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Integration of Technology in Higher Education in Myanmar: A Review of University Teachers' Perceptions of Barriers and Supports

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Abstract. Educational reform has been performed with respect to the integration of technology in daily classroom practices at higher education level in Myanmar. Digital technologies and digital classrooms become the most significant and dynamic issues. Since Myanmar is a lower level income country at the very early stage of ICT development, many challenges and barriers would be inevitably experienced by teachers and students in terms of technology integration into classroom practices. This study aims to examine the perceptions of university teachers to technology integration in classroom practices and possible barriers and supports for creating digital classrooms. With this aim, through the identification of individual, professional, institutional and contextual barriers, this study tries to reveal the perceptions, barriers and challenges and supports needed for implementing digital classrooms at university level. Online survey was used to collect data. The language used in the survey is English. Two hundred fifty-two university teachers participated in the survey to examine potential barriers and supports to integrate technology in classrooms at higher education level in Myanmar. The data was analysed by using mixed method, involving quantitative analysis method and qualitative analysis method. This paper aims to meet the needs of the educational reforms performing at higher education in Myanmar.

Keywords. Digital Classroom, Technology Integration, Higher Education, Barriers, Supports

1. Introduction

While more educators and teachers are using technology in the classroom every day, there is no monolithic way for university teachers to implement new forms of teaching and integrate technology into the classroom (Wood et. al., 2005). Also in Myanmar, education reform has rapidly occurred to bring education to international standard. Integration of educational technology has become the most significant issue in higher education of Myanmar. It is to utilize technology in academic setting. As regards the integration of technology in education and implementation of digital classrooms, many challenges and barriers are waiting both for teachers and students.

According to a research conducted by Smarter Scotland of Scottish Government, digital technology can enhance learning and teaching, make a substantial contribution by enriching education and lead to improved educational outcomes if used effectively and appropriately. Teachers play a pivotal role for integrating technology in the classroom (Mercer &

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Fischer,1992; Schofield, 1997; Brosnan, 1998). Significantly, it is important to know how technology is integrated to create digital classroom, the potential barriers and supports to computer integration, the perceptions of university teachers and how these variations impact on teaching practice. Most of the data about barriers and supports follow from surveys (Rosen & Weil, 1995; Becker & Ravitz, 2001; Specht *et.al*.,2002) and derives from empirical studies in which typically addressed one or two specific concerns, such as computer anxiety (e.g. Wood *et. al*., 2001). In order to understand a rich context of the barriers and supports that university teachers face, there should be more elaborations and identifications and investigations to their experiences, teaching practices and expectations.

The aim of the present study is to provide an initial attempt in order to present university teachers' concerns and perceptions of the potential barriers and supports available to creating digital classrooms at higher education level. The objectives of the study are:

(1) To access challenges and barriers waiting both for teachers and students in terms of technology integration in education

(2) To examine the supports available for creating digital classrooms in higher education

(3) To reveal university teachers' perceptions on barriers and supports needed for implementing digital classrooms at university level through the identification of individual, professional, institutional and contextual issues.

The questions addressed in the research are:

(1) What are the potential barriers when teachers try to implement educational technology in classrooms at university level?

(2) What supports would be needed to integrate technology in education?

(3) What are university teachers' perceptions of potential barriers and supports to creating digital classrooms in Myanmar?

2. Literature Review

Myanmar, the second largest country in Southeast Asia, is a lower -middle income country. Myanmar is shown to be at a very early stage of ICT development (Htun, K.S., 2019). In the educational reform with the technology integration in teaching and learning practices at higher education level, teachers' knowledge, digital skill and philosophy are the significant determinants of their instructional methods (Staub & Stern, 2002). To date, researchers suggest that there may be many more barriers in creating successful and applicable digital classrooms. The barriers such as equipment-based issues, hardware and software problems (Wood *et.al*. 2005) and very limited access to internet (Sutton, 1991; Rocheleau, 1995) and individual differences in attitudes and skills among teachers (e.g. Becker,1994, Anderson, 1996; Becker & Ravitz, 2001; van den Berg, 2002; Wood *et. al*. 2002) are recognized as the considerable barriers in Myanmar. The rapid advances in computer technology, the changes within universities regarding the prevalence of technology in universities today and the internet access issues are significantly the major challenges for teachers to implement educational technology in classrooms and to create digital classrooms for daily teaching/learning practices. Similarly, individual characteristics, such as "technophobia" or high computer anxiety, low level of technical knowledge, experience and familiarity level with computers and availability of hardware (Rosen & Weil. 1995) should be highlighted.

