions to develop their own "best practices" for others to see them as a "trendsetter" in their own field and innovator for the learning of tomorrow. Jones (1993) described best practices as centered "on the very essence of good management: guiding employees toward greater productivity, liberating them from the burdens of disorganization without saddling them with restrictive bureaucracy, and helping them to overcome some measure of the troublesome flaws inherent in people and processes. These are the measures of effectiveness and efficiency [8]. In light of the topic of the best practiced, many Human Resources for many academic institutions have determine the following as the common set of characteristics for online learners.

- Many online teaching positions are being filled by part-time instructors.
- Many colleges and universities have found that this helps to reduce some administration of benefits and pay – so part-time faculty have been a "quick fix" for their current need.

With these factors in mind in terms of the characteristics of today's candidates for online instructors, we need to focus next on their technological skills and ability to communicate in the classroom. These areas are critical not only for the effectiveness of the instructor for teaching, but also to enable them to be more efficient in the planning (design), implementing, and evaluating of various teaching strategies and approaches to learning in the online learning environment.

Technological and Communication Changes in the Classroom

While the online learning environment has been involving over the past several decades, it is uniquely different thanks to the advent of the World Wide Web (WWW) and the visionary efforts of many pioneering instructors in creating a new form of learning in the online or virtual plain. While today's online instructors and candidates have to learn and share new forms of technology and applications in order to help students complete all needed learning objectives and gain valuable content knowledge, they have to continuous work on improvement in this area. Furthermore, instructors have to master the use of more technology and Internet usage more than ever before, especially with the proper creation, management, and interpretation of email messages and other forms of business communications. Consequently, what happens when students are not required to attend a scheduled or video-recorded class to share points, ideas, and/or assignments, such as presentations? How can the instructor reach out to the student and draw them back into learn and measure it? Thus, the following areas represent areas in which both the instructor and students need to be versed in today so they can become more effective and efficient for work in today's learning environment and workplace.

- Communications skills
- Technology skills
- Presentation skills (design and development)
- Reflective thinking skills

Therefore, the next section of this paper will provide and overview of what is needed in training and education today to best prepare not only students, but also provide training and educational opportunities for today's adult learners.

Teaching Strategies and Techniques for Motivating Today's Adult Learner

Macey (2017) provided a list of seven best practices for implementing in today's learning environment in the areas of teaching and learning. In fact, these provide a good justification as to why technological applications are needed for today's classroom.

- Figure out what's needed "just in time"
- Assess what's currently being done
- Organize the categories of learning
- "Chunk" learning to make it digestible & easy
- Provide examples and scenarios, not just information
- Figure out where is help needed
- Find partners who can add value [9]

If we look at the above bullet points, we can see that we need to address course content knowledge in "chunks of learning" to not to overload the student but to help the learner see how knowledge can be built upon a good foundation and enhanced with various learning activities. However, before such activities can be introduced and facilitated by educators and trainers, the educator and trainer need to become even more prepared with technology and teaching methodology.

Consequently, before we can lead into the methodology for teaching with technology in the classroom, we need to make sure that we have trained our current and new wave of online instructors for changes in the classroom, especially with the use of technology. Knowles (1984) summed up the follow key principles in consideration of adult learning content that hold true still today.

- Adults need to be involved in the planning and evaluation of their instruction
- Experience (including mistakes) provides the basis for learning activities
- Adults are most interested in learning about subjects that have immediate relevance to their job or personal life
- Adult learning is problem-centered rather than content-oriented. [10]

If we keep these above-noted points in mind, this will enable instructors to create meaningful learning activities, as well as measurable learning activities to determine if learning objectives have been met, mastery of course content knowledge is being achieved, and adjusting one's teaching style and approach to engage more adult learners and help steer them towards more meaningful learning and develop an inroad towards lifelong learning. In the next section, we will overview the methodology in creating one's first web page and examine how it can be used for various learning projects for both academic credits, as well as use for further professional development.

Creating the Student's First Web Page

The writer of this paper has been using this particular learning activity quite effectively for several years at various colleges and universities with online programs. The key to the success of such a learning activities is to captivate the learner's interest, provide the necessary learning environment with the needed instruction to help the student to begin their web page, but also to follow up with reinforcing help and encouragement that such learning can be helpful at the current time and in future professional and educational endeavors. Rather than just assigning this type of activity, which does require a certain level of technological background, it should be presented in a "building block" manner, similar to the "chucks of learning, as noted earlier in the paper. Further, some educational theorists and practitioners use the term "sequence of learning" as a template for developing and designing their learning activities in their classroom. [11] [12] The following represents the sequencing of learning for this learning activity to help students begin their first web page.

- Do an Internet search for "free web page" – and see how many thousands of free templates and areas there are at this time.
- Be careful not to take a site you have to pay for or only has access for 30 days (i.e., www.wix.com)
- Start your template selection and begin creating your web page.
- Create a webpage with free templates within 1-2 hours.
- Use the webpage for an academic portfolio for school and later career development.

A key learning point is that not all web pages will be perfect, unique, or innovate/creative at first. In fact, the more the student "practices or experiences" with web page design, the better acquainted they will become with the process, and it should be noted that the sharing of the experiences will be a critical factor in the learning process. This will be examined in more detailed later in the paper.

As students work on their first web page, the instructor needs, to be cognizant of the fact that the student may need ongoing reinforcement as to why this activity is important and what they have “achieved” even with just the mere creation of only one page at the given time. For example, the instructor used for this learning event, prepared a set of questions for students to consider as they work on this project.

Here is a list of the students presented to the student to consider in a number of settings and associated factors. However, the instructor needs to emphasize on the onset of the presentation of the activity that web design and creativity will vary with the creator of any web page. Also, it should be noted that while some web designs can be simple or dramatic, its design represents some level of creativity and innovation for the adult learner. Therefore, during this type of learning activity, the learner should consider the following points about their web page design.

- What is your purpose?
- Who is your audience?
- What do you want to display?
- Is this for academic credit only?
- Do you have future need here?
- Can you access it later and add to it?

While the students are working on their webpage another type of learning activity can be “piggybacked” with this new technological learning in terms of taking their web page and adding more value to it, as well as gain more insight in terms of project management, time management, and overall web page design. The following section will highlight how the author of the paper connected the learning of web page design and creation to interface with the use of a portfolio, or rather an electronic portfolio better known as an e-Portfolio.

Application for future classes and Learning Activities

In this section, we will highlight what are portfolios and how to incorporate them into a classroom for both academic credits, as well as helping students to learn the relevance and potential application of electronic portfolios into their classwork and future lifelong learning endeavors. According to Greenberg (2004), there are three types of portfolios:

- Showcase e-portfolio – organization occurs after the work has been created.
- Structured e-portfolio – a predefined organization exists for work that is yet to be created.
- Learning e-portfolio – organization of the work evolves as the work is created. [13]

Sutherland and Powell noted that "An e-portfolio is a purposeful aggregation of digital items – ideas, evidence, reflections, feedback etc., which ‘presents’ a selected audience with evidence of a person’s learning and/or ability.” [14] For the purposes of illustration here, the author has used a number of e-Portfolios to incorporate the use of e-Portfolios and web pages as a dual project for student learning and application. The list below are application projects used by the author for several online undergraduate and graduate courses to help students learn both the use of technological application, as well as incorporating samples of their best work into an e-Portfolio for both academic credit and future use, which will be discussed following this section.

- Electronic Portfolios (e-Portfolios)
- Project Management Applications
- Training Programs
- Consulting Projects
- Connect Credit Work to Real Work students are facing in the workplace
- Simulations
- Research Projects for Real World Applications

It should be noted that these types of projects have been quite beneficial as a final assignment for both graduate and undergraduate courses, as well as drawing in all students to create a unique project, such as a web page and e-Portfolio which they would not have happen in most classes due to the heavy workload and concentration on specific learning objectives with the framing of limited learning activities for academic measurement. The following section will overview the final findings of the use of web page creation in today's online classes, as well as how this one project has been taken to another technological and virtual level by using the web page as the foundation for the students' e-Portfolio project.

Conclusion

Instead of following the traditional set of classroom assignments and following "pre-designated learning activities", the author of this paper focused on the unique approach of requiring both his undergraduate and graduate students to create a web page that is unique to them with the development and layout of a web page to reflect who they are, as well as using the web page as the center of an electronic portfolio, known today as an e-Portfolio. Students were given instructions on how to research where to find "free" templates and how to proceed in setting up their web page, along with links to include key projects which they had completed as part of the course requirements for the final project consisting of an e-Portfolio. The outcomes were quite successful in terms of participation in the learning activity, development of the learners' first web pages, as well as the development of their first e-Portfolio. Further, it should be noted that as students work on assignments during their course, they would submit weekly or bi-weekly assignments to the instructor to review and return for edits to be later incorporated into their final e-Portfolio project. During the course of these learning events, students were given the chance of working on improving their time management, project management, and examining potential uses of their e-Portfolio beyond their immediate class and program of student.

Lessons learners were easily discovered by both the student and instructor. While some students caught onto the design quickly, some needed some additional reinforcement. In fact, the instructor held weekly "online discussions" for al students to participate with ideas for the projects, as well as providing a forum for discussion for all students to learn from the insights of others in terms of web page design, e-Portfolio creation, and how to consider or plan for future use of their e-Portfolio. It should be noted as a final point in this paper that some students who followed the instructor's recommendation did take a USB stick with their e-Portfolio on it as a sample work to share with potential interviewers when interviewing for a job in their field. Finally, it should be noted that several of the students who went out for interviews and brought with them a sample of their e-Portfolio were hired "on the spot" during the interview, while others waiting in the waiting room were quickly dismissed as the "prepared" students from the author's classes were one step ahead when they reached their interview with a pre-loaded copy of their e-Portfolio to share with their interviewer. In fact, the author will not here that these students who were "hired on the spot" were quick to jump back into the online classroom shortly thereafter to let others know that while both the web page design and e-Portfolio were free project for them to use, they noted that the value achieved and perceived by them later was significant and acknowledged to others to take these courses now, as they have significant value to students today and for tomorrow.

References

[1] M.S., Knowles, The modern practice of adult education. Andragogy versus pedagogy, Englewood Cliffs: Prentice Hall/Cambridge, 1980.

[2] HistoryofInformation.Com (2019). Retrieved from http://www.historyofinformation.com/detail.php? entryid=2415, 2019

[3] C. Pappas, 8 important characteristics of adult learners. eLearning Industry. Retrieved from https://elearning industry.com/8-important-characteristics-of-adult- learners 2013.

[4] H. Harris, Defining the future or reliving the past? Unions, employers, and the challenge of workplace learning. Columbus, OH: ERIC Clearinghouse on Adult, Career, and Vocational Education, Information Series, No. 380, 2000.

[5] I.E., Allen, as noted in Babson Survey Research Group. 2013 US Survey of Online Learning Published. Retrieved http://www.icde.org/2013+US+Survey+of+Online+Learning+published.vb7C_wRjQXf.ips , 2013.

[6] C. Pappas, 8 important characteristics of adult learners. eLearning Industry. Retrieved from https://elearning industry.com/8-important-characteristics-of-adult- learners 2013.

[7] Washington Education Association and American Federation of Teachers – Washington. Best employment practices for part-time faculty. Taskforce report and recommendations. Retrieved 1/26/09 from http://www.sbctc.ctc.edu/college/_ hr_bestpractices.aspx, Nov. 21, 2005.

[8] T.L. Jones, The Americans with disabilities act: A review of best practices. New York: AMA, 1993.

[9] T. Macey, 7 best practices for implementing just-in-time learning. Advantage Performance Group. Retrieved from http://www.advantageperformance.com/implementing-just-in-time-learning/, 2017.

[10] M.S., Knowles, The modern practice of adult education. Andragogy versus pedagogy, Englewood Cliffs: Prentice Hall/Cambridge, 1980.

[11] D. Clark, Developing Instruction or Instructional Design.

[12] G.R., Morrison, S. M. Ross & J.E. Kemp, Designing effective instruction (4rd ed.). New York: John Wiley & Sons, Inc., 2004.

[13] G. Greenburg, "The digital convergence: Extending the portfolio model." *Educause Review* 39, no. 4 (2004): 28-36.

S. Sutherland and A. Powell, A, CETIS SIG mailing list discussions. Retrieved from https://www.jiscmail.ac.uk/ cgi-bin/webadmin?A1=ind0707&L=CETIS-PORTFOLIO#3, 2007.

