

# EXPLORING THE ROLE OF PEDAGOGICAL BELIEFS TOWARDS THE INTEGRATION OF TECHNOLOGY IN THE TEACHING PRACTICES AMONG PHILIPPINE HIGHER EDUCATION INSTITUTION EDUCATORS

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**ABSTRACT**— Rooted in a Philippine state university experience, this qualitative study employs phenomenological research design to explore the role of pedagogical belief on the use of ICT tools in the teaching-learning activities among the educators who are teaching courses in a teacher education institution. Due to scarcity of literature to support the role of pedagogical belief in the actual use of ICT in classroom activities, a focused group discussion was employed to explore the participant's experiences and perspectives using the framework of UTAUT model. The UTAUT model is a theoretical framework that elucidates the conditions under which teachers are most likely to accept and use information and communication technologies (ICT) in the classroom. This study shows that pedagogical belief plays a role with performance expectancy and effort expectancy in influencing an educator's behavioral intention to use technology. Furthermore, results also show that pedagogical belief plays a role with facilitating condition and behavioral intention in influencing the behavior of the lecturer in actual use of technology in their teaching and learning activities. It is hoped that results of this paper will benefit further studies relating to the role of pedagogical belief among educators in their use of ICT in their teaching-learning activities.

**Keywords**— Pedagogical beliefs, Technology acceptance, Technology use, State University educators, UTAUT

## INTRODUCTION

The exponential rise in the use of technology bore the development of new approaches to education [1]. This era is fundamentally challenging the way organizations train and equip people to succeed. As we are moving into the new age of technology revolution, there are many factors that are affecting the way higher education institutions equip the students. The fast-paced technology propels all aspects of society, education included, to embrace the significance the integration of technology into the pedagogy of teaching. Higher education institutions, if they are to keep abreast with the trends of time, are propelled to adopt to these changes in order to stay competitive in the internationalization and globalization of education [2]. Afterall, multimedia technologies have now become indispensable tools in the educational [3] experiences of digital native learners whose learning needs revolve around the use of information technology [4].

With the importance of technology in education, its integration has been greatly emphasized in teacher training and professional development. In this line, the teacher education institutions are expected to prepare their students to adequately use technology in their educational practice. Doing so includes giving the students the opportunity to understand the underlying pedagogical reasons for using technology and by providing first-hand experiences as to how such technology can support teaching and learning [5]. As such, the educators in the teacher education institutions are therefore expected to be equipped with knowledge and skills in using educational technologies. Through constant and effective use of these technologies in education, students will have the opportunity to acquire important skills necessary for them to survive and compete in the 21<sup>st</sup> environment [6].

A plethora of literature supports the contention that integrating technology in education yields a more engaging and more meaningful learning experiences for learners [7–11]. However, the question remains: do educators in a Philippine higher education institution use technology in their teaching activities based on their pedagogical beliefs?

## THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY

There are several theories and models that support technology adoption and use. Among the many, the Unified

Theory of Acceptance and Use of Technology (UTAUT) is the most rigorous and parsimonious model. It explains more than 70% of variance in the actual use of technology among individuals who were studied using this model. The UTAUT theory suggests that four core constructs namely, performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) are direct determinants of behavioral intention (BI) and which ultimately influences the use behavior (UB). These constructs are further moderated by gender, age, experience, and voluntariness of use [12].

While many studies regarding the adoption, acceptance and use of technology in various areas using UTAUT model validated the initial findings [12–14], recent studies showed contradicting results. Review of literatures revealed the following relationships among UTAUT latent constructs as statistically non-significant: PE to BI [15, 16]; EE to BI [17, 18]; SI to BI [15, 17]; FC to UB [17]; and BI to UB [15, 17].

Given this scenario, it is therefore thought of in this study that a moderating variable, specifically related to teachers' pedagogical beliefs, may be at work. Ertmer [19] pointed out that if it is truly the intention to increase teachers' use of technology, especially when it comes to increasing the student learning and as well as their technology skills to achieve learning outcomes, it is therefore imperative to consider how the teachers' actual classroom practices are rooted in, and moderated by, existing pedagogical beliefs.