According to a study by Philip Subu (2018), there is still lack of knowledge, skills and expertise for developing teachers in Myanmar. Myanmar faces limitations in both financial and skilled human resources. In the era of covid-19 pandemic, Myanmar is striving to integrate technology in teaching and learning process of higher education institutions. The present study tries to provide the quantitative and qualitative observation of university teachers' perceptions

in order to get the better understanding on the potential barriers and supports to create digital classrooms at higher education institutions in Myanmar.

3. Methodology

A total of two hundred fifty-two university teachers participated in the surveys to examine potential barriers and supports for creating digital classrooms at university level. Online survey method was used to collect data via google form. The language used in the online surveys is English. The participants' language used in the surveys is in English and very few in Burmese. The data is analyzed by using mixed method involving quantitative and qualitative methods. It begins with quantitative method, using online survey via google form in which the forced-choice and close-ended questions were exposed. To probe questions on their experiences and perceptions of barriers and supports with regard to creating digital classrooms, qualitative method is used to be able to assess the content with the open-ended questions. Thematic analysis of the data from the survey is used to result in a two-layered coding system in which the data is analyzed both the content of the data and the affect or emotion the participants attached to the content. The overall approach is inductive so as to look for new understanding of the whole context of the Myanmar university teachers' perceptions of barriers and supports to creating digital classrooms and to technology integration in education.

3.1. Participants

A total of 252 university teachers from Arts and Science Universities in Myanmar participated in the survey. Participants are in 24 to 55 age range. The majority of participants have been teaching for at least 3 to 7 years of experience at university level in Myanmar.

3.2. Sampling Procedure

Initially, the requests were sent to the participants from arts and science universities. It is a purposive sampling. The participants are university teachers from 24 to 55 range of age. The participants from 24 to 37 range of age are found to be more familiar with technology and they had prior technical knowledge and experience in taking online surveys and online courses. Some participants ranging 38 to 55 of age showed computer anxiety and the measures of computer use and familiarity with technology are not in high level.

3.3. Materials and Procedure

To begin with, participants completed a short survey to assess demographic information. This survey is closed-ended format with a predefined list of answer options. It includes age, gender, job position, total years of learning, total years of teaching at university level and highest level of education. The second survey includes closed-ended questions, forced-choice questions and open-ended questions. The questions are related to computer use, the availability of computer at home and university, internet access available at home and at university, administrative supports and opportunities of courses and trainings for computing skills and digital technology, comfort level with computer, amount of time spent on computer and doing school-related tasks using computer. The questions such as the availability of computer at home and at university and internet access are closed-ended types using forced-choice (yes/no). The questions regarding with comfort level with computer are asked using a five-point Likert-type scale, where 1 represented "very at ease/very enthusiastic" and 5 represented "very ill at ease/ not at all enthusiastic". The questions related to the amount of time spent on computer and doing school-related tasks are asked with single answer multiple choice question format with ratings (never/often/very often/rarely/always). The questions concerning with suggestions to

implement digital classrooms and perceptions of potential barriers and supports available to integrate technology in classrooms are open-ended question types, which are then specifically overlooked to assess individual differences and opinions, attitudes, beliefs, awareness and concerns to digital technology in education of Myanmar.

3.4. Data Analysis

Data was collected from university teachers of Arts and Science Universities in Myanmar. Two hundred fifty-two teachers participated in the online survey. The survey includes two google forms. The survey is designed to get the individual differences in digital skills and the level of the familiarity with technology, qualifications and teaching experiences, the supports available and the availability of internet access at work and at home. The data is analyzed by using the quantitative and qualitative techniques. Quantitative analyses are conducted on the forced-choice and close-ended questions from the survey. Qualitative analyses are used to assess the content of the open-ended questions from the survey.

4. Findings and discussion

4.1. Results

The results of data are categorized in (a) material resources, (b) human resources, (c) pedagogical resources and administrative supports, (d) individual differences for quantitative data analysis. For qualitative data analysis, the results of data are categorized by means of (i) Content Themes and (ii) Affect or Emotion-based Themes.