‘TheTeacherApp’ as Concept Building Approach for Digital Teachers: A Lifelong Skills Development

Dr. Sanjeev Kumar

District Institute of Education and Training (DIET) – Shimla
At Shamlaghat, P.O. Panesh, Distt. Shimla, Himachal Pradesh, India.
sanjeev24778@rediffmail.com

Abstract

Teaching profession influences the society, State and Nation. The future of a country shaped in the classrooms. Therefore, it is the dire need of the present teachers to get updated with current knowledge and practices. But, when we talk about ‘Quality Teaching’, we have not enough good teachers to impart conceptual knowledge to their students even in digital era. Most of the teachers need conceptual clarity of their teaching content. The State and Central Govt. organizing various in-service teaching trainings, but the outcome is not satisfactory. ‘TheTeacherApp’ is a remarkable step in this direction. Every teacher uses smart mobile phone and ‘TheTeacherApp’ is helping them to build their conceptual knowledge digitally – anywhere, anytime at zero cost. It follows a unique approach towards building educational technology solution for digital teachers in India. There are 100 courses in Mathematics, Language teaching and Pedagogy up to March, 2019. The digital content is constructive in nature, interactive, delivered in Hindi language and downloadable and available offline as well. Presently, the teachers of Delhi, Himachal Pradesh, Haryana, Uttarakhand, Utter Pradesh, Rajasthan, Punjab and Maharashtra are using this app for concept building. 95% teacher users reported that they will implement the strategies and examples present in the course in their classroom. 79% users reported that the course helped them to build an understanding of the core concept presented in the course. 96% teacher users reported that they will share TheTeacherApp with their colleagues. 64% teachers reported that their knowledge is increased after viewing the course. It is reported in the study that in Himachal Pradesh digital teachers of Una district downloaded the courses, completed them and used the app with highest number. Therefore, it is possible to provide great lifelong skill development for teachers over the mobile phone.

Keywords: *TheTeacherApp, Digital teachers, Teacher Toolkit, Concept building*

Introduction

Every profession in influenced by the new techniques and technology. The people use the android mobile phones at the personal as well as professional levels. Various apps are designed to make the technology user friendly. These types of apps are available to facilitate the teaching – learning process. This paper is concerned with the concept building of teachers through ‘TheTeacherApp’ using smart mobile phone at anywhere – anytime at zero cost. It follows a unique approach towards building educational technology solution for digital teachers in Himachal Pradesh and India. There are 100 courses in Mathematics, Language teaching, Science and Pedagogy up to March, 2019. The digital content is constructive in nature, interactive, delivered in Hindi language and downloadable and available offline as well. Presently, the digital teachers (having smart phones) of Delhi, Himachal Pradesh, Haryana, Uttarakhand, Utter Pradesh, Rajasthan, Punjab and Maharashtra are using this app for concept building. In these States, 95% teacher users reported that they will implement the strategies and examples present in the course in their classroom. 79% users reported that the course helped them to build an understanding of the core concept presented in the course. 96% teacher users reported that they will share TheTeacherApp with their colleagues. 64% teachers reported that their knowledge is increased after viewing the course. In Himachal Pradesh, it is used by the teachers of Govt. elementary schools. A special training is imparted regarding ‘how to use – TheTeacherApp for teaching – learning process’ in all the districts. The teachers are using this app frequently and getting certificates after completion of the courses. Presently 43803 digital teachers were registered in the app up to April, 2019. The impact of the courses is also reflecting in the classrooms. It is a wonderful approach to provide great lifelong skill development for teachers digitally over the mobile phone. It enables them to learn anytime, anywhere in their daily life routine. It consists of the concepts standard 1st to 8th (elementary level). Therefore, the app encourages lifelong learning skill development. Digital Marketing Institute (2019) proposed seven benefits of online and digital learning. It is explained that every stage of education can be improved and enhanced through the online courses which is quite beneficial for lifelong learning. The research studies show that there has been an annual growth of 5% or more in the online learning year by year. The online courses engage the students at a deeper level which help to improve the digital literacy of the adults. This type of learning offers flexibility and there is no need for actual classroom learning. All the students participate in the learning process and in this way, they know each other better. The digital and lifelong learning enhances the career opportunities for the students and faculty members because it offers multiple ways to learn.

Importance and Benefits of Educational Mobile Apps

Every child and adult likes to operate the mobile phones and apps in this current techno era. So, the connection between internet surfing in mobile phones and learning is established to make the learning process easier and more interesting. The educational mobiles apps are proving the effective way to attract the students for learning and adults for the lifelong learning.

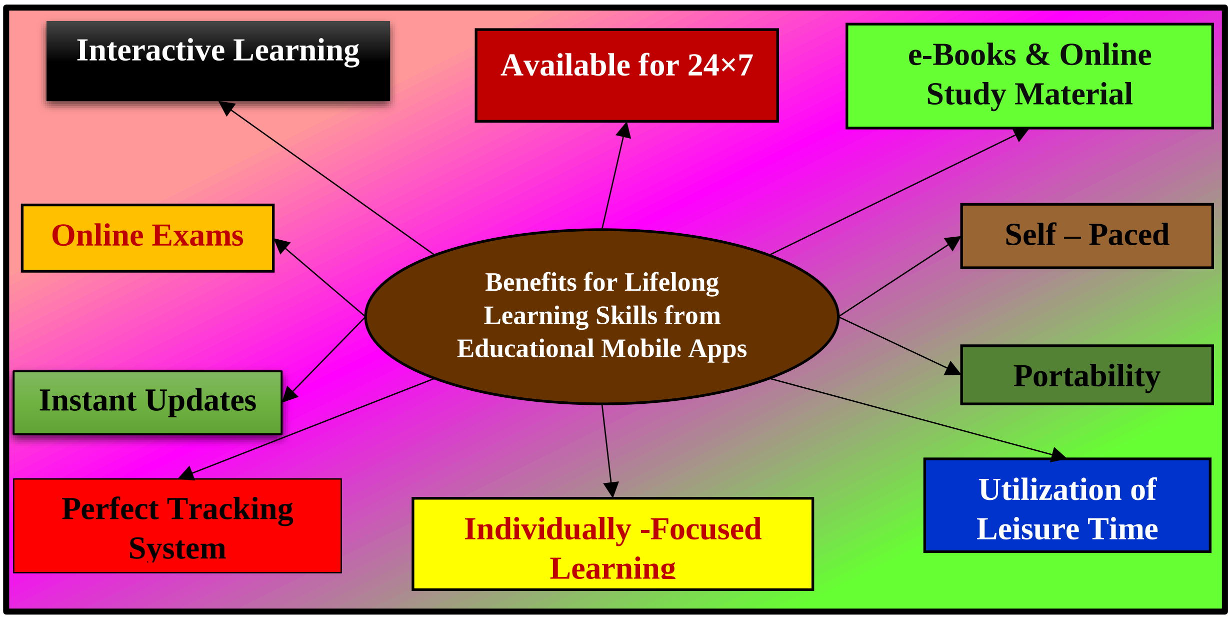

Interactive Learning
Available for 24×7
e-Books & Online Study Material
Online Exams
Self – Paced
Benefits for Lifelong Learning Skills from Educational Mobile Apps
Instant Updates
Portability
Perfect Tracking System
Individually -Focused Learning
Utilization of Leisure Time

Fig. I: Benefits for Lifelong Learning Skills from Educational Mobile Apps

The students can access the information from anywhere with the help of educational apps. It is the constructive way to impart knowledge and skills without wasting time and money. The benefits of lifelong learning skills with the educational apps are given in the figure I.

'TheTeacherApp' – A realistic approach for lifelong learning skill development for digital teachers

'TheTeacherApp' consists of concept building courses of elementary school level in Mathematics, language, pedagogy and science. Mathematics course deals with the important concepts in which the children usually confuse, when the teacher teaches. Approximation, statistical thinking, how to teach place value, understanding Place value, building the concept of Algebra, fraction and understanding number system. The pedagogy part is very important for teachers for planning and executing the teaching – learning process. It consists of remedial teaching, Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis, Growth mindset, project-based learning, multiple intelligences, critical pedagogy, different teaching strategies, learning in groups, teaching Environmental Studies (EVS) by integrated approach, multi-grade and multiclass teaching, knowing about learning, skill of questioning and learning outcomes. The language part of app has the concepts – poems and language development starting writing, how to make print environment in classroom? reading by understanding, language of children: school vs home, literature in elementary schools, skill of listening, chatting between children: main resource of classroom, assessment in primary literacy, promoting free hand writing, supporting reading skill, introduction of children to reading, initial behaviours, of reading-writing. Science part of the app consists of concepts – skin, learning science by doing, planning in science syllabus, how to teach EVS by different activities? Photosynthesis and density & acceleration (TheTeacherApp, 2019). Fig. II shows some screenshots of the structure of 'TheTeacherApp'.

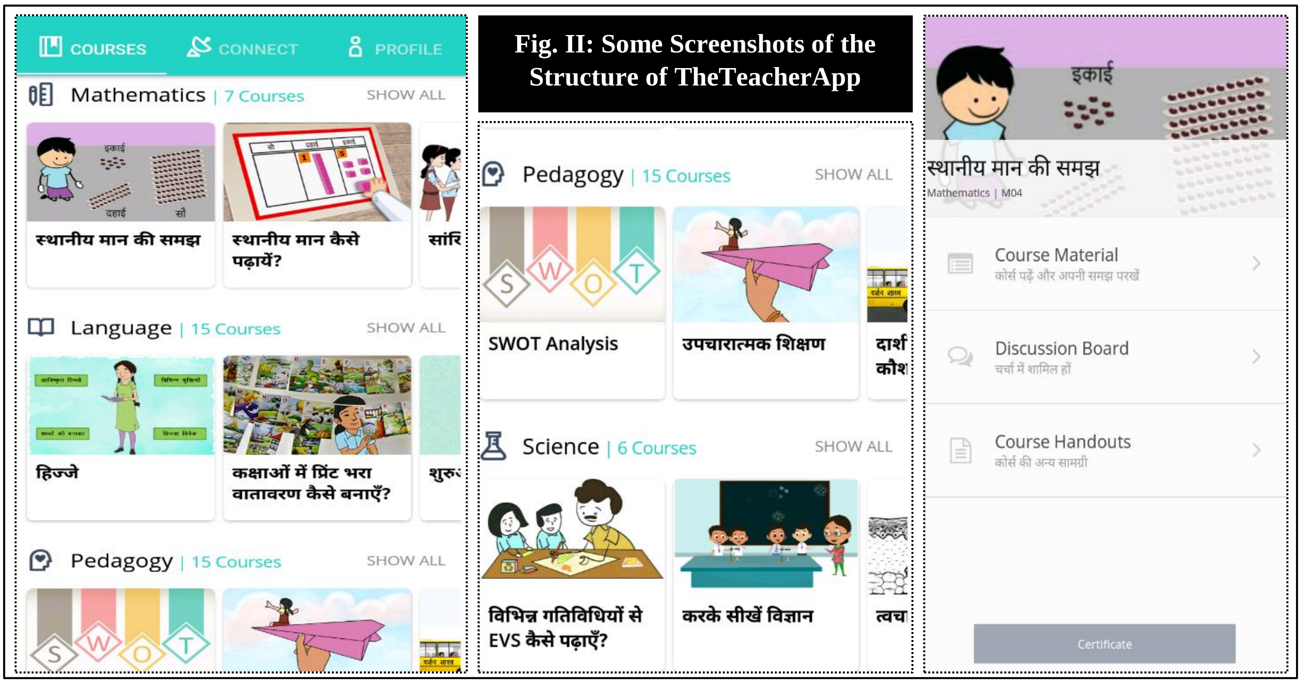


Fig. II: Some Screenshots of the Structure of TheTeacherApp

COURSES
CONNECT
PROFILE
Mathematics | 7 Courses
SHOW ALL
स्थानीय मान की समझ
स्थानीय मान कैसे पढ़ायें?
Language | 15 Courses
हिज्जे
कक्षाओं में प्रिंट भरा वातावरण कैसे बनाएँ?
Pedagogy | 15 Courses
SWOT Analysis
उपचारात्मक शिक्षण
Science | 6 Courses
विभिन्न गतिविधियों से EVS कैसे पढ़ाएँ?
करके सीखें विज्ञान
इकाई
स्थानीय मान की समझ
Mathematics | M04
Course Material
कोर्स पढ़ें और अपनी समझ परखें
Discussion Board
चर्चा में शामिल हों
Course Handouts
कोर्स की अन्य सामग्री
Certificate

It is a lifelong learning skill development approach for all the teachers. The teachers can build their capacities and earn certificates in various courses at any time – anywhere at zero cost or no cost. The courses are prepared in a manner to create the interest of the teachers to do the courses suited to them.

Review of Related Literature

Ansari, M. H. (2017) conducted an investigation of effectiveness of mobile learning apps in higher education in India and found that mobile learning apps are very useful in higher education and lifelong learning environment. The students had adequate knowledge and skills to operate the app and use it for learning process. Owino, O. S. (2013) studied the impact of e-learning on academic performance and found that e-learning improves the teaching effectiveness and academic performance especially in higher education and lifelong learning. It encouraged the greater achievement but, it depended upon the different learning styles of the students. Hirsh-Pasek, K.; Zosh, J. M. et.al. (2015) conducted a study on putting education in 'Educational Apps': lessons from the Science of learning. The study defined the potential educational impact of current and future apps. The researchers, educators and designers guided to design evidence – based app development. The new standard of evaluation was set in the app. The use of educational apps aligned the learners with known process of children's and adults' learning. The framework was also used by the parents of children. The apps promoted the active, engaged, meaningful and socially interactive learning within the context of a supposed learning objective taken in the educational process.

It can be concluded from the review of related literature that no study has been conducted on 'TheTeacherApp' in India and Himachal Pradesh. Therefore, the present study is purely significant and there is dire need to conduct it.

