"EENY-MEENY-MINY-MOEING" THE USE OF WEB 2.0 TOOLS IN THE TEACHING PRACTICE AMONG PUBLIC UNIVERSITY EDUCATORS IN NORTHERN MINDANAO, PHILIPPINES

Sarah O. Namoco
University of Science and Technology of Southern Philippines, sarah.namoco@ustp.edu.ph

ABSTRACT. *This study aims to explore the level of knowledge and proficiency of the use of the different Web 2.0 tools as they are integrated into the teaching practice based on the pedagogical beliefs of public university educators in Northern Mindanao, Philippines. To address the goal of this study, this paper employed a cross-sectional study using a survey research design. 300 public university educators responded to the study. Findings revealed that the majority of the respondents practice constructivist pedagogical beliefs. Moreover, 87% of the respondents have knowledge about Web 2.0 tools, and only 86% of them use the tools in their teaching practice. However, the level of proficiency of the respondents' use of Web 2.0 tools is still at the Never Use to Beginner's level of proficiency. Recommendations for further studies and professional development for educators related to the integration of technology in teaching are discussed in this study.*

Keywords: Pedagogical Beliefs, Philippine public university educators, Teaching practice, Web 2.0 Tools

INTRODUCTION

The higher education institutions are expected to equip the faculty members to adequately use technology in their practice [1, 2] to improve the teaching and learning experience of the learners that will equip them with the demands of the workplace for the 21st century [3]. As such, educators are allowed to have first-hand experiences as to how such technology can support teaching and learning [4]. Henceforth, faculty members in higher education institutions are expected to be equipped with knowledge and skills in using educational technologies such as Web 2.0 tools.

Several studies had been conducted to examine the readiness and use of Web 2.0 tools in teaching among educators in the Philippines. For example, Olea (2019) found out that the HEI educators in CALABARZON Province in the Philippines are integrating Web 2.0 tools into their teaching activities thereby increasing the efficiency of their task accomplishments as well as improving the students' productivity and opportunity for collaborative learning. However, reports from other studies showed that not all educators are using or are efficiently using Web 2.0 tools in their teaching practices. Correos (2014), in his study about secondary school English language teachers' technology literacy, found out that the teachers' technology literacy was moderate. Balmeo, Nimo, Pagal, Puga, and Sanwen (2014) also found out that SPED teachers in Baguio City integrated the use of technology in their classroom activities, however, the implementation is limited to a certain extent. Furthermore, Marcial and Rama (2015) found out that educators in Central Visayas do not integrate technology into their teaching practice because their knowledge and skills were learned from the books or that they have only heard about it from colleagues; they were not trained.

To better understand what drives a teacher to use technology in the teaching practice, it is important to determine the pedagogical beliefs of the educators [9]. The educators' pedagogical beliefs may hinder or may enable them to integrate technology into their teaching practices [10]. Moreover, educators, whether constructive or traditional pedagogical believers, adopt technologies selectively to suit their teaching activities whenever and however they deemed it most appropriate [11]. Furthermore, it is equally essential to shed understanding of the educator's level of proficiency in the use of Web 2..0 tools into their teaching practice [12].

These reports from the literature provided evidence that there was limited use of technology in teaching and that educators faced many challenges that demotivate them from using technology in their class activities. Furthermore, pedagogical belief influences the educators' use of technology in the teaching practice. It is therefore imperative to explore the knowledge about and use of the different Web 2.0 tools in the teaching practice of the Philippine government university

educators based on their pedagogical beliefs. Specifically, this study seeks to:

a. determine the level of knowledge about and proficiency in the use of Web 2.0 tools in the teaching practice among Philippine public university educators;
b. ascertain the prevalent pedagogical beliefs of Philippine university educators; and
c. identify the knowledge and use of Web 2.0 tools into the teaching practice of the educators based on their pedagogical beliefs.

Results of this study can be used as a springboard for identifying training needs for faculty development programs.