4.1.1. Quantitative Data Analysis

(a) Material Resources

Computer use and access: The vast majority of teachers (95.2%) indicated that they owned their computers at home. 31.75% of the participants used computer very often.28.97% always used computer for school-related tasks and 1.98% of the participants never used computer for doing school-related tasks. Out of the participants, only very few teachers (4.76%) indicated that they had not possessed a computer on their own. 43.65% of the participants indicated that computers were provided at the departments and 56.35% showed that computers were not supported at work.

(b) Human Resources

The majority of participants hold Master's degree. The highest qualification is postdoctoral degree. The majority of participants have been teaching for at least 3 to 7 years of experience at university level. (see Figure I for the summary of the total years of teaching experiences of the participants).

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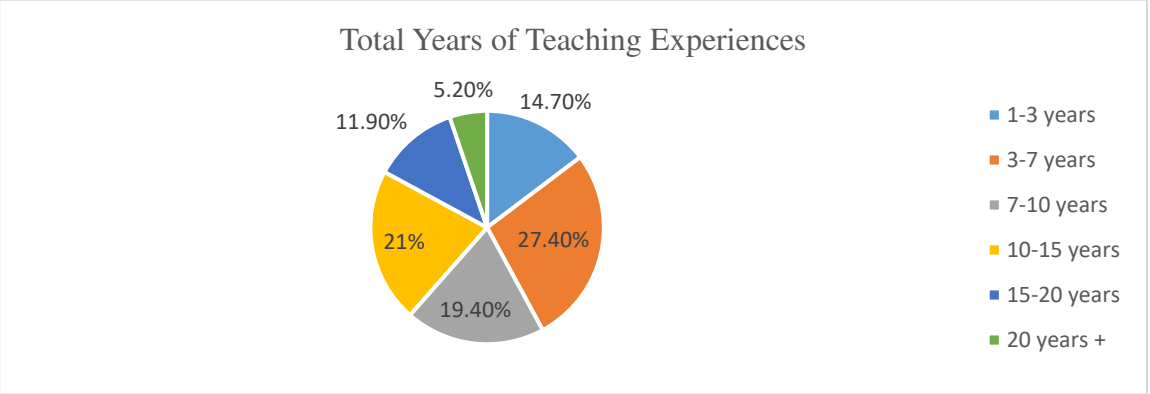
Figure 1for the summary of the total years of teaching experiences of the participants



Technological competency level: The majority of participants took computer courses on their own. 73.81% of participants took courses and trainings for computing skills on their own. 26.19% of participants had not taken any computer courses. With the data from the survey, the technological competency level of teachers was intermediate or lower.

(c) Pedagogical Resources and Administrative Supports

Training and professional development: 63.49% of participants indicated that they had attended trainings, courses and workshops for the supports of creating digital (online) classroom conducted by their universities while 58.73 % of participants indicated that they had courses and workshops conducted by the ministry for professional development and digital literacy. It was also shown that 53.17 % of participants took courses of digital skills on their own. Then, 44.84 % of participants were not sure about institutional plans for teacher professional development at higher education level. Only 10. 32 % of participants indicated that administrative supports are satisfactory for creating digital classroom.

(d) Individual Differences

Comfort and technophobia or computer anxiety: With this issue, certain variables entered simultaneously into the analysis: age, gender, number of courses or trainings attended, and measures of use (use of computers at home and school) and supports. According to the survey, greater computer use was related to higher level of comfort and lower level of computer anxiety. Age and gender were considered as significant impact on the comfort and computer anxiety. 87.45 % of the participants ranging from 26 to 35 years of age showed that they were familiar with technology and had prior knowledge and experience in taking surveys and courses online whereas 36.12% of the participants ranging 38 to 55 of age experienced high level of computer anxiety.

Measure of computer use and familiarity with technology: 93.26% of the participants indicated that they had prior experience of attending online meeting and courses. 4.76 % of teachers, however, answered that they had never experienced online meetings and courses. 1.98% did not answer this question. Surprisingly, 36.90% of the participants of all ranges of age answered that the comfort level was very at ease or very enthusiastic when working the school-related tasks and only 4.37% of teachers answered that they were very ill at ease and not at all enthusiastic using computer for school-related tasks. (see Table I for the prevalence of the percentage of University Teacher's Perceptions)

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Table I for the prevalence of the percentage of University Teacher's Perceptions