Objectives of the Study

1) To study the digital teachers visiting 'TheTeacherApp' more than once in a month.
2) To study the digital teachers using 'TheTeacherApp' daily for teaching – learning process.
3) To study the digital teachers just viewed the Teacher Toolkit of 'TheTeacherApp'.
4) To study the digital teachers completed the 'TheTeacherApp' courses and got completion certificates.

Materials and Methods

Type of Study: Teaching – Learning based Quantitative Study.

Place of Study: The present study of 'TheTeacherApp' as a concept building approach for digital teachers was conducted in the State, Himachal Pradesh, India.

Duration of the Study: Six months, 1st October – 2018 to 31st March – 2019.

Methodology of the Study: The study was concerned with descriptive research method. The data was collected from all over the State, digitally. The Pratham representator Ms. Shaileja compiled the data and prepared the data sheet which was used in the study.

Sampling: Himachal Pradesh State was selected using the purposive sampling technique. All the teachers who downloaded and registered in 'TheTeacherApp' were treated as population of the study. The teachers using the app continuously were included in the sample. The data was self-generated by the app.

Definitions of the Technical Terms

Digital Teachers: All the teachers registered in 'TheTeacherApp' through their mobile number were treated as digital teachers. These teachers are continuously using the app in their capacity building and updating their skills through the use of the app. These teachers use the concepts given in the app in their classroom teaching through their android mobile phones, computers and laptops. They use the digital content for teaching the concepts to their students.

TheTeacherApp: It is an app designed for the digital teachers of India for concept building and making their teaching – learning process more enjoyable and effective. In January 2017, TheTeacherApp has been designed with partnership of 3 organisations American India Foundation, Pratham and Bharti Foundation. It can be used online as well as offline mode to facilitate the digital teachers at every situation whether their internet is working or not. The courses included in this app are – mathematics, language (Hindi), Pedagogy and Science. All the courses are in Hindi language.

Teacher Toolkit: It is concerned with the repository of short videos of duration 3 to 4 minutes which are based on the various activities. The teaching – learning materials and other resources from across India are also included in the teacher toolkit. Any digital teacher can adapt and use these videos in the regular classroom teaching process. The toolkit provides the teachers various teaching strategies and tools that can enhance their classroom practices. The main concepts in the Teacher Toolkit are: Magical board, story of coin, multiplication board, wonderful picture of addition, time – table, let us make pairs, language bingo, children & their environment, introduction to parents of students, list of stories, student portfolio, work sheet, story through pictures, give rest to brain, keeping to attention of students, etc.

Concept Building: It is concerned with the deep understanding the concept and deliberation in the classroom. TheTeacherApp is used by the teachers for building their concepts of the particular subject. The short videos of various concepts are loaded in the app to make these easier to understand and teach in the class. The digital teachers got the various ideas to teach these fundamental concepts. In this way this approach helped the teachers in building their basic concepts digitally.

Winter Schools: The schools situated in the upper hills of Himachal Pradesh in which there is heavy snowfall in winter season. These academic session starts on 10th February and closes on 31st December. These schools remain closed from 1st January to 9th February every year.

Summer Schools: The schools situated in the lower part of Himachal Pradesh in which there is no snowfall in winter season. These academic session starts on 1st April and closes on 31st March. These schools remain closed from 26th May to 31st July every year.

Analysis

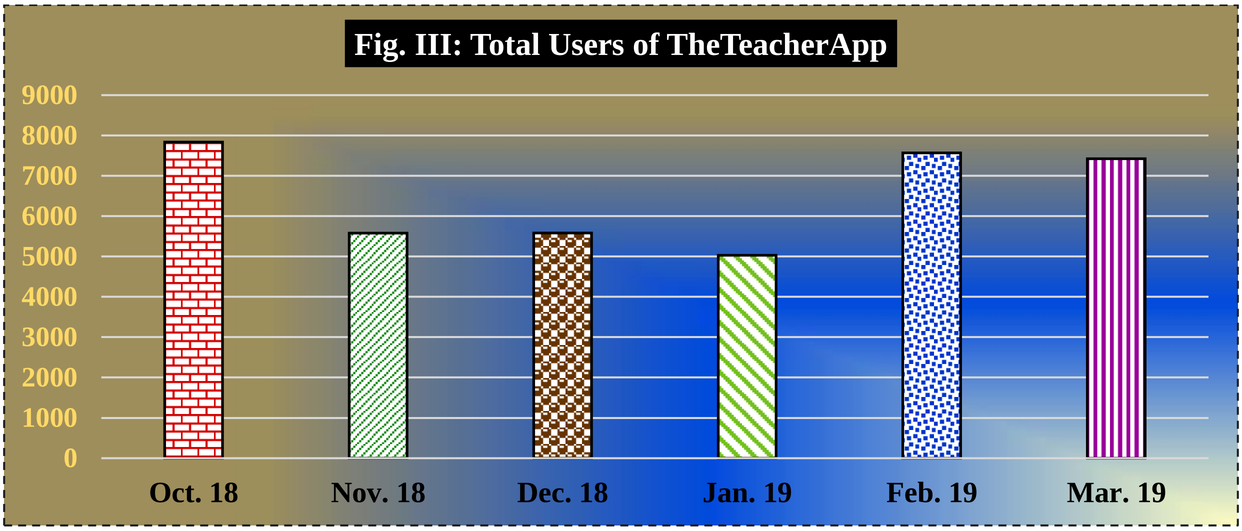
All the data tabulated categorically and simple addition is used.

Results of the Study

1. Number of Digital Teachers who Visit TheTeacherApp more than once in a Month: It deals with the digital teachers who see 'TheTeacherApp' more than one time in a particular month. The data was generated in the app as the digital teacher clicks on the app and opens it. The month – wise detail is given in Table 1 as follows.

Table 1: Month – wise detail of Digital Teachers visiting 'TheTeacherApp' more than once in a Month

Sr. No.	Month	No. of Users
1.	October, 2018	7837
2.	November, 2018	5580
3.	December, 2018	5583
4.	January, 2019	5031
5.	February, 2019	7569
6.	March, 2019	7424



It is clear from the Table 1 and Fig. III that maximum digital teachers (7837) visit the app more than once in the month of October – 2018. But it is minimum (5031) in the month January – 2019. The reason behind it is that the winter schools are remain closed in this month. Therefore, the digital teachers have not taken the visit of the app seriously as the schools were closed and there was no teaching – learning process during this period.

2. Digital Teachers using ‘TheTeacherApp’ daily for teaching – learning process: It deals with the digital teachers who use ‘TheTeacherApp’ daily for teaching – learning activities. These teachers are using the app for making their teaching – learning process interesting and enjoyable. It encourages the quality education in the elementary schools. The district – wise and month – wise detail of the active teachers is given in the Table 2 and fig. III as follows.

Table 2: District – wise and Month – wise daily usage of TheTeacherApp (Active Users)

Sr. No.	District	Oct. 18	Nov. 18	Dec. 18	Jan. 19	Feb. 19	Mar., 19	Total
1.	Bilaspur	48	58	46	20	138	36	346
2.	Chamba	67	13	32	26	111	45	294
3.	Hamirpur	57	25	11	19	57	11	180
4.	Kangra	63	87	64	84	166	34	498
5.	Kinnaur	23	14	13	2	4	38	94
6.	Kullu	34	27	19	3	56	43	182
7.	L & Spiti	2	2	1	2	2	0	9
8.	Mandi	175	144	107	50	205	64	745
9.	Shimla	34	17	12	11	95	49	218
10.	Sirmour	34	25	18	11	33	11	132
11.	Solan	49	7	33	18	47	23	177
12.	Una	43	68	97	85	464	94	851
Total		629	487	453	331	1378	448	3726

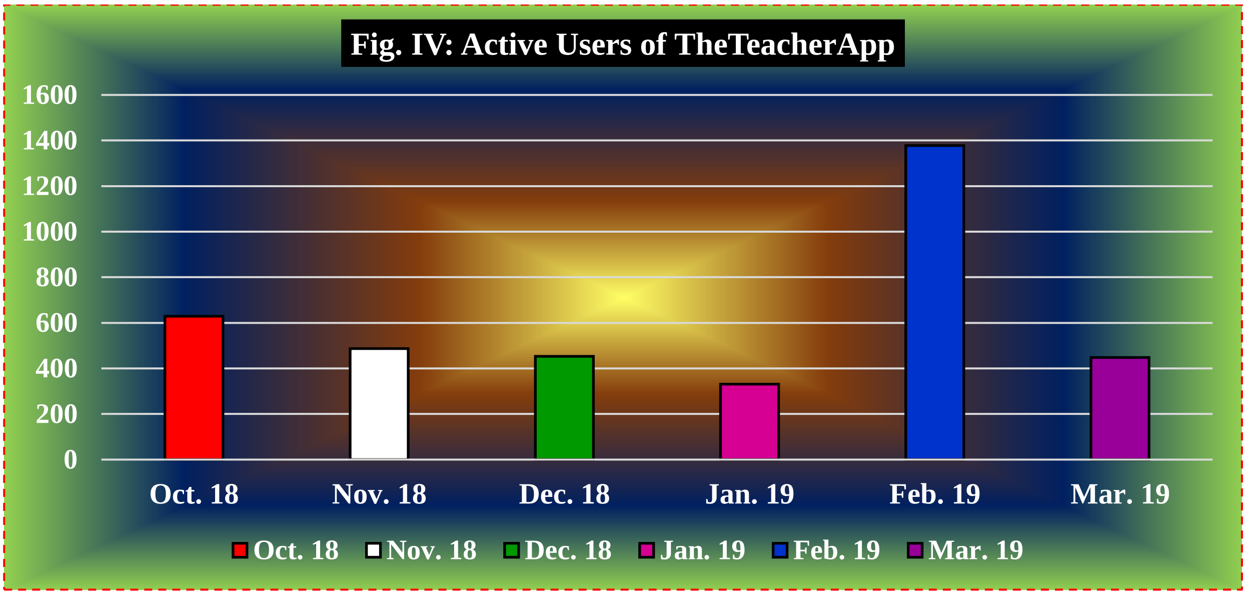


Fig. IV: Active Users of TheTeacherApp

It is interpreted from the above Table and Fig. that there were highest number (851) of the digital teachers of the Una district who had made the daily practice of ‘TheTeacherApp’ in their classrooms for teaching process. It is the result of the proper in -service teacher training regarding the utility of the app for the teachers and students for quality teaching – learning activity. The DIET – Una has motivated the teachers for using this app in the classroom for concept building approach. On the other hand, lowest number of digital teachers (9) were using the app regularly in Lahul and Spiti district. Most of the part of the district is covered with snow for six to eight months and no proper training was imparted for using the app for teaching – learning.

3. The digital teachers just viewed the Teacher Toolkit of 'TheTeacherApp': It is concerned with just viewing of the Teacher Toolkit of the app by the digital teachers. It means the teachers had view the courses of the app and used these in the teaching – learning, but, not downloaded the courses. Digital teachers adopted this practice for not using the memory of their mobile phones. Also, in some places the signal of internet is weak and courses were not able to download properly. Therefore, these teachers just view the Teacher Toolkit and solve their purpose. The detail of the number of teachers viewed the Teacher Toolkit is given in the Table 3 and Fig. V as follows.

Table 3: Number of Teachers who Viewed the Toolkit

Sr. No.	Month	No. of Teachers
1.	November, 2018	1490
2.	December, 2018	939
3.	January, 2019	1723
4.	February, 2019	2289
5.	March, 2019	2378
	Total	8819

Fig. V: The Teachers who Viewed TheToolkit

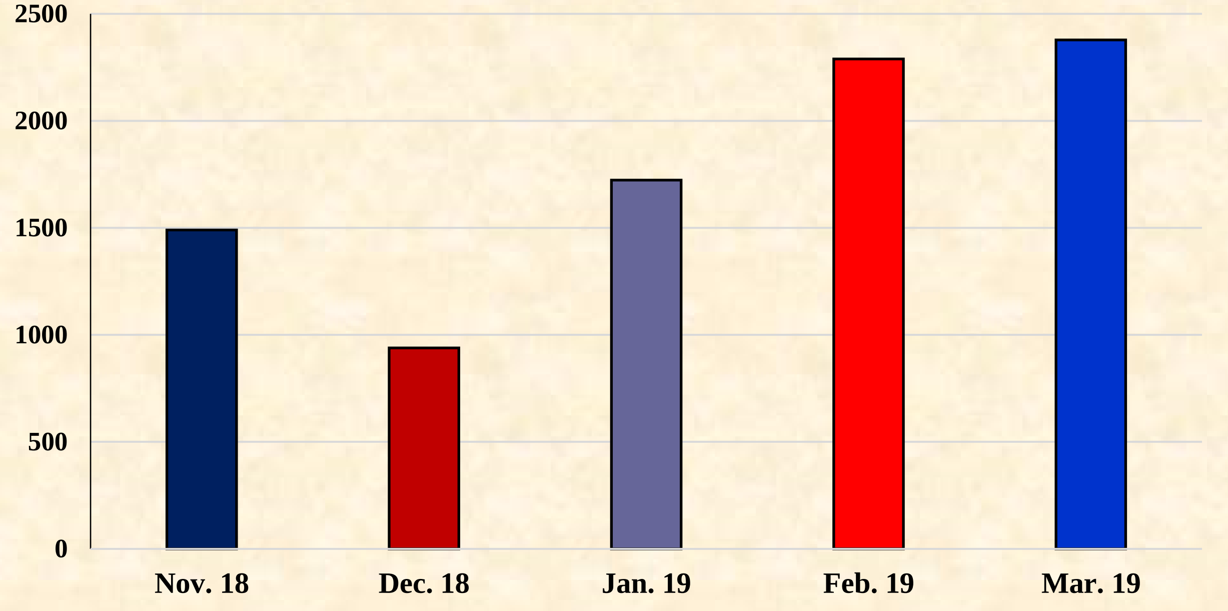


Table 3 and Fig. IV describes that highest number of digital teachers (2378) viewed the Teacher Toolkit in the month March, 2019 and lowest number of teachers (939) viewed it in December, 2018. March month is the examination month in lower Himachal Pradesh and the teachers viewed and used the app for preparing the students for examinations.