## PEDAGOGICAL BELIEFS

A review of literatures investigating the mechanism of pedagogical beliefs towards acceptance and use of technology in teaching have revealed that pedagogical beliefs may strengthen or weaken the teacher's intention and use of technology [20]. According to the findings of Pajares [21] and Chen [22], are of the opinion that the practices of pedagogical beliefs may be modified in the course of time due to external factors. These factors could be attributed to effecting factors such as the educator's competence, motivation, confidence and self-efficacy in the use of technology; the leadership and policies of the institution; and other related cultural and societal factors that may shape the teacher's actual behavior towards technology use [23, 24]. Scholars [25], in educational technology and teaching reported in their study that educators' pedagogical beliefs may hinder or may enable

them to integrate technology into their teaching practices. This is in conjunction with the findings of others [26] stating that educators, whether constructive or traditional pedagogical believers, adopt technologies selectively in order to suit their teaching activities whenever and however they deemed it most appropriate.

### PROBLEM OF THE STUDY

Considering the necessity of faculty members to be equipped with technological skills and knowledge so they can also equip their student teachers with the technology skills and knowledge that will prepare them for the 21<sup>st</sup>-century era, it is imperative to investigate the intention and use of technology among the university educators regarding their teaching-learning activities. The main purpose of this study is to explore the lived experiences of the educators in their actual use of technology in their teaching practices. Specifically, this study sought to answer this research question: How does the pedagogical beliefs of the Philippine higher education institutions form or shape their acceptance and use of technology in their teaching practices?

### METHODOLOGY

#### STUDY DESIGN

This study employed an interpretivist perspective and phenomenological approach to rule out an answer to this study's research question. This research design seeks to describe the meaning of a lived experience of a phenomenon for several individuals, which in this case is the teaching experience of using technology in the classroom activities in line to the participant's pedagogical belief. According to Gray [27], interpretivism design focuses on the meanings of human experiences.

Scholars suggested that in cases where literatures are hard to find to support a concept in a study, understanding people's perceptions is necessary to establish how and why people respond to certain issues or phenomena [28]. Focus group discussion is one of the several ways used to explore and gain in-depth understanding of people's interpretation and experiences of social issues. Memon, Ting, Ramayah, Chuah, Francis, and Cheah [29] likewise argued that one way of identifying the mechanism of a potential moderator is through discussion with experts in the area under study, and that qualitative data is also a necessary avenue to discover and recommend pertinent potential moderating effect but is otherwise verifiably tested in the field of study. Hence, a focus group discussion is one of the several ways used to explore and gain in-depth of people's understanding, interpretation and experiences of social issues [30, 31].

#### PARTICIPANTS

In approaching this study, the purposive criterion sampling was used to identify the participant who have experienced the phenomenon. This method of sampling helps to create a homogenous sample of participants who have all experienced the phenomenon [32]. The participants who

volunteered in the FGD were eight educators in a Philippine state university in Northern Mindanao, Philippines. Using purposive sampling, the participants were either a part-time or full-time educator of the said state university and have been teaching for at least five years to have a full grasp of the phenomenon based on their experiences. The criteria for selecting participants were based on the memorandum issued by the Philippine Commission on Higher Education [33]. Prior to the FGD session, a letter of permission was given to all identified participants to seek for their approval of the said FGD, informing them that the FGD was voluntary by nature and that they can withdraw anytime they want if they are not convenient or comfortable. Table 1 shows the demographic profile of the participants. The real names of the participants were replaced with code names to protect their identity.

**Table 1. Demographic profile of the FGD participants**

Name Codes	Years in Teachin	Courses Taught	Acad emic
PM1	24	Job-Enabling English	PhD candidate
PM2	14	Assessment and Evaluation	PhD graduate
PM3	8	Sciences	Masters candidate
PM4	14	Chemistry	PhD graduate
PF1	18	Applied Mathematics	PhD candidate
PF2	18	Communication Arts	Masters graduate
PF3	14	Technology Education	PhD candidate
PF4	12	History	Masters graduate

#### DATA COLLECTION

A semi-structured interview protocol, which was anchored on the UTAUT framework, was developed by the researcher, reviewed by two qualitative experts, and edited based on feedback. In the FGD conducted, the questions raised were pertaining to the educators' perspective, beliefs and experiences regarding their behavioral intention and actual use of technology based on their pedagogical beliefs in their teaching-related activities. The languages used during the discussion were the local Cebuano language and the English language to allow the discussants to express freely their opinions on the issue being discussed. An audio recorder was used to record the conversation to ensure the free flow of dialogues as well as to ensure that every idea presented is captured. Important terms variables in the study such as pedagogical beliefs and the constructs of the UTAUT model were operationally defined by the researcher before the FGD started to ensure clarification of terms used during the discussion. The researcher served as the moderator during the FGD. The FGD was conducted on August 2018 in Northern Mindanao, Philippines. The questions asked are presented in Table 2.