LITERATURE REVIEW

Benefits of Using Web 2.0 Tools in Teaching and Learning

Several reports and studies have recommended purposeful use of Web 2.0 tools in the teaching and learning activities to help educators and students enjoy the maximum benefit of active and individualized learning, making the students as producers of their learning [13, 14], as such enabling limitless opportunities of facilitating learning collaboration both online and offline among learners and educators alike [15]. It is therefore essential that Web 2.0 tools be integrated and used in education as the technology has huge potential in developing the collaboration, interaction, socialization, creativity, and autonomy skills among students, thereby making room for educators to allow students to create an atmosphere conducive for learning [16]. It can be gleaned, therefore, that technology and pedagogy of teaching should come hand-in-hand to achieve the outcomes that the program is intended to achieve.

On Educators' Teaching

The use of Web 2.0 tools in the process of education is characterized by active participation, a collective mind, cooperation, interactivity, and social interaction as well as the possibility to create learning networks. The use of technology in education is beneficial both to the educators and to the students. It enables the educators to "overcome poor-quality education and turn to good quality of education using technology instruction in various discipline" [17]. Hence it posits a huge challenge for

educators to be knowledgeable and skilled with the use of these tools to maximize the learning of their students. Using Web 2.0 tools in teaching influences the educator to strategize teaching techniques to improve the delivery of classroom instruction in a manner that is most beneficial especially to students [18]. As such, educational tools available on the internet have become accessible for educators to explore for them to find the most appropriate educational tools to suit their students' learning preferences. Furthermore, using Web 2.0 tools in teaching is becoming indispensable in the everyday lives of students and had caused a significant impact on their learning [19], [20]. This motivates educators and education designers to explore tpotentten and use of Web 2.0 tools in formal education. Hence, scholars strongly recommended for educators sustain the use of Web 2.0 tools as an effective strategy in education[21].

Educators' Pedagogical Beliefs

Literature on pedagogical belief, in the field of educational technology, categorized the concept into two, namely the constructive belief and the traditional belief. Different scholars gave varied terms to signify similar concepts. For example, Meirink, Meijer, Verloop, and Bergen (2009) refer to the two concepts as learner-centered and teacher-centered beliefs. Chan and Elliott (2004) described these two concepts of beliefs in terms of acquiring knowledge in teaching and learning. Liu, Lin, and Zhang (2017) identified these two pedagogical beliefs as High and low transmissive pedagogical beliefs. The high transmissive pedagogical beliefs indicate that the educator believes, adheres to, or practices teaching activities that are typical to a conventional teaching method. Meanwhile, the low transmissive pedagogical beliefs are geared towards helping the students to develop their skills to manage complex situations and learn both independently and continuously. This belief emphasizes that the student's responsibility for learning is geared toward the construction of knowledge and that this construction of knowledge is achieved when students are engaged in learning and when they work together as a team [22]. Literature shows that constructivist beliefs about teaching and learning have a significant positive effect on the integration of technology in teaching [25]. Educators with more constructive beliefs tend to implement more student-centered or can adopt complex technology uses in teaching [26].

METHODOLOGY

Research Design

The goal of this study is to explore the knowledge about and use of the different Web 2.0 tools in the flexible learning program of the Philippine government university educators. To address this gap in the literature, this study employed the survey research design. This design is aimed at "providing a quantitative description of trends, attitudes, or opinions of a population by studying a sample of that population" [27].

Sample and Sampling Procedure

The respondents of this study were 300 faculty members coming from the five campuses of a public university system located in Northern Mindanao, Philippines. The respondents were selected using the purposive sampling technique [27]. The following inclusion and exclusion criteria were used to specifically identify the qualified respondents: a *bona fide* faculty member of the above-mentioned public university; and either a temporary or regular employee. The inclusion and exclusion criteria are necessary for purposive sampling to ensure that the respondents are the people who are most appropriate to provide an answer to the research questions, [28]. Table 1 presents the distribution of the respondents of the study.