4. Digital teachers completed the 'TheTeacherApp' courses and got completion certificates: It is the final stage of the app. The digital teachers who downloaded the courses and appeared in the online examination, are entitled for the certificates. It describes the district – wise and month – wise number of teachers who completed the courses of 'TheTeacherApp'.

Table 4: Number of Teachers who Completed the Courses

Sr. No.	District	Oct. 18	Nov. 18	Dec. 18	Jan. 19	Feb. 19	Mar., 19	Total
1.	Bilaspur	74	73	61	33	243	53	**537**
2.	Chamba	70	22	29	55	189	61	**426**
3.	Hamirpur	76	23	10	32	94	14	**249**
4.	Kangra	98	99	84	153	235	42	**711**
5.	Kinnaur	42	12	19	2	2	52	**129**
6.	Kullu	49	46	15	5	78	53	**246**
7.	L & Spiti	1	5	3	6	6	0	**21**
8.	Mandi	234	172	186	86	323	77	**1078**
9.	Shimla	40	17	19	20	203	56	**355**
10.	Sirmour	33	35	16	23	53	11	**171**
11.	Solan	50	15	29	24	112	27	**257**
12.	Una	64	48	84	101	1357	107	**1761**
Total		**831**	**567**	**555**	**540**	**2895**	**553**	**5941**

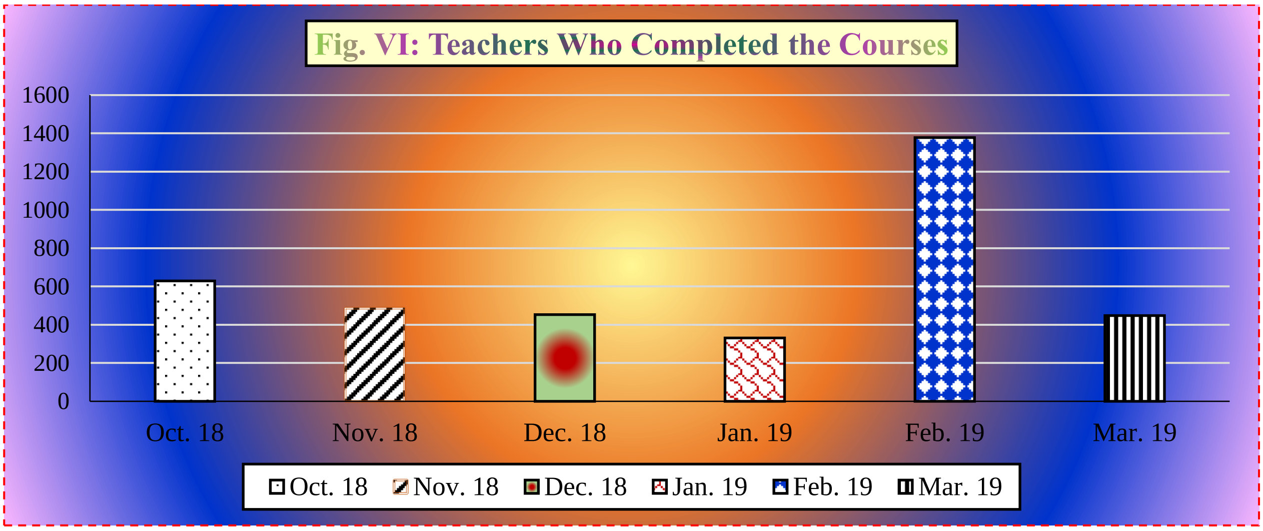


Fig. VI: Teachers Who Completed the Courses

Table 4 and Fig. VI deals with the number of digital teachers completed the courses of the app and got the completion certificates in the end. It is clear that highest number of digital teachers (1761) of Una district completed the course whereas lowest number of teachers (21) of the district Lahul and Spiti got the completion certificate. On the other hand, highest number of teachers completed the courses in the month February, 2019 and lowest number of teachers got the certificate in the month January, 2019. February month is concerned with important time from examination point of view in lower Himachal Pradesh. Therefore, teachers were quit sincere to complete the course in this month and use it in the teaching – learning process.

Conclusion

'TheTeacherApp' is playing a vital role for initiating the use of latest spine of knowledge specifically to captivate and educate students in an effective manner. It is really helping the digital teachers for directing the students to pave their way to quality education by sharing various educational activities. It is found in the study that there is continuous increase in the use of the app by the digital teachers for learning new techniques to teach the concepts which is perfect example of the lifelong learning. Although, some of the teachers are in the last span of their job, i.e., on retirement age, but, still they are trying to learn the new things to make their classrooms more enjoyable for students. But, there is need to motivate more teachers to join this technology app for providing quality education and concept building approach.

References

Ansari, Mohd. (2017). An Investigation of Effectiveness of Mobile Learning Apps in Higher Education in India. *International Journal of Information Studies and Libraries*. 2. Retrieved from https://www.researchgate.net/publication/319187545_An_Investigation_of_Effectiveness_of_Mobile_Learning_Apps_in_Higher_Education_in_India/citation/download on 15/04/2019.

Digital Marketing Institute (2019). How Online Learning Can Improve Academic Performance? Retrieved from https://digitalmarketinginstitute.com/blog/how-online-learning-can-improve-academic-performance on 18/04/2019.

Owino, O. S. (2013). The Impact of e-learning on Academic Performance: A case study of Group Learning Sets (M.A. Dissertation), University of Nairobi. Assessed on 02/05/2019 from https://chss.uonbi.ac.ke/sites/.../STEPHEN%20ODHIAMBO%20WORD%20DOCUMENT.do

Pasek, K.; Zosh, J. M. et.al. (2015). Putting education in 'Educational Apps': Lessons from the Science of Learning, *Psychological Science in the Public Interest*. Association for Psychological Science, SAGE Publication, Vol. 16 (1), pp. 3-34. Retrieved from https://roberta-golinkoff.com/wp-content/uploads/sites/3/2015/08/APPS-PSPI-4-15.pdf on 15/04/2019.

TheTeacherApp (2019). Courses, The Teacher App. Powered by Openedx. Retrieved from http://www.theteacherapp.org/dashboard on 05/05/2019.

Use of Innovative Technology Solutions in Open & Distance Education & Skill Development

Dr. Swati Mujumdar

Director, Symbiosis Center for Distance Learning
director@scdl.net

Abstract

One of the most important factors in the education field today, other than good teachers, is Information, Communication & Technology (ICT). The efficient & effective use of ICT has enabled educationists worldwide to tackle challenges faced by students and teachers as well as to achieve excellence in education and development of skills. The education system and its components worldwide and especially in developing countries face numerous challenges including lack of financial resources, lack of good teachers in rural areas, unreasonable demand-supply ratio, inability to judge learning outcomes, issues of access & equity. As a result, it is almost impossible to judge the outcome of our education system today. On one hand the industry needs people with skills and while there are large number of youth who do not possess the skills to be employed. With proper and effective use of ICT a large number of youth can be educated and trained on various skills required by the market. Symbiosis has developed several ICT based solutions to tackle challenges mentioned above. These models coupled with ICT based tools have improved the effectiveness, efficiency and delivery aspects of the education and skill development. The research study finds that ICT implementations at Symbiosis have resulted in higher student-satisfaction ratio, lowering drop-out rate, convenience and flexibility to students, lowering costs / overheads of administration, enhancing learning experiences, focused skill development as per market needs & measurable learning outcomes. The Research study concludes that effective use of ICT in education and skill development definitely improves the quality & delivery of education and student care services as well as it helps in measuring learning outcomes and skills in students.

Keywords: *Information Communication & Technology, Open & Distance Learning, Education delivery, Skill development*

Rationale and Objectives of the Study

Rationale of the Study

That education provides the foundation for development of individuals and nations is now an accepted theory. Thus education has a tremendous emphasis while planning the growth of nations. Governments all across the world & especially in developing countries are combating important issues such as equitable access to education, reach of education to remote corners, ensuring inclusive growth by using education as a growth driver. The education that developing nations desperately need, and constantly seek, is one which equalizes opportunities for the poor, the disadvantaged, the women in particular, and those living in rural and remote areas.

In developing as well as developed countries, Distance Education has gained tremendous significance. Policy makers across the world are seriously considering the potential of Distance Education from the stand-point of achieving their objectives of access, equity and reach in education.

India is going through a phase of demographic dividend. Although India has the largest higher education system in the world, the Gross Enrollment Ratio in higher education is merely 25-26%. Further, only about 20% of the graduate students are employed and employable. On one hand the industry needs a large pool of skilled manpower while there are lacs of educated students who do not find jobs as they don’t have employable skills. This gap has led the Indian Government to initiate the Skill India mission. Through this initiative the Indian Government envisages to skill millions of youth as per industry needs so that they can be gainfully employed.

The Indian Government has created many schemes, policies, plans and organizations to skill the youth in industry relevant skills. The National Skill Development Corporation, the National Skill Qualification Framework, the domain wise Sector Skill Councils are some examples of the organizations and plans created by the Indian Government.

Problem Statement

Distance education being a more flexible and cost effective system, has emerged as a formidable system of higher education in most of the developing countries. While one must admit that the conventional education system has played an important role in expanding education, particularly in the urban areas, one must accept its limitations as a means of mass education and especially, quality education in the rural areas. The costs of infrastructure (personnel, buildings, materials) necessary for the traditional type of education have gone up tremendously, while most of the governments (in developing countries) are suffering from resource crunch. This fact coupled with the high drop-out rates have resulted in net additions of millions of illiterate people from decade to decade in the developing countries including India.

New technologies can help distribute education from the world’s best sources to all the people irrespective of age, sex, creed, religion, socio-economic status, who are in need of education wherever, thus crossing all geographical and social barriers. Innovations in ICT have played an important role in Distance Education especially to improve quality and reach of education.

As compared to other countries India has to address the multi fold challenge of:

- A large young population who need to be gainfully engaged and employed
- Economic challenges
- Affordability of education
- Skilling youth as per industry needs to improve employability
- Increasing reach
- Improving access and equity in education

- Diverse socio-economic-cultural strata of society

Affordable good quality distance education and industry relevant skill development are tools to address the above problems. This research study addresses the challenge of improving the quality and reach of education in a developing country by leveraging innovations in ICT.

Objectives of the Study

The primary objective of the study is to measure the effectiveness of technology tools to deliver quality education in open & distance learning and skill development.

The aims of this research paper are:-

- To examine the effectiveness of technology in improving the quality and reach of education in one of the largest autonomous institutions in India.
- To measure the effectiveness of innovative technology solutions in improving learner experience at reduced administrative costs.
- To examine the effectiveness of technology in defining measurable learning outcomes.

Perspective of the Study

Changes in Education Paradigm

Education in general and more specifically Distance Education have benefited tremendously from various technology advances. The surprisingly fast growth in the use of computers and especially the internet and web sites in the last two decades has virtually revolutionized educational delivery through distance. It is envisaged that the structure of education will be such that majority of students will be learners outside the four walls of the classroom. Education will not be something to be completed before entering the job market; on the other hand, it will be a life-long occupation. Place of work will be the place of learning. The pace with which these changes will take place will depend upon the pace with which information and communication technology will be put into operation to the cause of education, especially in the developing countries. With this as the context, it is important to explore to what extent technology has been adopted in developing countries for delivery of education. This research paper attempts to study use of innovative technology solutions in one such institution in India.

Methods

A case study is being presented on the use of ICT at the Symbiosis Centre for Distance Learning, Pune, India. This case study enumerates the many challenges faced by education providers in developing countries and the ability to harness the immense power of innovative ICT solutions to cope with these challenges. The case study specifically focuses on the distance & open education sector in India.

Case Study of Symbiosis Centre for Distance Learning

Overview of Situation

Symbiosis Center for Distance Learning (SCDL) is a private ODL institute in India offering programs through distance education. The institute has been a pioneer in developing many ICT solutions and facilities to improve the quality, accessibility, delivery and reach of education to more than 100,000 distant learners from all corners of India and 16 different countries. SCDL provides 25 academic programs in more than 136 courses of study in faculties of Management, Information Technology, Education and Humanities & Law.