Factors	Yes (Percentage & Count) (Yes/Rarely/Often/Very Often/Always)	No (Percentage & Count) (No/Never)	Maybe/ not Answer (Percentage & Count)
Availability of computer at home	95.24 % 240	4.76 % 12	
Availability of computer at work	43.65 % 110	56.35 % 142	
Availability of internet access at home	100 % 252	0 % 0	
Availability of the support of internet access at work(by the employer)	65.87 % 166	30.16 % 76	3.97% 10
Computer use at home (for work)	96.83 % 244	1.98 % 5	1.19% 3
Internet access for leisure activities	94.44% 238	5.56 % 14	
Internet access for work	95.24% 240	4.76 % 12	
Taking courses for computer skills) on their own	73.81 % 186	26.19 % 66	
Taking courses for computer skills provided by departments/institutes	58.73 % 148	41.27 % 104	
Taking courses for digital skills on their own	53.17 % 134	46.83 % 118	
Taking courses for digital skills provided by institutes	63.49 % 160	36.51 % 92	
Experience of learning and attending meetings online	93.26% 235	4.76 % 12	1.98% 5
Experience of teaching online	61.11% 154	34.52 % 87	4.37% 11
Suitability of digital classroom in Myanmar	51.19 % 129	48.81 % 123	
Possibility of implementing effective digital classroom in Myanmar	57.54 % 145	42.46 % 107	
Potentiality for teachers' professional and digital skills	8.33 % 21	18.25 % 46	73.41 % 185
Potentiality for students' skills/awareness and motivation	8.27 % 21	31.10 % 79	60.63 % 152
Satisfaction with Administrative supports	10.32 % 26	44.84 % 113	44.84 % 113

4.1.2. Summary of the Quantitative Data

It is significant that teachers' age, teaching and learning experiences, skills, attitudes and other individual differences are found the important variations of barriers to create digital classrooms. The majority of the participants had familiarity with computers and used them both at home and at school. The level of the technological competency was intermediate and lower. The availability of material resources for teachers and administrative supports remained as big questions to be answered and it was shown that teachers were not satisfied with the institutional plans. According to the survey, it is noticeable that the availability for the opportunities of

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trainings and workshops for professional development and digital skills is low and any institutional plans was not satisfactorily recognized by teachers.

4.1.3. Qualitative Data Analysis: Open-ended questions

The questions are open-ended question types and the responders were expected to reveal opinions and perceptions, meaning to get the rich context of their perceptions of barriers to creating digital classrooms and supports for integrating technology in education. Thematic analysis (Boyatzis, 1998) of the data from the survey is to result in a two-layered coding system (Wood *et.al*., 2005) which analyses both the content of the data and the affect or emotion the participants attached to the content.

The development of the coding scheme is initiated by independent and open coding of the questions concerned with their preference to the teaching styles out of three different types of classes named traditional classroom, digital classroom and blended classroom, teacher level issues, computer hardware, software and internet access issues and administrative supports and budget issues. Language used in the online surveys is English. The language is simple and easy to understand and it is possible to produce a "data-driven" coding scheme (Guba & Lincoln, 1989).

Primarily, the data is coded for content theme (Wood *et. al*., 2005). Significantly, as it is important to identify "how" teachers felt about the questions, i.e. the perceptions, emotions and attitudes attached to the digital and technological issues, the data is reread and blocked into particular sections and each block is coded according to perceptions as well as content. The affective themes include positive, negative and complex categories. Some of the answers were incredibly "positive" and some partially or completely "negative". The "complex" coding category identifies answers that had both positive and negative emotional responses together. All answers of the open-ended questions are, therefore, coded using two layered coding scheme (content and affect) (Wood *et. al*., 2005) for both the content and affect themes.

4.1.3.1. Content Themes

Five major content themes are identified: location issues, teacher level issues, computer hardware, software, electricity and internet access issues, student level issues and administrative supports and budget issues.

(i) Location issue

The location of the institutes or where the particular universities are situated is considered as one of the major issues in the context of Myanmar. Some teachers highlighted the rate of applicability and availability of digital classrooms in the certain institutes located in country's contested areas, in particular Rakhine, Kachin and Shan States.

(ii) Teacher level issue

It is noticed that some participants indicated their concerns about the readiness and potentiality of teachers to integrate technology in classrooms and technological competency level of teachers for creating digital classrooms.