Table 1 Demographic profile of the respondents

Characteristics/Values		F	%
Sex	Female	157	5
	Male	143	4
Age	Below 25 years old	39	1
	26 to 35 years old	130	4
	36 to 45 years old	76	2
	46 to 55 years old	39	1
	56 to 65 years old	14	
	Above 65 years old	2	
Highest Educational Qualifications	Bachelor's Degree	137	4
	Master's Degree	119	4
	Doctoral Degree	44	1
Academic Rank	Instructor	213	7
	Assistant Professor	47	1
	Associate Professor	34	1
	Professor	6	

Research Instrument

The data collection of this study was conducted through an online survey. The research instrument employed in this study consisted of three parts. The first part consisted of two filtering questions which are answerable with yes or no to identify whether the recipient of the survey questionnaire is qualified to answer [12]. The second part contained question items that aimed to identify the respondents' knowledge about and use of Web 2.0 tools available on the internet which the respondents integrate into their teaching activities. To measure this section, the respondents were instructed to tick as many Web 2.0 tools that they are familiar with and the tools they are using in their teaching activities. They are further instructed to rate their level of proficiency in the use of each of the tools.

The third section of the instrument was intended to answer the second research question of this study which is to determine the pedagogical beliefs of the respondents, and subsequently to categorize the respondents into two based on their pedagogical beliefs. The question items were adapted from the study on Pedagogical beliefs and attitudes toward information and communication technology: a survey of teachers of English as a foreign language in China [24]. The pedagogical belief construct has five-question items (Table 2).

Table 2 *Question items on the transmissive pedagogical belief*

Pedagogical Beliefs statements	
TPB1	During the lesson, it is important to keep students confined to the textbooks and the desks.
TPB2	Teaching simply means practicing the ideas from educators without questioning them.
TPB3	Teaching is simply telling, presenting, or explaining the subject matter.
TPB4	Good teaching occurs when there is mostly teacher talk in the classroom.
TPB5	Teaching is to provide students with accurate and complete knowledge rather than encourage them to discover it.

The research questionnaire was pre-tested before the administration of the survey [29] using the cognitive interview technique [30], [31]. This is to ensure that the respondents clearly understand the question items. Appropriate corrections were made on the questionnaire according to respondents' feedback after the pre-testing. To ensure, further that the respondents recall the concept of Web 2.0 tools, a cloud picture of common Web 2.0 tools is included in the questionnaire.

Data Gathering and Ethical Consideration

The collection of data was conducted through an online survey [32] using Google Form. The Google Form link was sent through messenger private messages to identified faculty members of the public university under study. The identified faculty members were further requested to share the link with colleagues. The online survey was conducted from February to April 2018. To ensure ethical considerations, appropriate measures were undertaken before the online survey questionnaires were sent to the target population. Permission letters were sent to the university officials. In addition, the respondents of the study were assured of the confidentiality of their answers as well as the anonymity of their identity. They were also informed that the results of the study will be published.

Data Analysis

To determine the level of proficiency of the respondents regarding the use of Web 2.0 tools in their teaching activities, a description of the mode score, frequency, and percentage were employed to interpret the data [33]. The level of competence of the respondents in using Web 2.0 tools was assessed using the four ordinal categories. The interpretation of this part used the frequency, percentage, and mode results of the SPSS assessment [33]. The scale to which the respondents will use is reflected in Table 3.

Table 3. Scale to measure the level of proficiency in the use of Web 2.0 tools among the respondents

Scale		*Operational definition*
4	Proficient	*Use Web 2.0 tools to develop coordinate and publish teaching materials and assessments on the internet.*
3	Competent	*Use Web 2.0 tools to organize information, set up tasks, and actively use Web 2.0 for decision-making*
2	Beginner	*Use Web 2.0 tools to view, send and receive text*
1	Never use	*Never used any of the Web 2.0 tools listed below*

To identify whether the respondents' pedagogical beliefs are high or low, the dichotomization technique was used [34]. The dichotomization of the transmissive pedagogical belief from a continuous scale to a categorical variable was performed through a median split strategy[35]. Each item to measure the pedagogical belief was assigned a five-point Likert scale (Table 4). To determine the knowledge and use of Web 2.0 tools among the educators based on their pedagogical beliefs, the cross-tabulation feature of SPSS version 25 was used to analyze the data.