Highlights

ICT has been effectively used in Symbiosis Centre for Distance Learning in all aspects of education delivery, quality improvement, skill development, student care services, academics, administration & management.

SCDL has created and implemented many innovative ICT applications coupled with innovative business solutions such as:

- A comprehensive Student Information System (SIS)
- E-learning / online learning providing high quality, standardized content
- Student Care Center
- Call Center
- Online Assignments / Online Project Report Submission
- On Demand Examination
- Mass Email System
- Sophisticated and personalized Web Portal
- Online Question Bank
- Dynamic generation of diploma

Innovations in ICT

Information Technology and Communication solutions can be implemented with 7 key objectives:-

- Providing learning opportunities to those seeking knowledge irrespective of their geographic location, socio-economic or cultural backgrounds
- Providing access to education in order to ensure inclusive growth
- Building IT literacy especially in young children
- Providing low cost & low energy consuming solutions in delivery of education
- Providing better student services
- Providing opportunities of learning from good teachers coming from cities to students based in rural areas without physical movement of teachers or students
- Providing high quality standard content to improve overall quality of learning
- Improving administrative efficiency and transparency

Challenges faced by Symbiosis Center for Distance Learning

- to ensure highest academic standards by latest high quality, standardized content in order to provide better learning experiences and provide curriculum in line with industry needs
- to set & maintain quality standards in academics, operations and administration
- to obtain staff trained in IT skills
- to motivate & create a positive attitude in existing staff members & faculty in order to make them more “IT savvy” & train on e-learning development
- to gather management support for introducing and implementing IT solutions and online learning components as part of the education system of SCDL
- To develop, purchase and implement appropriate IT solutions only where necessary and ensure proper fund allocation by controlling unnecessary costs associated with implementation of expensive IT solutions

- To continuously track, manage and maintain complete data related to students demography, academics, fees, submissions, examinations, profiles etc.
- To manage large number of learners coming from varied backgrounds and provide content and student care services without compromising on quality and timelines
- To maintain a culture of professionalism, customer focus in order to treat student as a customer and to ensure high efficiency at all levels of administration and management
- To create business processes in order to resolve student queries/issues promptly and effectively so as to achieve complete student satisfaction.

IT Solutions and Business Process Implemented at SCDL

- **E-learning and online learning** – SCDL has developed interactive e-learning content having real-life case studies, scenarios and simulation. Students are also given small assignments and tests to understand their learning effectiveness. Besides the e-learning content, SCDL faculty also provide on-line lectures which are delivered for every topic of the curriculum. Students can view the faculty notes, see and hear the faculty and also ask questions. The online lectures give a synchronous learning experience to the students and provide an in-classroom experience. Furthermore students also experience peer-interaction. Besides the online lectures SCDL provides on-line chat sessions with faculty during which students can ask their queries using type-chat to further resolve their doubts. All these modes of learning have helped distance learners to get a better learning experience.
- **Skill Development** – Since it is easily possible to update e-content, SCDL ensures that the content and curriculum is updated on a continuous basis as per changing industry needs. SCDL maps the skills required by the industry for specific domains and build those into the e-content. The assessments are also developed in such a manner that they can test whether the student's skills are developed as per the learning outcomes.
- **Software to track complete details for paper based assessments submitted by students** – This system tracks the inwarding date (date when the assessment was received and entered in the system), the faculty to whom it has been assigned for evaluation and the expected timeline for receiving it back, the marks obtained by the system and the faculty's comments/evaluation report. This data is further posted on the web site in real-time mode so as to enable students to view at what stage of evaluation their assessments are. This drastically reduced the queries of students to the institute asking about the status of their assessments and brought about complete transparency in the process.
- **Pre-enrollment guidance system** – this software allows potential students to understand which programs/courses offered by the institute would be suitable for them considering their previous academic background, interests and career choices. The system also allows students who have not yet been admitted to the institute to track the status of their admission/enrollment form. This system has helped the enrollment department to provide some automated pre-enrollment counseling to potential students.
- **Student Information System (SIS)** – This system tracks complete student data from enrollment to graduation. It is a system driven by rules and privileges and provides appropriate access rights to various departments as per their job role. The data tracked in the system is also displayed real-time on the institute's web site for student viewing. The most commonly used screens from this large ERP system is 'Student View'. This view is organized like a file with various file tabs. Once the student's registration number is entered in SIS, it displays complete student details organized under various tabs as below:
    a. The Demographic tab
    b. The Fees tab
    c. Communication Tab
    d. Dispatch Tab

- **Mass Email System** – This system allows the institute to send important emails and proactive information to large groups of students at the click of a button. The system allows for selection of a criteria or target group to whom the email is intended. This mass email system has considerably reduced costs associated usually with printed communication.
- **ID Card and Admission Letter Generation System** – This system allows the data entry department to enter complete student details when the admission form is received. The system also tracks the reasons for provisional admission or other deficiencies in the application. The system generates admission confirmation letters and generates pre-laminated ID cards for each admitted student. This data is also reflected on the institute web site and is easily accessible to students who have sent their admission application form and are awaiting admission/enrollment.
- **Post My Query** – This link on the institute web site allows students to send their queries via email to the institute. Instead of sending emails to various email addresses, the link provides an interface wherein the student can select from a list of common queries (administrative queries), type his email address to which the reply is to be sent and add additional text within the message. Once the student clicks submit, the link routes the student’s query to the appropriate department/staff member who handles such types of queries. This link has increased the efficiency of the staff members handling student queries.
- **Integrated Voice Response System** – This system provides automatic data to students who call the institute. The calls are also tracked to ensure better response to repeat calls.
- **Dedicated Student Call Center and Student Care Center** - The Dedicated Student Call Center is a professionally managed setup with over 30 trained call operators who are dedicated to handling only student calls. SCDL is the only educational institute in India to host a professionally managed call center dedicated to answering student calls. The call center receives as many as 1200-1500 calls each day. The call operators extensively use the IT systems such as SIS and Student View which enable them to answer student calls with accurate and quick information.
- **E-communication Center** – This center has over 13 communication assistants who are dedicated to answering student queries received via email. Students send administrative queries using the Post My Query link on the web site. These queries are routed at the back end to the concerned communication assistant specialized in handling those types of queries. The HOD of Student Care Dept. ensures quality of reply and guarantees a response time of 1 business day for any query received in this department.
- **Online Assignments and On Demand Examinations** – SCDL has rolled out assessment engine software which renders an objective test to students. The objective questions are based on application and comprehension levels of learning. The assessment engine generates a test based on these objective questions. The tests or online assignments are self-correcting and student can see complete score card at the end of the assignment. The On Demand exams and Exam Booking System allow students to book an exam for any course for which they are eligible through the Online Exam Booking System. The system allows a student to select a date, time and location (exam center/city) of his choice for appearing for the exam. This completely convenient and flexible system has enabled students to schedule and take exams throughout the year. This has resulted in significant reduction in drop-out rates of students.

Findings and Conclusion

Findings of the Study

The ICT implementations at Symbiosis have resulted in:-

- Standardization of online content and high-quality content
- Continuous updation of content to meet industry needs
- Skill development in students as per industry needs
- Better learning experience for distance learners
- higher student-satisfaction ratio
- lowering the drop-out rate amongst distant learners enrolled with the institute
- Accurate tracking of student data related to academics, fees, administration etc.
- Ability to provide real-time, accurate MIS reports to management on various aspects of academics, administration and finance
- Convenience and flexibility to students due to online assignments & on demand examinations
- Lowering costs / overheads of administration, conduct of exams, costs of postage and other overheads
- Enhancing learning experiences of students & creating a positive attitude
- Streamlining of business processes thereby building efficiency
- Improvement in delivery and quality of education

Conclusion

SCDL has implemented technology significantly but only where necessary without over-use. It has chosen to implement simple, inexpensive yet effective IT solutions which have improved administrative efficiency and quality of education delivery to thousands of students from all corners of India and over 40 different countries. Excellent use of ICT for effective management and delivery of education has resulted in increased enrollment year after year with SCDL today having more than 100,000 active students.

Discussion

The effective use of ICT in education definitely improves the quality & delivery of education and quality of student care services. The contemporary curriculum reflected in the continuously updated content has helped to develop skills in students as per latest industry requirements. Since the content is delivered online it is quite easy to update it on a continuous basis.

ICT helps to create standardized content. It also lowers administration costs and overheads. It provides tremendous flexibility and convenience to students. The effective use of ICT coupled with good quality education results in better student satisfaction. Just as much as it is important to develop and implement innovative ICT solutions for education it is equally important to create and build business process to support such initiatives

Recommendations

For developing countries, ICT can be a powerful tool for achieving access, equity and reach of education. Educational institutions must explore new innovative technology solutions that are not only cost effective but also have a direct impact on quality of education delivery, learner experience, student support services and various administrative & business processes.

Can a Facebook Group Make People's Lifestyle Zero-Waste?

Lara Jean L. Salaysay

University of the Philippines – Open University, Los Banos, Laguna, Philippines
lara.salaysay@gmail.com

Abstract

With plastic pollution plaguing our oceans, citizens respond by shifting to a zero-waste lifestyle. As an archipelagic and social media country, Filipinos interested in shifting to a zero-waste lifestyle have Facebook as a platform to deepen their knowledge on said practice thus translating into action. This research studied a Facebook Group focused on reducing waste in personal lifestyle grounded on the three types of interaction, theory of equivalency, and two effective principles of learning design. Participation to the Facebook group was not required and based on interest. Data was gathered through an interview of the group founder's, questionnaire answered by selected members, and observation of the group's post. The Facebook group has high levels of interaction among all three types and practices the two effective principles. Facebook groups when used correctly can support citizens in updating their knowledge and making choices that would answer societal problems. Further study should be done to harness the potential of social networking sites like Facebook in providing lifelong learning that is not only beneficial for citizens but for society.

Keywords: *Social Networking Sites, Lifelong Learning, Informal Education*

Rationale and objectives or purposes of the study

The Philippines is the country with most time spent online for four consecutive years. The average time is 10 hours and 2 minutes for 2018. It also led the social media penetration with 99%. Of the 76 million Filipinos using social media, 75 million has a Facebook account (Gonzales, 2019). Amidst the proven threat of Facebook in spreading fake news, there is a big potential to harness the use of Facebook in providing lifelong learning to global issues. One global issue is plastic pollution and its consumer-driven solution, Zero-Waste Lifestyle.

In 2015, a video of a sea turtle with a plastic straw stuck in its nostril trended online. It increased consciousness of people on the impact of plastic to marine life. The graphic video was the start of eliminating the use of straws by private individuals. Soon after, the public also started asking private establishments to ditch the straw through the grassroot movement of Straw Wars Philippines[4] (Porcalla, 2018). Since then, reducing waste especially zero-waste plastics had been more evident through the consumer side. Government and businesses had been pressured by the public to cut plastic at source but there is little progress.

Dubbed as a social media nation, Filipinos who are interested in starting a zero-waste lifestyle may have brought their query online. Typing the keyword zero-waste lifestyle on Google Trend[5] shows an increase in interest of the public. The Philippines topped the interests when sorted by region. Zero-waste lifestyle is just being introduced in some schools through the concept of sustainability. Thus, there's a population of Filipinos who don't have formal education regarding this. Some may result to readings blogs or joining online groups to deepen their knowledge on it. A well-known Facebook group is Buhay Zero-Waste which translates to Zero-Waste Life. The group description states that it is "a Filipino community trying to reduce the amount of waste they produce in their day-to-day living."

Studying the group may bring to light how Facebook Groups can be utilized to inform the public on latest global issues and catalyze citizen action. Specifically, this paper would like to investigate the impact of the group to shift the user's lifestyle to a zero-waste one by analyzing the levels of interaction.

Perspective(s) or theoretical framework

Informal learning deeply relies on learner-motivated pursuit of knowledge (Latchem, 2014). According to Erault (as cited by Latchem, 2014), there are three forms of informal learning: incidental and implicit, reactive, and deliberate. Incidental and implicit revolves on learning without the actual intent of gaining knowledge. An example will be a conversation that led to a certain topic or information coming suddenly from television. Reactive deals with learning that is explicit but still spontaneous. One example is the themes used in television shows. Lastly, deliberate informal learning is achieved when the user seek knowledge. An example is watching a video on Youtube or searching in the library for a topic of interest. In this paper, the members of the group are on the deliberate form of informal learning. They had chosen to join a Facebook group where like-minded people can engage in conversations.

