Computer Self-Efficacy, Information Technology (It) Competency And Teaching Effectiveness Of Teachers Among Higher Education Institutions

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Abstract

This study determined the level of computer self-efficacy, IT competency and teaching effectiveness of the faculty members. The respondents in this study were the sample of faculty purposively taken from Higher Education Institution in Iloilo. The descriptive research method was used as the research design of the study. A researcher-made questionnaire on the level of computer self-efficacy, IT competency and teaching effectiveness of faculty were used to gather data. They were classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended. The validity of the questionnaire was determined by presenting the questionnaire to the panel of experts with the use of the Eight-Point Criteria of Good and Scates. The reliability was tested to 30 faculty members in the province of Iloilo. The data were gathered, tabulated and subjected to statistical analyses. Both descriptive and inferential statistics were used in this study. The statistical tools used were the frequency count, percentage, mean, Mann-Whitney U-test, Kruskall Wallis H test and Spearman rho with the aid of computers' Statistical Package for Social Sciences (SPSS) Software. The level of significance was set at 0.05 alpha.The findings of the study were majority of teachers were 36 – 50 years old, female, married, bachelor's degree, general education, 11 – 20 years of teaching experience and 11 – 20 number of IT trainings. There was a very high level of computer self-efficacy, competency and teaching effectiveness of teachers. There were no significant differences in the level of computer self-efficacy, IT competencies and teaching effectiveness of teachers when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended. There were significant relationships among the level of computer self-efficacy, IT competency and teaching effectiveness of teachers..

Keywords: Computer Self-Efficacy, Information Technology Competency, Teaching Effectiveness

1. Rationale

In the 21st century, computer self-efficacy, information technology (it) competencies are considered vital in transforming effective teaching in the Philippine education specifically in HEI's. Teachers of Higher Educational Institutions are expected to achieve technological competence and implement better forms of teaching practices which improve the student learning experiences. This is supported by Mc Donald & Siegal (1992), computer self-efficacy is the belief in one's ability to successfully perform a technologically sophisticated new task. Humsha (2011), adopting ICT competency standards and adequate training will help teachers to incorporate ICT effectively in education.

The computer technology helps for the reduction of workloads, for the advancement of knowledge, improve efficiency of school activities, storing outputs and other academic related data. Considering the critical role educators play in return of these substantial investments, more detailed researches are necessary to fully

examine the factors influencing the teachers' teaching effectiveness by the use of IT. The level of integration of IT by teachers into their teaching methods may be influenced by a number of factors. More information is necessary to determine the critical factors influencing their decision to adopt technologies into their instructional delivery.

In view of the changes that have taken place, HEI's administrations and teachers have become aware of the IT potential to establish competitive advantages, reduce costs, increase productivity, and improve teaching performance and to develop the learning process organizational. Hence, it is important to understand how the implemented technologies are being utilized to facilitate students learning.

The teacher's computer self-efficacy must be explored in HEI's . It is vital in conceptualizing the integration of technology inside and outside the classroom.

This study speaks to help teachers with information about the efficiency of the technology adopted, about how it is being used and if professionals are able to use it properly to improve teaching effectiveness. Thus, this study conducted.

2.Statement of the Problem

This study aimed to determine the computer self-efficacy, information technology (IT) competency and teaching effectiveness as bases for IT-based instructional delivery among Higher Education Institutions (HEIs) in Iloilo, Philippines for the Academic Year 2019-2020.

Specifically, this study aimed to answer the following questions:

1.   What is the profile of the respondents in terms of age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings of faculty members?

2.   What is the level of computer self-efficacy of faculty members when taken as a whole and classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings?

3.   What is the level of IT competencies of faculty members when taken as a whole and classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings?

4.   What is the level of teaching effectiveness of faculty members when taken as a whole and classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings?

5.   Are there significant differences in the level of computer self-efficacy of faculty members when grouped as to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings?

6.   Are there significant differences in the level of IT competencies of faculty members when grouped as to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings?

7.   Are there significant differences in the level of teaching effectiveness of faculty members when grouped as to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings?

8.   Are there significant relationships among the level of computer self-efficacy, IT competencies and teaching effectiveness of faculty members among HEIs in Iloilo?