**Table 2. Interview protocol**

To explore broad experiences
1. What is do you think is the most effective ways of teaching? How does this belief influence your instructional material preparation, delivery of lesson and assessment of learning?
2. Do you consider your pedagogical belief in integrating technology in your teaching-learning activities because you believe it will help you to perform better professionally?
3. Do you use technology in consonance with your pedagogical belief to make your teaching-learning activities easier?
4. Do you use technology in your classroom activities along with your pedagogical belief because your supervisors or your colleagues believe that you should use technology
5. Do you use technology alongside your pedagogical belief because the technical infrastructure is available, or that your organization supports the use of technology?
6. Does your intention use of technology in consonance with your pedagogical belief influences your actual use of technology in your classroom activities ( <i>Behavioral intention to use</i> )
To explore and generate more detail about specific experiences:
<ul style="list-style-type: none"> <li>• Tell me more about that ...</li> <li>• Can you give me an example? <ul style="list-style-type: none"> <li>• I want to understand what you mean.</li> <li>• Can you tell me again?</li> <li>• Why do you think that is?</li> </ul> </li> </ul>

### ETHICAL RESEARCH CONSIDERATION

Before the actual data collection was conducted, and to ensure that the data privacy law (Republic Act 10173) was upheld in compliance to research ethics, each FGD participant was sent letter of permission. They were informed that the FGD was voluntary in nature and that they can withdraw from FGD at any time they felt they are not convenient or comfortable. The participants were also informed that the FGD will be audio-recorded to facilitate free flow of discussions and to capture all ideas discussed. Furthermore, the participants were also ensured that their identity will be kept confidential and anonymous.

### DATA ANALYSIS

The focus group discussion transcript was transcribed into English language. The transcription was cross checked by two English educators from the languages used in the discussion to English language. After the transcription was done, the transcript was coded, facilitated by using the NVivo10 software. The data analysis was done in accordance with the directed content analysis approach. This approach is applicable where “an existing theory or prior research exists about a phenomenon that is incomplete or would benefit from further description” [34, p. 5]. Initially, 35 separate codes were generated but these were later condensed into five themes, all of which fall under the five core variables of the UTAUT model. Moreover, statements from the participants are quoted as they were provided during the focus group discussion.

### RESULTS AND DISCUSSIONS

To strengthen the entitlement that indeed pedagogical belief shapes the acceptance and use of technology in the

teaching practices among Philippine higher education institutions, a focused group discussion (FGD) was conducted. The succeeding section presents the results of the thematic analysis in this study.

### PERFORMANCE EXPECTANCY AND BEHAVIORAL INTENTION

In relation to the participants' view on the influence of pedagogical belief on performance expectancy, the participants were asked whether they intend to use and/or actually use technology based on their pedagogical beliefs because it helps them perform better professionally in their teaching activities. PF2 shared that the teachers “*use technology because it can help facilitate deliver the lesson*” and hence it is easy for the educators to “*access instructional materials.*” PM2 also agreed to this standpoint by sharing that “*the teacher's task of delivering the lesson is made easier because of the technology.*” In addition, PM2 mentioned that using technology in teaching makes learning experience “*more engaging for the students especially that the learners are digital natives.*”

These reports from the participants agree to the findings of [12, 35]. This phenomenon could be attributed to the perceived convenience in carrying out the teaching tasks of the educators – not only in the delivery of the lesson but as well as in the assessment of student performance, and in communication and dissemination of information.

### EFFORT EXPECTANCY AND BEHAVIORAL INTENTION

Concerning the influence of pedagogical belief in affecting effort expectancy towards the behavioral intention to use technology in their teaching activities, the participants shared they do use technology because it makes their job become easier to accomplish. PF2, an English educator, shared that an educators' task is heavy, hence, they find ways to make their work easier, and that facilitating of learning be made lighter without sacrificing the quality of teaching. To affirm with PF2, PF1 also shared that with the heavy tasks of a teacher, using technology is an ease of burden in making students learn because it is interactive hence it makes student engaged in learning.

The result of this discussion is in consonance with the previous literatures [12, 13]. The phenomenon could be attributed to the perceived ease of using the technology in education. If the technology is user-friendly and if can be easily navigated, it follows that it is also easy for the educators to integrate these technologies into their teaching activities.

### SOCIAL INFLUENCE AND BEHAVIORAL INTENTION

In matters relating the effect of pedagogical belief in influencing the educators' social influence towards their behavioral intention to use technology in their teaching activities, PM2 persuasively claimed that social influence does not, in any way, influence his use of technology. He said that the supervisor or the colleague do not influence their intention to use technology in their teaching activities. This is because that the teachers believe that the students learn more when instruction is aided with technology.