---

[4] Straw Wars Philippines started in 2015 as a campaign by Save Philippine Seas to reduce or eliminate single-use plastic straws at the source by engaging with business establishments, such as resorts, cafés, hostels, and restaurants. See more at https://www.savephilippineseas.org/strawwarsph

[5] The keyword used was Zero-Waste Lifestyle covering January 1, 2016 to May 20, 2019. See more at https://trends.google.com/trends/explore?date=2015-01-01%202019-05-20&q=zero%20waste%20lifestyle

There is limited study on informal distance education. Most studies involving Facebook groups used the group as a supplementary tool to formal distance and traditional education. A study by Bett, H. and Makewa, L. (2018) explored the use of Facebook Group for continuous professional growth of English teachers in Kenya. Using content analysis, it concluded that the Facebook group had contributed to the professional growth through discussion focusing on content and pedagogy. Likewise, teachers form their “bond” through posting other content to be able to deepen their connection with each other. A more comprehensive study using metasynthesis of 22 articles identified two effective principles of informal online learning design: interaction opportunities support knowledge construction and learner empowerment; and segmented, titled, and tagged learning objects facilitate personalized learning (Holland, 2019). The study recommended the use of case study in documenting informal online learning than discrete platforms. Likewise, it directed future studies to explore the philosophy of constructivism and the theory of heutagogy as lenses for future researches. Constructivism aims to produce learning through learners constructing ideas through their experiences and environment (Molenda, Reigeluth, & Nelson, 2003). On the other hand, heutagogy which is similar to andragogy is the study of self-directed learning. Heutagogy follows the constructivist theory by focusing on learner-centered reflective practice surrounding real-life questions and deviation from teacher hegemony on knowledge (Holland, 2019).

Moore (1989) posits that there are three types of interaction existing in distance education: learner-content, learner-instructor, and learner-learner. Distance education designers usually focuses on the learner-content interaction. Afterall, it’s the knowledge and skills that learners seek. Learner-instructor is between the learner and an expert. The expert scaffolds and assists the learner in accomplishing the learning objectives. Lastly, learner-learner interaction dwells in the shared learning experiences of learners (Moore, 1989). In addition, the theory of equivalency assumes that deep and meaningful learning will occur if at least one of these interactions are at a high level (Anderson, 2003). This allowed distance education institutions to be cost and time effective by focusing on one level of interaction.

To explore the impact of informal online learning in the lifestyle of its user, I used a case study approach in the facebook group, Buhay Zero-Waste. The case study is anchored on the theory of interaction and theory of equivalence. The study describes the quality of the level of interaction and supports the theory of equivalence to support lifelong learning for self-motivated learners. Likewise, it aims to validate Holland’s two effective principles of informal online learning design despite the lack of distance education background of the group administrators.

Methods or modes of inquiry

Participants

As of writing, there are 37, 026 members of the group accumulated since May 20, 2017. To provide analysis of all answers while being time-efficient, the sample was limited to 30 respondents. The respondents for the questionnaire was randomly chosen. The link to the form was posted on the group. The form includes a guarantee of confidentiality, anonymity, and informed consent. Majority of the respondents are female with 26 respondents, 3 males, and 1 who prefer not to say. The age range is 18 to 46 years old with 25 as a mode.

Materials

A triangulation of data was used to explore the theory of interaction in Buhay Zero-Waste. Data was gathered through observation of the group, interview of founder, and questionnaire to selecte members. I observed the posts and discussion in the group specifically on the content posted, role of the group administrators and interaction among members. Then, I interviewed the group founder regarding her views on the dynamics of the group. Currently, there are ten group administrators but only the founder was interviewed. Afterwards, a qualitative questionnaire was posted on the group to be answered by interested members.

Procedure

The researcher asked for the approval of the group founder before proceeding to the study. The group founder was interviewed online, and a qualitative questionnaire was posted on the group. The researcher asked the group founder for questions arising in terms of confirming the quality of the level of interaction in the group. After three days, the questionnaire was closed. Some participants who agreed to be contacted for follow-up were asked questions.

Results and conclusion(s)

In analyzing the form of informal learning, majority of the respondents are on the deliberate level. 60% of the respondents were intentionally searching for a zero-waste group when they joined. 30% joined the group after appearing as a Facebook suggestion which means that they had been searching for zero-waste topics as it appeared as a suggestion. The remaining were added by a friend. However, we can conclude that all members of the group are on the deliberate form of informal learning as they need to answer a question on why they would like to join the group before being added. The group administrators deny membership to those who don’t answer or offer vague answer such as “to learn.” Likewise, the group never used paid advertisement to increase the number of members. The group spread through word of mouth and free publicity by local national media like GMA News and ABS-CBN.

All respondents have been positive to say that the Facebook group helped them move closer to a zero-waste lifestyle. The responses describe high level of interaction among learner, content, and instructor. In addition, BZW validates the hypothesis that interaction opportunities support knowledge construction and learner empowerment and segmented, titled, and tagged learning objects facilitate personalized learning are effective principles of informal online learning design. As user-generated group, there are multiple opportunities for interaction. Members co-create knowledge through their experiences. Likewise, the search function in the group allows learners to choose which aspect of zero-waste lifestyle do they need information about aside from the chronological and trending-based arrangement of the group’s news feed.

Learner-Content Interaction

The members of the group interact with the content posted by their fellow members. The members of the group interact with the content by reading the main post, following the comment, and reacting using the Facebook emojis. The content is moderated by the group administrators. According to them, the group news feed is being curated with priority to engaging and inspiring shareable posts of actual experiences. Likewise, they ask members to search the group first before posting a question or sharing an information. The administrators do not allow sharing of contest give-aways and soliciting for donations in the information. Brands can't plug their own merchandise in the group. With this, the group administrators created BZW Tindahan (translates to store) for zero-waste suppliers, stores, and establishments that sell zero-waste products or help promote a zero-waste lifestyle and Buhay Zero-Waste Preloved group for an online dumpster drive for pre-loved items. Both groups have significant smaller number of members than the main group.

The content revolves around the following: sharing of personal practices such as upcyling projects and composting techniques; asking for tips and suggestions such as upcycling ideas and product reviews; discussing zero-waste news in and out of the country such as policies implemented in the city and recycling practices in another country like Japan; posting recycling/reusing drop-off points such as recyclable fairs and make-up, pens, even bras drop-off; and advocating for stores adhering to zero-waste concept such as bulk stores and sustainable fairs.

English is used as the primary language when posting and commenting, followed by Filipino. It is rare to see any of the other languages and dialects used in the Philippines. Perhaps, one of the reasons is there are local spin-off Facebook groups for specific places. Depending on the content posted, it can get to less than a hundred to a thousand reactions and hundreds of comments.

Learner-content interaction is high as content is posted every day and older content can be searched in the Facebook group. There is a variety of content posted tackling composting, upcycling projects, reusables swaps, learning opportunities, and drop-off points all related to enabling a Zero-Waste Lifestyle.

Learner-Instructor Interaction

In the context of a Facebook group, the instructor is the group administrators. The founder created the group to serve as a “virtual knowledge library of actual life experiences” that will enable zero-waste lifestyle to its member. She took inspiration from a Philippine Vegan Zero-waste group. However, she believed that not all curious or practicing zero-waste are vegans. Likewise, she wanted to create a local version of Journey to Zero-Waste, a facebook group with a similar goal but has members from all over the world, because of different context in the Philippines. Lastly, she hopes to create a group that will guide Filipinos to getting closer to a Zero-waste lifestyle.

Unlike an instructor, they don’t decide on the structure of the group nor the discussions done. The ten administrators work as volunteers in approving posts, ensuring that the group remain as a positive environment, and blocking those who don’t follow the rules. The group administrators blocked people for plugging businesses, posting irrelevant content, and disrespecting other users mostly for bashing or shaming beginners.

The respondents are divided whether the group administrators affect their shift to a zero-waste lifestyle. However, majority acknowledged that the administrators work in the background to filter the post. Some respondents take inspiration from the posts and comments of administrators as Facebook now tags members with roles such as admin, new member, and visual storyteller. The administrators also get personal messages from curious members regarding their own zero-waste journey.

Learner-Learner Interaction

Based on the content posted by fellow members through main posts and comments, there is high learner-learner interaction. Members have varying degree of zero-waste lifestyle prior to joining the group. Respondents said their level of zero-waste lifestyle was from three to nine with one as non-existent and ten as completely zero-waste. Half of the respondents belong to one to five while the other half chose six to nine. The group is a mix of beginners and experienced advocates of zero-waste lifestyle.

Members increase their knowledge of zero-waste lifestyle specifically through sharing of practices, mapping of zero-waste stores and drop-off points, and latest data. Likewise, members participate in online campaigns through petition-signing. In January 2019, members were among the top campaigners against New Year's Eve's balloon drops and releases. It successfully stopped publicized balloon drops and releases and event organizers released statements of considering eco-friendly practices in their next celebrations. Aside from the cognitive knowledge, interaction touches the affective domain, as well. Sharing zero-waste journey inspires other users to continue with their initiative. It creates a sense of belongingness with other users despite the distance. Some members noted that they're the only one doing this in their circle and seeing a lot of other people in this shared advocacy help keep them on track.

Facebook group can be utilized to address lifelong learning in global issues. In this study, a facebook group with high levels of interaction among learner, content, and instructor and adhering to two effective informal online learning design guided members to shift to a zero-waste lifestyle. It is cost and time efficient as the group administrators moderate posts to avoid repetition, retain relevance, and maintain a positive environment. Members gained knowledge and support system to enable a zero-waste lifestyle. Members have varying levels of zero-waste lifestyle and some are still producing waste or using plastic but with lesser quantity that what they usually do. The group values respect the levels of zero-waste lifestyle and prioritizes progress than perfection. The success of the group was achieved though group administrators have zero knowledge on online informal learning design. What more can be achieved in other issues with an informed knowledge of distance education?

Discussion

According to the theory of equivalency, at least one type of interaction must be high to enable learning in a distance education context. Learning translated to action occurred in the Facebook group as it had high levels of interaction among the three types: learner, content, and instructor. Contrary to the theory of equivalency, maintaining high level of interaction in the three forms are cost and time effective. As a volunteer-run group, administrators spend minimal time in moderating post content. The group banked on user-generated content.

Despite the lack of formal distance education background of the group administrators, the group were unconsciously aligned to the two effective informal learning design: interaction opportunities support knowledge construction and learner empowerment; and segmented, titled, and tagged learning objects facilitate personalized learning (Holland, 2019). With the content being user-generated, it allowed for high levels of co-constructing knowledge of the learners through experiences. Likewise, the design of facebook allowed for personalized learning through the search function. Facebook features that were not utilized were mentorship and units. This can also allow for more structure in learning zero-waste lifestyle. Learners who have less autonomy may be overwhelmed by the amount of information and may want detailed structure to follow.

The study only surveyed a small sample of the population. Other factors that may affect their interest and practice such as age, gender, educational attainment, and socio-economic status were not considered in analyzing the impact of the facebook group to the respondents.

When facebook groups maintain high level of interaction among learner, content, and instructors with minimum cost involved, we can guarantee learning to translate into actions. features of Facebook as a platform allow for more personalized and constructive knowledge creation which are standards for informal online learning design. Concerned agencies may use this information to supervise interest-based groups to support lifelong learning in terms of existing global issues of learners.

Recommendations (if any)

The researcher would like to recommend the following:

- Comparison between more place-specific facebook group (ex. Buhay Zero-Waste Cavite) contrary to Buhay Zero-Waste;
- Consider other factors that may affect lifelong learning and the dynamics of the group such as age, gender, socio-economic status, and educational attainment;
- Analysis of circle of digital friends and the exposure to national and global issues; and
- Analysis of learning through Facebook pages, Instagram influencers, and Youtube bloggers.

References

Anderson, T. (2003). Getting the Mix Right Again: An updated and theoretical rationale for interaction. *International Review of Research in Open and Distance Learning, 4*(3).

Bett, H., & Makewa, L. (2018). Can Facebook groups enhance continuing. *Asia-Pacific Journal of Teacher Education*. doi:10.1080/1359866X.2018.1542662

Gonzales, G. (2019, January 31). *Filipinos spend most time online, on social media worldwide – report*. Retrieved from Rappler: https://www.rappler.com/technology/news/222407-philippines-online-use-2019-hootsuite-we-are-social-report

Holland, A. (2019). Effective principles of informal online learning design: A theorybuilding metasynthesis of qualitative research. *Computers & Education*, 214-226.

Latchem, C. (2014). Informal Learning and Non-Formal. *Journal of Learning for Development, 1*(1).

Molenda, M., Reigeluth, C., & Nelson, L. (2003). Instructional Design. *Encyclopedia of Cognitive Science, 2*, 574-578.