Table 4 Description of the mean score for the prevailing pedagogical beliefs

Score	Range	Operational Description
1	1.00 to 1.80	Very untrue of what I believe
2	1.81 to 2.60	Somewhat untrue of what I believe
3	2.61 to 3.40	I cannot exactly determine whether I believe the statement or not
4	3.41 to 4.20	Somewhat true of what I believe
5	4.21 to 5.00	Very true of what I believe

RESULTS AND DISCUSSION

Prevalent Pedagogical Beliefs of the Respondents

The dichotomization of the pedagogical beliefs resulted in two groups: high transmissive (traditional) and low transmissive (constructive) pedagogical beliefs. Data analysis showed that 59 percent (177) of the respondents belonged to the low transmissive (constructive) pedagogical belief, and 41 percent (123) of the respondents belonged to the high transmissive (traditional) pedagogical belief category. Table 5 presents the distribution of the two categories of pedagogical belief.

Table 5 Distribution of respondents based on pedagogical beliefs

Pedagogical Beliefs	Frequency	Percent
Constructive (Low Transmissive) Pedagogical Belief	177	59%
Traditional (High Transmissive) Pedagogical Belief	123	41%

Knowledge and Use of Web 2.0 Tools of the Respondents

The survey results revealed that 87 percent (262) of 300 respondents are familiar with the Web 2.0 tools used in teaching that are available on the internet, while only 13 percent (38) are not familiar. Relating to the respondents' use of Web 2.0 tools in their teaching activities, 86 percent (262) signified that they do seek the facilitative help of available internet tools, while 14 percent (42) indicated they do not use Web 2.0 tools in their teaching activities (see Table 6).

Table 6 Distribution of the respondents based on their knowledge and use of Web 2.0 tools in their teaching activities

Characteristics	Value	*f*	%
Familiarity of Web 2.0 Tools	Yes	262	87
	No	38	13
	Total	300	100
Use of Web 2.0 Tools in their teaching activities	Yes	258	86
	No	42	14
	Total	300	100

Investigating the respondents' knowledge and use of Web 2.0 tools in teaching based on their pedagogical belief groups, it can be observed that nine in every ten educators are familiar with Web 2.0 tools, and that about one in every ten are not using Web 2.0 tools into their teaching tasks. On the other hand, about four in every five HTPB educators are familiar with Web 2.0 tools and one in every four of them are not using the Web 2.0 tools (Table 6). Meanwhile, in investigating the respondents' knowledge and use of Web 2.0 tools in teaching based on their pedagogical belief groups, it can be observed that nine in every ten educators are familiar with Web 2.0 tools, and that about one in every ten are not using Web 2.0 tools into their teaching tasks. On the other hand, about four in every five HTPB educators are familiar with Web 2.0 tools and one in every four of them are not using the Web 2.0 tools (see Table 7).

Table 7 Distribution of the respondents based on their knowledge and use of Web 2.0 tools of the respondents and pedagogical beliefs

Characteristics	LTPB		HTPB	
	F	%	F	%
Knowledge about Web 2.0 tools				
Yes	161	91	101	82
No	16	9	22	18
Use of Web 2.0 tools				
Yes	162	91.5	96	78
No	15	8.5	27	22

The Level of Proficiency in the Use of Web 2.0 tools in Teaching Activities

Based on the results, as shown in Table 8, most of the respondents of the study are proficient in the use of email services, information resources tools, and tools for dissemination of information academic communication. Besides these aforementioned tools, most of the respondents indicated that they have never used the rest of the commonly used Web 2.0 tools being assessed in this study.