To support this claim, PF3 shared that their use of Web 2.0 tools into their teaching activities is “not motivated by external factors.” The reason is simply because the motivation is from within the educators themselves. The participants claimed that they use technology because “it helps facilitate the classroom activities.”

Based on the results of the FGD, it is observed that the people within the work cannot influence the educator to integrate technology into their teaching activities. This agrees with the findings of [15, 17]. This could be attributed to the idea that using technology into teaching activities is driven by intrinsic factors such as the educator's passion in technology and their willingness to upgrade their teaching strategies with knowledge and skills of internet technology. The intrinsic motivation of the educator is a major driving force that leads them to use technology [36].

#### **FACILITATING CONDITIONS AND USE BEHAVIOR**

Regarding the influence of the pedagogical belief in affecting facilitating conditions towards the actual use of technology in the teaching activities of the educators, the participants were asked whether they use technology because these are available in their organization and that the organizational support to use such technology is also available. In line to this variable, PF2 affirmed by saying that they "cannot use technology if it is not provided in the institution."

Related to this experience, PM3 shared that

*"if the educator is creative, and the educator believes that technology facilitates the constructive manner of teaching, then the educator can use his/her own resources. However, for those who cannot afford to buy their own technologies, they can only depend on what the school can provide."*

PM4 also mentioned that in line with the educator's own belief of how to make learning more meaningful to the learners, an educator may use his or her own money to purchase certain technology gadgets in order to help facilitate the teaching-learning activities. In addition, PF1 narrated that "no matter how we want to do constructivist strategy using technology, but if we don't have the technology still, we are limited to that extent." Of this statement, PF2 affirmed that "if there is available technological infrastructure," it is certain that they will use the technology in "line with the pedagogical belief that we adhere to."

Based on the participants' perspectives, it can be gleaned that the perceived importance of the organizational support and the infrastructure technology are deemed highly necessary in integrating technologies into the educators' teaching activities. This agrees with [37] implying that when facilities are provided adequately, then the educators are motivated to employ these technologies into their teaching practices.

#### **BEHAVIORAL INTENTION AND USE BEHAVIOR**

Finally, when asked whether their intention to use technology influences their actual use of technology, all participants agreed that their intention influenced their action. PM2 affirmed to this by saying,

*"Yes, action follows our intention. If I really want to use the technology, it is because I know, and I believe that technology facilitates student learning in a more engaging and meaningful manner. In addition, if and when there is available technology, then I will certainly use it."*

The participants' point of view related to BI towards the UB of technology could be attributed to the fact that the educators perceived the use of technology into their teaching practice as helpful in their teaching job, easy to use, and that they themselves are willing to learn and are intentional to use the technology. There is no doubt that the

educators are intentional to accept and use technology into their teaching activities. This findings is in congruence with the previous study conducted by [38] which reported that when the BI of the educators is established, it is reflected in the actual use of the technology in the conduct of their teaching practice.

#### **CONCLUSION**

The pedagogical belief of the educators, whether is teacher-centred or student-centred, shapes their intention and behaviour in integrating technology into their teaching practices. However, these beliefs are also curtailed by certain factors such as the availability of technology infrastructure and multimedia gadgets. Based on the results of the FGD conducted in the context of this study, this research paper highlights the moderating mechanism of pedagogical belief in the relationships between performance expectancy and intention; effort expectancy and intention, as well as the facilitating condition and behaviour. However, the pedagogical belief does not shape the moderating role between social influence and intention.

It can be deduced from the results of the analysis that performance expectancy and effort expectancy influence the pedagogical belief of the educators to their behavioural intention to use technology. Similarly, facilitating condition and behavioural intention also influence the pedagogical belief of the educators towards their actual use of technology in their classroom activities. However, no matter how motivated the educators are in integrating technology into their teaching activities, without the ample support and provision of multimedia technology infrastructure in a teaching institution, the educators are limited to some extent in their pedagogies of teaching. It is therefore recommended that academic institution administrators and stakeholders will give thorough consideration in allocating budget for the provision of multimedia technologies used in teaching.

This study has its limitations. The FGD was conducted among eight art-time HEIs faculty members from the lens of interpretivist study. For future researchers, it is recommended that this qualitative study be conducted in quantitative design in order to gain empirical evidence related to the intention and use of technologies in teaching activities. Furthermore, the moderating effect of pedagogical belief may also be investigated from the empirical perspective.

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