Moore, M. (1989, January). Three Types of Interaction. *American Journal of Distance Education, 3*(2), 1-7. doi:10.1080/08923648909526659

Porcalla, D. (2018, June 14). *Philippines 3rd largest contributor to ocean plastic*. Retrieved from PhilStar: https://www.philstar.com/headlines/2018/06/15/1824813/philippines-3rd-largest-contributor-ocean-plastic

The Development of Electronic STOU-EPT

Alisa Vanijdee

School of Liberal Arts
Sukhothai Thammathirat Open University, Thailand
Alisa.van@stou.ac.th, avanijdee@hotmail.com

Abstract

Sukhothai Thammathirat Open University (STOU) first offered the electronic STOU English performance test (STOU-EPT) in 2017. The purpose of the paper is to give account of how the test was developed. The main objective of this standardized test is to measure the performance of candidates who wish to pursue graduate studies, and it also serves as an English exit examination for undergraduate students. The development process started with rationales for test development, project planning, needs analysis, test design, review of the test, item writing and revision, recording the listening texts and conducting pilot study. It was designed based on CEFR (2001) criteria and with the advisory of Dr. Weir and team from the University of Bedfordshire, UK. The test consists of three skills: listening (25%), structure (35 %) and reading (40%). Test specifications for listening and structure were based generally on CEFR (2001) criteria and Grammar City & Guilds ESOL, AWL words, ALTEcando. Lexitutor program was implemented to evaluate the level of difficulty of the reading and vocabulary section. The test measures A2, B1 and B2 levels for all three skills. The Office of Registration, Records, and Evaluation helped to make the electronic format delivery. The exclusive nature of electronic STOU-EPT is that it is offered in electronic format. The test includes 4 sets of 100 items each; thus each section (listening, structure and reading) can be mixed and matched to create more test versions. Also, the test results, along with the descriptions defining the levels, are provided immediately after the test. The next phase of STOU-EPT is to perform the reliability test, and test items need to be updated with more question items added and designed for the upper levels of C1 and C2 for a higher level of performance. Also, it needs to be modified to be in accordance with the CEFR Companion Volume with New Descriptors (2018), the digital context and electronic delivery must be updated.

***Keywords**: English performance testing, online testing, CEFR based test*

Rationale of STOU-EPT development

Sukhothai Thammathirat Open University first attempted to use electronic STOU-EPT (Sukhothai Thammathirai Open University English Performance Test) in 2017. It is a test based on Council of Europe Frame of References: Languages, or CEFR (2001). The aims of the test are graduate student assessment and an exit exam for undergraduate students.

The paper version STOU-EPT had been offered for more than 20 years; it included Dialogue (listening and speaking), vocabulary and structure, and writing (error recognition) totaling 100 items. It was based on TOEFL paper styles and had been modified periodically. However, the listening and speaking part was multiple-choice format and it was not benchmarked with other standardized tests. The need for revision became obvious.

In 2010, Associate Professor Dr. Vanijdee, with the support of the university, attended a training course in standard test writing at the *Centre for Research in English Language Learning and Assessment* at the University of Bedfordshire, UK. led by Dr. Weir and his team — Dr. Green, Dr. Nakatshuhara, and Dr. Unaldi, renowned academics in language testing in the UK. The focus of the test writing training was based on CEFR (2001) criteria and on four skills: listening/speaking, grammar, reading and writing.

In 2001, the STOU-EPT: electronic version was proposed to the university. The test items were written by instructors in the School of Liberal Arts. The Office of Registration, Records, and Evaluation of STOU, who at the same time worked on an electronic walk-in exam, participated in the establishment of this electronic version. The test includes just three parts: listening (25%), structure (35%), and reading (40%) as speaking and writing tests involve supplying a large number of test assessors. Prospect test-takers are mostly STOU students. The four sets include100 items each. Each section of the test in each set can be combined or 'mixed and matched' making 64 different tests. The test was piloted, reviewed and revised meticulously.

STOU-EPT eTesting was first launched on 27 August 2017 with 2 more operations, in 2018 with 6 operations, and 2019 (April) offered 2 operations. Angsuchoti, S., Juimoungsrti, S., Sirirongpan, C., Sittirit, P., Jiraro, S., Santhitiwanich, A., Ponapichat, P. (2018) in "An Evaluation of STOU-EPT Testing System" has summed up the testing system under the following topics: (1) online registration; (2) STOU-EPT items bank and data base consisting three parts with different response methods (multiple-choice questions, matching, and fill in the blanks); (3) practical test management: STOU-EPT items banking can be randomly selected, so the 4 sets of test can be randomly managed into 64 versions. (Also includes the archive of testing for individual test-takers and the test items); (4) test operation: test-takers have to login and try different sections of the test, submit each part, plus overall submission, tests are graded and the results processed including description of test-taker performance which are provided (printed out) immediately after the test; (5) test control: management and housing tasks on the day of test taking.

Theoretical framework

The classic definition of the test is to measure what it is supposed to measure. (Weir 1990). Performance test is a test designed to measure overall performance of test-takers. It can be used to evaluate students before attending an academic program. It also needs to be standardized with its validity and reliability.

The challenges in developing a standardized test lie in the test questions and the delivery. STOU-EPT eTesting has been developed under the supervision of Dr. Weir and his team from the Centre for

Research in English Language Learning and Assessment at the University of Bedfordshire, UK. In terms of content or test questions, it is based on CEFR (2001) criteria.

Test development process as summed up by Motteram, J (2019) from the British Council, Republic of Singapore includes reasons for test development, project planning, needs analysis, test panel review, design and specification, rater/item writer training, item writing and quality assurance, piloting, pretesting and analysis, revision of content and specification, test delivery (live administration), monitoring. STOU-EPT development at its beginning stage had performed all of these steps. The test on computer system was also piloted and adjusted to be efficient for test-takers.

Methods

1. The design and pilot testing

The design of the test started with the rationale and project plan submitted to the university. The needs analysis was qualitative research from the data of paper STOU-EPT, and the development team. The test items were written based on CEFR (2001) criteria and supplementary resources, discussed for any improper content or wordings, and later revised accordingly. After revision, the recording of the listening texts were conducted. The test was also piloted for the test items and with the electronic system concerning listening, time pause and appropriate and easy–to-understand instructions. The pilot for electronic aspect was conducted with 40 students. Some of the instructions were revised. The timing was also adjusted precisely to make an effective electronic test.

2. Test specifications

Test specifications are very crucial to the test; it is the determination of the goal of the test. The design of the test started with the overall specifications from CEFR (p 48-49) consisting of domain, locations, institutions, persons, objects, events, occupations, texts with the detailed contents as follows:

2.1 The general criteria was based on the listening, reading, spoken interaction and spoken production of CEFR (2001) p 24, 26-27) as guidelines for all levels of performance. (See Appendix 1 Global Scale)

2.2 The content of the item questions, the reading texts and the topics for listening were based on CEFR as follows: *Domain* includes personal, public, occupational, educational. *Location* includes home, family, friends; public spaces; offices, factories, workshops; schools, colleges, universities. *Institutions* includes family, social networks; public authorities; firms, corporations, industries; professions, learned societies. *Persons* includes family and friends, intimate; official, shop personnel, drivers; employers/ees, managers; class teachers, teaching staff. (CEFR 2001 pp 48-49). This notion is comprehensive as a basis of the writing of test items as it corresponds with what the test-takers have to be able to perform in real life.

2.3 Task types were designed based on Dr. Unaldi’s specifications based on her research.

Task types include response methods, text length, structural resources (words/sentences, the complexity of sentences, cohesion, lexical resources—K1, K2, K3, K4 and AWL words), nature of information (abstract or concrete). Content knowledge (technical, processional or common) discourse mode (genre, rhetorical task, pattern of exposition, explicitness), cognitive (type of reading), texts levels (sentence, across sentences and text).

The following table shows the details of each issue from level A2, B1, and B2. Deciding on a reading passage for the test involves all aspects: beginning with discourse mode – the type of texts that are going to be used and test-taker need of content knowledge; the number of words; the sentence structure. Types of questions and response format are also considered.

Table 1: A summary of task types from Dr. Unaldi

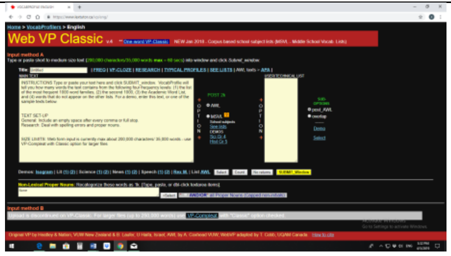
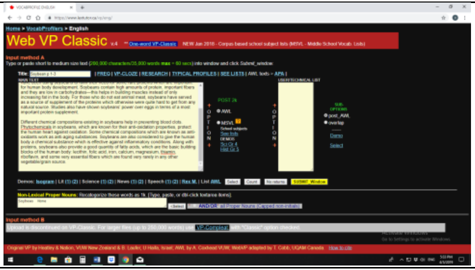
	A2	B1	B2
Response method	MCQ, sequencing, sentence completion, gap filling, information transfer (Read and fill out a form),	MCQ, multiple choice sentence completion, MCQ gap filling, multiple choice cloze, multiple matching, sequencing	MCQ, multiple choice sentence completion, MCQ gap filling, multiple choice cloze, multiple matching, sequencing
Text length	250 words	up to 500 words	up to 750 words
Structural resources	Words/sentence: Ave 12 Flesch-Kincaid Grade Level: Ave 6 The complexity of sentence structure: mainly simple sentences Cohesion: explicit	Words/sentence: Ave 15 Flesch-Kincaid Grade Level: Ave: 8 The complexity of sentence structure: mostly simple sentences (but some use of subordinate clauses in PET) Cohesion: explicit	Words/sentence: 18 Flesch-Kincaid Grade Level: 12 The complexity of sentence structure: a range of sentence patterns, frequent compound sentences Cohesion: the relations between the parts of the text may not be signaled explicitly
Lexical resources	95% K1-20 words = K1 89.2% K2 5% K3 0.7% AWL words: 0.6%	95% K1-20 words = K1 84.7% K2 8.7% K3 2.3% AWL words: 2.5%	95% K1-20 words = K1 84.2% K2 7.8% K3 2.6% K4 1.3% AWL words: 3.3%
Discourse mode	**Genre:** biography, letters, notes, emails, stories (people/animal events) Simple documents on everyday matters Simple informational sources (encyclopedia, reference books, leaflets and brochures) - **Rhetorical task**: Narrative, descriptive, instructive - **Pattern of exposition**: define, describe, illustrate -**Nature of information**: concrete - **Content knowledge**: areas immediate relevance, simple informational expository content	**Genre:** expository and informative newspaper/magazine articles on familiar subjects, simple informational sources, biographic texts with description of events, feelings and wishes, book reviews - **Rhetorical task:** Narrative, descriptive, instructive, expository - **Pattern of exposition**: define, describe, elaborate, illustrate, compare and contrast, classify - **Explicitness of text structure**: explicit - **Nature of information**: concrete - **Content knowledge**: not required, everyday situations encountered in work, school, leisure etc. familiar topics in expository texts	**Genre:** newspaper/magazine articles, reports (on professional topics) specialised articles (in related fields), books informational sources (e.g., brochures, guides, manuals) - **Rhetorical task**: historical biographical narrative, descriptive, instructive, expository, persuasive, argumentative - **Pattern of exposition:** define, describe, elaborate, illustrate, compare and contrast, classify, cause and effect, problem and solution, justify - **Explicitness of text structure**: less explicit structure - **Nature of information:** both concrete and abstract - **Content knowledge**: content can be slightly specialised yet accessible to common reader: technical and professional discussions and correspondence, contemporary problems

Table 1 (continued): A summary of task types from Dr. Unaldi

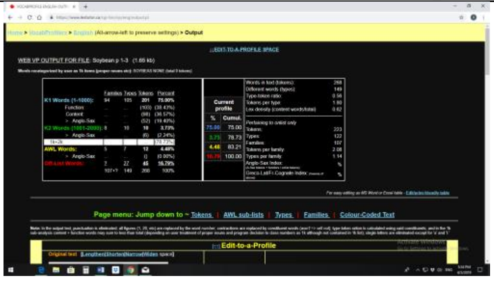
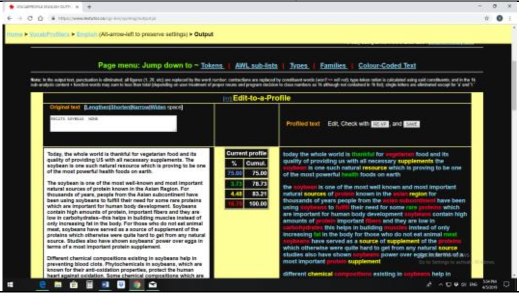
Cognitive Type of reading	1. establish meaning within and across sentences; understand the main points/facts in short and simple texts (to be able to answer what the major events/reason/solution/results etc. was in one or two sentences) 2. understand simple/local cohesion 3. guess the meaning of words from the contexts 4. use a lexical item in context (MCQ) 5. identify the right parts of speech to be used in context	1. establish meaning across sentences; understand the main ideas and/or relevant points and the relation between them, though not necessarily in detail (description of events, feelings and wishes, clearly significant and clearly signaled reasoning, and argumentation) 2. identify the main idea of a paragraph (stated relatively explicitly in the paragraph) 3. identify the purpose of the writer at paragraph level (stated relatively explicitly in the paragraph) 4. identify the meaning of unfamiliar words from the context 5. identify the meaning of occasional unknown words from the context and deduce sentence meaning (using a lexical item in paraphrase sentences) 6. identify the right parts of speech to be used in context 7. identify the referents of pronouns	1. establish meaning across sentences; understand the main ideas and relevant points and the relation between them in detail 2. identify the main idea of a paragraph (stated relatively implicitly in the paragraph) 3. identify the purpose of the writer at paragraph level (stated relatively implicitly in the paragraph) 4. search read quickly to locate relevant information 5. identify the main idea of the whole text
Text levels	word, sentence and across sentences	word, sentence and across sentences	sentence, across sentences and text

2.4 Lextutor for the vocabulary tests for reading passages

The Compleat lexical tutor (http://www.lextutor.ca/) is a free program for the study of concordance, vocabulary profiler, exercise maker, interactive exercises and others. The following figures show the process of the analysis of a reading text.