Table 8 Mode scores, frequency, and percentage of responses on the use of Web 2.0 tools in teaching activities

Web 2.0 Tools		Score per Web 2.0 tool			
Categories	**Examples**	**F**	**%**	**Mode**	**Description**
Email services	Yahoo!	139	46	4	Proficient
	Gmail	196	65	4	Proficient
	Outlook	177	59	1	Never Use
Computer-based information resources	Google Scholar	88	29	4	Proficient
	Google Chrome	174	58	4	Proficient
	Yahoo	123	41	4	Proficient
	EduTube	202	68	1	Never Use
	YouTube	169	56	4	Proficient
	TEDTalks	131	44	1	Never Use
Social media for social and academic networking	Facebook	192	64	4	Proficient
	Twitter	135	45	1	Never Use
	Instagram	132	44	1	Never Use
	LinkdIn	120	40	1	Never Use
Communication/instant messaging tools for academic purposes	FB Messenger	190	63	4	Proficient
	WhatsApp	166	55	1	Never Use
	Viber	131	44	1	Never Use
	Skype	101	34	1	Never Use
Interactive digital learning platform	Edmodo	160	53	1	Never Use
Presentation Infographics	Prezi	114	38	2	Beginner
	SlideShare	117	39	3	Competent
	Piktochart	236	79	1	Never Use
	Canva	223	74	1	Never Use
Learning Management System	Moodle	182	61	1	Never Use
Table 8 Continued					
Open Educational Resources (OERs)	Khan Academy	166	55	1	Never Use
	Lumen	177	59	1	Never Use
	Common	227	76	1	Never Use
Website platforms for disseminating academic information	EduBlog	245	82	1	Never Use
	WordPress	146	49	1	Never Use
	Weebly	217	72	1	Never Use
Animated video maker tools	Powtoon	205	68	1	Never Use
	Moovly	251	84	1	Never Use
	GoAnime	242	81	1	Never Use
Multimedia Production tools	Screencast – O – Matic	230	77	1	Never Use
	Jing	249	83	1	Never Use
	Camtasia	246	82	1	Never Use
Interactive digital learning resources / Assessment tools	Kahoot!	234	78	1	Never Use
	Mentimeter	260	87	1	Never Use
	EDPuzzle	254	85	1	Never Use
	Socrative	259	86	1	Never Use
	Quizlet	218	73	1	Never Use
Online board	Padlet	251	84	1	Never Use
Concept map teaching strategy in the classroom	Bubbl.Us	257	86	1	Never Use
	WiseMapping	248	83	1	Never Use
	MindMapple	252	84	1	Never Use
	SpiderScribe	251	84	1	Never Use
	MindMap	231	77	1	Never Use

It can be deduced from the results of the data analysis that the educators are familiar with or that they have heard about Web 2.0 tools as they are used in the teaching practice. Previous studies confirmed that when individuals view technology as a valuable tool in the performance of their task, they are more likely to use it [36]. This agrees with the report of Venkatesh et al. (2003) that when technology is viewed as useful in carrying out the task, an individual is most likely to use it. Alternately, the findings of this study also revealed that other categories of Web 2.0 are still unexplored by the respondents. This result agrees with the findings of previous studies wherein educators are found to be integrating technology in their teaching practices at the very least level due to inadequacy of skills and competencies [6], [7], [38].

CONCLUSION

The results of this study contributed to the body of knowledge by way of describing the pedagogical beliefs of the public university educators in Northern Mindanao, Philippines. Furthermore, this study also reported that while the educators are familiar with the Web 2.0 tools, their level of proficiency is still at the beginners' stage.

RECOMMENDATIONS

This study employed a quantitative study wherein the data tell the readers of the level of the educators' knowledge and use of Web 2.0 tools in their teaching practice. However, this study does not capture an in-depth explanation of this central phenomenon. Therefore, it is recommended for future studies that a qualitative study of this nature may be conducted. Furthermore, the context of this study is the public university educators. Perspectives of private university educators may show different results. Hence, a similar study may also be conducted from the perspectives of private universities. Finally, it is strongly recommended that educators may be trained in the use of Web 2.0 tools as they are integrated into the teaching practices.

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