(iii) Computer hardware, software, electricity and internet access issues

The availability and possibility of computer hardware and software at institutional level still remains as questionable issue. The vast majority of teachers were not sure for the availability of computer hardware as well as software at institutions so as to create digital classrooms. Similarly, the possibility of internet access and electricity is considered as the significant and challenging issue in most of the institutes in Myanmar, including in the country's contested areas.

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(iv) Student level issue

The motivation level of the students is one of the major components that teachers considered as serious issue in order to implement digital classroom at university level successfully for the effective outcomes in education. Some teachers showed their concerns about the students' computer competency level, motivation level and the cost for computer hardware/software and internet access so as to engage online learning in digital classrooms.

(v) Administrative supports and budget issues

This category refers to the presence or absence of training programs, plans and opportunities, evaluation of those programs and plans. The vast majority of participants spotlighted the challenges with regard to the administrative supports, as well as budget issues, in order to implement successful digital classrooms with effective and reliable outcomes.

4.1.3.2. Affect or Emotion-based Themes

Open-ended questions that were related to the possibility of the implementation of digital classrooms at higher education level generated the particular personal emotions and suggestions. Three major themes described "how" the teachers felt about "what" they answered and suggested: positive, negative and complex. Overall, the positive themes accounted for the majority of the perceptions, followed by complex affect.

(i) Positive Affect

According to the survey, the majority of teachers considered the implementation of digital classroom as the necessary and unavoidable move at higher education level, despite some challenges. Similarly, switch to digital or blended classrooms from traditional classrooms was identified as the positive impact on education. Two-third of the participants showed their strong interest in implementing digital classrooms and integrating technology in education. Their comments indicated positive view on implementing digital classrooms. Some comments are mentioned below;

"It's useful for the students, specially, when they are away from school because of different situations." (p1)

"If teachers would be interested and tried to teach, it would be successful later." (p2)

"We should not be left behind and we should try to apply all the means we can improve our students (') skills, and widen knowledge." (p3)

(ii) Negative Affect

Opposite to the positive outcomes, negative affect is less frequent for the possibility of the implementation of digital classrooms within the current conditions in Myanmar education sector. According to the findings, it is found the low level of possibility very limited supports for creating digital classrooms in the current situations. In the survey, very few teachers discussed from the negative point of view and their comments are coded as negative. Some of their notions are listed below: (p= participant)

"Because, some students live in rural areas. They don't have chances: to access internet and to apply it well. Moreover, there is not enough electricity in some remote villages." (p4)

"Ss are not very happy to learn through it." (p5) (Ss = Students)

"Not very happy with Ss (students') performance." (p6)

"I want to teach face to face." (p7)

(iii) Complex Affect

It is noticed that some of the teachers were not certain about the teachers and students' motivation level, potentiality and the technological literacy level. The data related to the potentiality and technological literacy issues are neither clearly negative nor positive in affect and are coded as complex. Some comments are noted as follows:

"Not sure whether it will be successful. May be in a few universities, but it is not easy for many universities, I think." (p8)

"It depends on different situations." (p9)

5. Conclusion

There are three major findings in the study. First, consistent with past researches (Hadley & Sheingold, 1993, and Wood *et.al*., 2005), use of technology and the measure of computer use result greater comfort with technology and the individual differences in computer competency level and digital literacy. Second, comfort with computer and low level of computer anxiety would lead to higher rate for creating digital classrooms and integrating technology in the pedagogical procedures in digital or blended classrooms. Third, despite the limited availability and supports within the current conditions of higher education sector and institutions in Myanmar, the participants surprisingly showed their great interest in the higher educational reform and revealed their highly significant rate of acceptance, readiness, potentiality and positive points of view to generate technology integration in traditional classrooms. Specifically, technology has become crucial for the educational environment and integration is a relatively recent demand. Computer technology becomes the path of any innovation in teaching. The computer anxiety or technophobia would no longer be the major barriers for teachers to integrate technology in classrooms. As teachers have more experience with technology and high frequency of computer use and, with the potential opportunities and supports possibly available at institutional level, it could be expected that teachers would become more comfortable with technology over time. Teacher's positive points of view and great interest in the higher educational reform would lead with great impact on creating digital classrooms and integrating technology in traditional classrooms. This paper confirms the existence of potential barriers to integrate technology in daily teaching and learning practices at higher educational level in Myanmar, specifically identifying Myanmar university teachers' perceptions to creating digital classrooms.

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