1. Choose WebVP Classic v 4	**2. Enter the text**
	

(Source: https://www.lextutor.ca/vp/eng/ retrieved 4/5/ 2019)

3. Click submit_window for output profile	**4. More detailed analysis**
	

(Source: https://www.lextutor.ca/cgi-bin/vp/eng/output.pl/ retrieved 4/5/ 2019)

The output shows K1 Words (1-100), K2 (1001-2000), AWL words, and Off list words, with types and tokens, family. These data are for adjusting the text to the appropriate level.

Results

STOU-EPT eTesting consists of 3 parts: Listening 25 items 25 marks; Structure 35 items 35 marks; Reading 40 items 40 marks. (See Appendix 2 STOU-EPT manual)
The listening tasks were developed as follows:

1. conversation: A dialogue and match with the pictures 8 marks
2. B1 A Monologue of 6 speakers and match them with relevant topics 6 marks
3. B1 B Listen to a talk and get the main idea, then fill in the words to summarize the talk 6 marks
4. B2 Listen to the lecture and answer True or False 5 marks

The reading tasks consist of 6 passages with different levels ranging from A 1-2 to B1- B2 according to the test specifications. The passages are determined by topic, number of words, type of texts, and measure of difficulty and vocabulary by Lexitutor program and task types.

Structure items are designed based on Grammar City & Guilds ESOL, AWL words, ALTEcando. The difficulty lies in the complexity of grammar and the difficulty of vocabulary level.
The marks and descriptors for each skills range from A2-B1-B2.

Part I - Listening

Marks (25)	**Descriptions**	**CEFR-based level**
0	No attempt made.	**-**
1-8	The candidate probably has sufficient performance to understand everyday English and short, simple, clear, personal and public messages**.**	**A2**
9-20	The candidate probably has sufficient performance to access straightforward factual information and language used in educational contexts.	**B1**
21-25	The candidate probably has sufficient performance to access standard spoken language in educational contexts and various content-based lectures.	**B2**

Part II - Structure

Marks (35)	**Descriptions**	**CEFR-based level**
0	No attempt made.	**-**
1-10	The candidate probably can use some simple structures correctly but still systematically makes basic mistakes.	**A2**
11- 23	The candidate probably can use some simple structures correctly but still systematically makes fewer basic mistakes than A2 level.	**B1**
24-35	The candidate probably can show sufficient knowledge for straightforward situations in educational contexts.	**B2**

Part III - Reading

Marks (40)	**Descriptions**	**CEFR-based level**
0	No attempt made.	**-**
1-7	The candidate probably can access simple documents on everyday matters and simple informational sources.	**A2**
8-21	The candidate probably can access expository and informative sources, and other English texts in commonly encountered educational contexts.	**B1**
22-40	The candidate probably can access English texts that might be encountered most in educational contexts.	**B2**

Discussions and Recommendation

STOU-EPT e-testing is beneficial and expresses STOU potential in developing standardized tests at the local level. It was designed based on the CEFR (2001) criteria with the content (domain, location, institutions, persons) meticulously planned. The task types also support the issues to be evaluate and of great variety in the level of A2, B1, and B2. Most of all it was designed to be used via computer testing and can be implemented online. All in all, the STOU-EPT (eTesting) is useful for graduate students to continue their studies and for the undergraduate students for the exit examination before finishing a B.A. degree. Test-takers can get the results with descriptors of the level immediately after the test. It can accommodate a large number of students at a reasonable cost. It has been offered for 20 test sessions and is in the process of research for reliability to be a standardized test. The validity is approved from the meticulous design in all aspects as mentioned earlier. However, with the coming of 21st century disruptive technology, STOU EPT eTesting needs to be concerned with two issues: (1) CEFR companion (2018) new descriptors and (2) globalisation of the test.

Firstly, STOU-EPT must be modified using the CEFR companion (2018). The Council of Europe has expanded and adjusted the CEFR (2001) as "*Common European Framework of References for Languages: Learning, Teaching, and Assessment: Companion Volume with New descriptors*". The issues that need to be taken into consideration are language variation, mediation, plurilingual repertoires and online interaction in today's digital contexts.

According to Professor Ruschoff (2019), CEFR has been a powerful benchmark on language policy for many decades; it ties the curriculum, teaching and learning objectives and the overlapping of teaching and evaluation. At the beginning it was concerned with communication, culture and societies. There are *descriptors of performance* and *can do statements* which emphasize what the learners can do instead of marks or grades. For CEFR 2.0, there is a need to adapt to accommodate changes and increasing modality in communication practices, expanding scopes of genres/cultural artefacts; also the concept of mediation – cross modal communication, interactive, and transactional practices.

The challenges for today's performance lie in globalization, digitalization, connectivity, diversification of modes of communication, interaction, social/professional networking, changing perception of native-speaker model, plurilingual and pluricultural contexts. The issues taken into consideration are as follows**:**

Language variety includes societal developments: increase diversity, developments in second/foreign language education, new sensibility, intelligibility.

Phonology focuses on comprehensibility and intelligibility.

For listeners: Familiarity with accent/variety/diversity/willingness to interact, positive attitude towards L1/L2 speakers and linguistic diversity.

For speakers: Accent/variety is less important than comprehensibility and intelligibility

Mediation from linguistic, culture, textual, through and with media, social, pedagogic

plurilingualism vs multilingualism focuses on the variety of language use.

Plurilingual and pluricultural competence consists of pluricultural repertoires, plurilingual comprehension where the learners are social agents in a social-oriented approach because the goal of learning languages changes disruptively; the ideas towards native-speaker quality of speaking has shifted to qualitative speakers.

STOU-EPT thus has to study all of these issues and trends and modify its test items.

Secondly, STOU-EPT eTesting needs to move forward. In which direction? The author of this paper and the initiator of STOU-EPT eTesting proposed that it must co-operate with international standards organization to develop the glocal test which has core part and specific part. Motteram J. (2019) proposes that the test glocalisation within the global context is divided into two types: Glocal Test Type I (APTIS) and Glocal Test Type 2. The university also needs to consider the important issue of tendency to Fragmentation (O' Sullivan 2019) which means the tests will be distributed or fragmented into more specific tests for each area, setting more specific objectives to each location or country using the test.

To sum up the next immediate steps are the modification of the test items to be in accordance with CEFR (2018 descriptors) and the definite policy whether STOU is going glocalisation with the standard organization while maintaining the prestige of its academic endeavor. The modification for the present test involves administration issues in that the university needs to invest more on the study and budget to develop STOU-EPT eTesting to its full potential in all skills. The 2nd phase of STOU-EPT will be focusing on providing more test items and developing a writing exam. These skills are an immediate need for graduate students. The 3rd phase may aim at a speaking test which involves many aspects such as the quality of standard assessors.

References

Angsuchoti, S., Juimoungsrti, S., Sirirongpan, C., Sittirit, P., Jiraro, S., Santhitiwanich, A., Ponapichat, P. (2018). *An Evaluation of STOU-EPT Testing System*. Sukhothai Thammathirat Open University.

Common European Framework of Reference for Languages (2001). available at https://www.coe.int/en/web/common-european-framework-reference-languages. Retrieved 4/6/2019.

Common European Framework of Reference for Languages: Learning, Teaching, Assessment Companion volume (2018). Council of Europe February 2018 Available at https://rm.coe.int/cefr-companion-volume-with-new-descriptors-2018/1680787989

Motteram, J. (2019). *A Test Development for Developing Localised and Local Test*. Paper presented at 54th RELC International Conference and 5th Asia-Pacific LSP and Professional Communication Association Conference Teaching and Learning of English for Academic, Professional and Other Purposes in the Digital Era 11 - 13 March 2019, Republic of Singapore.

Rüschoff, B. (2019). *Digital Tools, Language Learning and Digital Literacies in the*

21st Century Language Classroom. Paper presented at 54th RELC International Conference and 5th Asia-Pacific LSP and Professional Communication Association Conference Teaching and Learning of English for Academic, Professional and Other Purposes in the Digital Era 11 - 13 March 2019, Republic of Singapore.

Rüschoff, B. (2019). *Teaching and Learning of English for Academic, Professional and Other Purposes in the Digital Era.* Paper presented at 54th RELC International Conference and 5th Asia-Pacific LSP and Professional Communication Association Conference Teaching and Learning of English for Academic, Professional and Other Purposes in the Digital Era. 11 - 13 March 2019, Republic of Singapore.

Rüschoff, B. (2019). *Language Learning and Assessment in the Digital Era*. In *Conversation with Invited Speakers* Ana Pellicer-Sanchez, Rose Clesham & Bernd Ruschoff Chair: Marie Yeo at 54th RELC International Conference and 5th Asia-Pacific LSP and Professional Communication Association Conference Teaching and Learning of English for Academic, Professional and Other Purposes in the Digital Era. 11 - 13 March 2019, Republic of Singapore.

Rüschoff, B. (2019). *The CEFR and Language Learning in the Digital Era: Challenges and Opportunities.* Paper presented at 54th RELC International Conference and 5th Asia-Pacific LSP and Professional Communication Association Conference Teaching and Learning of English for Academic, Professional and Other Purposes in the Digital Era. 11 - 13 March 2019, Republic of Singapore.

Vanijdee, A. (2010). *The development of electronic STOU-EPT.* Executive Report submitted to Sukhothai Thammathirat Open University.

Vanijdee, A. (2001). *A Report on Development of Standardized Test* . Centre for Research in English Language Learning and Assessment University of Bedfordshire, UK. 28 August to 28 September 2009.

Vanijdee, A. (2019). *The Assessment and Evaluation of Online B.A. English Courses in the 21st Century: Challenges and Possibilities*. Electronic Journal of Open Distance Innovative Learning (EJODL) Volume 9/ 2 July-December 2019 Sukhothai Thammathirat Open University.

ACADEMIC COMMITTEE

Assoc. Prof. Dr. Krisana Rungrojwanich, Chairperson

Assistant Prof. Dr. Bhawat Chiamjinnawat, Vice-Chairperson

Prof. Dr. Boontip Siritarungsri

Prof. Dr. Porphant Ouyyanont

Prof. Dr. Sumalee Sungsri

Assoc. Prof. Dr. Araya Prasertchai

Assoc. Prof. Dr. Duongdearn Suwanjinda

Assoc. Prof. Dr. Kamolrat Intaratat

Assoc. Prof. Dr. Poonsuk Wetwithan

Assoc. Prof. Dr. Sineenuch Khrutmuang Sanserm

Assoc. Prof. Dr. Supawadee Theerathammakorn

Assoc. Prof. Dr. Walaiwad Chaiyabutr

Asst. Prof. Dr. Khajitpan Kritpolviman

Asst. Prof. Dr. Koolchalee Chongcharoen

Asst. Prof. Dr. Kultida Bunjongsiri

Asst. Prof. Dr. Narinthip Thongsri

Asst. Prof. Dr. Premruetai Noimuenwai

Asst. Prof. Dr. Songlak Sakulwichitsintu

Asst. Prof. Dr. Sungworn Ngudgratoke

Asst. Prof. Dr. Wunlapa Sabaiging

Dr. Boriboon Pinprayong

Dr. Chamnian Rajphaetyakhom

Dr. Khajornsak Sitthi

Dr. Sathita Wimonkunarak

INTERNATIONAL REVIEWERS

Prof. Dr. Makiko Miwa (The Open University of Japan, Japan)
Prof. Karen Francis (University of Tasmania, Australia)
Assoc. Prof. Dr. Alison Kearney (Massey University, New Zealand)
Assoc. Prof. Dr. Indah Wahyuni Hermin (Universitas Gadjah Mada, Indonesia)
Assoc. Prof. Dr. Yasuhiko Tsuji (The Open University of Japan, Japan)
Assoc. Prof. Hommala Phensisanavong (National University of Laos, Laos)
Asst. Prof. Dr. Jeetendra Pande (Uttarakhan Open University, India)
Asst. Prof. Dr. Shuang He (Hubei University, China)
Dr. Andy Liew Teik Kooi (Wawasan Open University, Malaysia)
Dr. Ishan Abeywardena (University of Waterloo, Canada)
Dr. Jean Saludadez (University of the Philippines Open University, Philippines)
Dr. Kam Cheong Li (Open Universtiy of Hong Kong, Hong Kong)
Dr. Martha Prata-Linhares (Universidade Federal do Triangulo Mineiro, Brazil)
Dr. Maximus Gorky Sembiring (Universitas Terbuka, Indonesia)
Dr. Michele Notari (PH Bern University of Teacher Education, Switzerland)
Dr. Ng Khar Thoe (LECSAM, SEAMEO, Malaysia)
Dr. Nashwa Ismail (The Open University UK, UK)
Dr. Tola Olujuwon (Adeniran Ogunsanya College of Education, Nigeria)
Dr. Thirumeni Subramaniam (Open University Malaysia, Malaysia)
Dr. Wei Li (Open University of China, China)
Dr. Will Barratt (University Malaya, Malaysia)