Hypotheses:

1.   There are no significant differences in the level of computer self-efficacy of faculty members when grouped as to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings.

2.   There are no significant differences in the level of IT competencies of faculty members when grouped as to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings.

3.   There are no significant differences in the level of teaching effectiveness of faculty members when grouped as to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings.

4.   There is no significant relationship among the level of computer self-efficacy, IT competencies and teaching effectiveness of faculty members among HEIs in Iloilo.

3.Theoretical Frameworks of the Study

This study will be anchored in Bandura's (1997) Self-Efficacy Theory. Bandura has defined self-efficacy as one's belief in one's ability to succeed in specific situations or accomplish a task. One's sense of self-efficacy can play a major role in how one approaches goals, tasks, and challenges. The theory of self-efficacy lies at the center of Bandura's social cognitive theory which emphasizes the role of observational learning and social experience in the development of personality. The main concept in social cognitive theory is that an individual's actions and reactions, including social behaviors and cognitive processes, in almost every situation are influenced by the actions that individual has observed in others. Because self-efficacy is developed from external experiences and self-perception is influential in determining the outcome of many events, it is an important aspect of social cognitive theory. Self-efficacy represents the personal perception of external social factors. According to Bandura's theory, people with high self-efficacy—that is, those who believe they can perform well—are more likely to view difficult tasks as something to be mastered rather than something to be avoided.

Tippins & Sohi (2003), which have studied the relationship between IT and organizational performance through resource-based view (RBV), understand that IT per se may not generate a sustainable advantage (Barney, 1991), and should not be studied as a stand-alone feature, because it can be easily imitated by competitors. These authors believe that IT can provide benefits for the organization if combined with other organizational resources through the complementarity and co-specialization. Given the concept of co-specialization, understood as the fact that a resource has little or no value without the presence of another. Moreover, Compeau and Higgins (1995) asserted that low computer efficacy may leads to a decline in performance.

This study will also be linked to the concept of IT competency by Tippins & Sohi, (2003) which has three dimensions. The first is the IT objects that are related to tools, like software, hardware, operating systems, support staff, internet, and intranet. The second dimension is the IT operations understood as methods, processes and skills required to complete a focal task. Finally, the third dimension is IT knowledge linked up to how the company has technical awareness of IT objects

Proponent of ICT in education argue that ICT make huge resources of information available for learners anytime anywhere, almost for free, and that is occurring at a pace that never been witnessed all throughout the history of humanity. However, opponents of ICT in education claim that having these information sources available for students and people is something and utilizing them accordingly in the course of education, is something else. Making information available for students will not attract them to act positively and transform this information into effective knowledge, as those researchers used to argue.

Pro- ICT people further argue that ICT use in school is crucial to equip students with the digital literacy skills needed for the information age, as suggested by Manuel Castells (Castells, 2009). These technologies can also be effective to improve understanding of difficult to grasp concepts, through the use of multi-modal and media representations, (M. Selinger, 2009). This argument is used by several sources to maintain that ICT can indeed be used to raise students' achievements, and therefore justify expenditure inflicted by these technologies. Some proponents of ICT in education even went beyond these arguments, for instance Sugata Mitra (2006) to claim that ICT can compensate for poorer quality teachers especially in rural areas. Many other proponents see ICT as a catalyst to reform pedagogy that was difficult to achieve through traditional means (Cornu, 1995, Joshi and Murthy 2004).

In opposition to that, there are groups who think that ICT is not a universal solution that can work in any context, and the use of ICT in teaching and learning is very much interrelated with the context, culture, values and people, who should act on these technologies to make them effective, since technology alone cannot make the difference as stated in Toyama, K. (2011), and Rabaya'h K. (2013).

4.Conceptual Framework of the Study

The approach of this study was designed and conceptualized to determine whether there are correlations among variables. The respondents were classified according to their demographic profiles namely age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings.

The independent variables were the demographic profiles such as age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings. The

dependent variables were the level of computer self-efficacy, IT competency and the teaching effectiveness. The desired output or outcome of this concept was to develop a conclusion to determine the IT-based instructional delivery
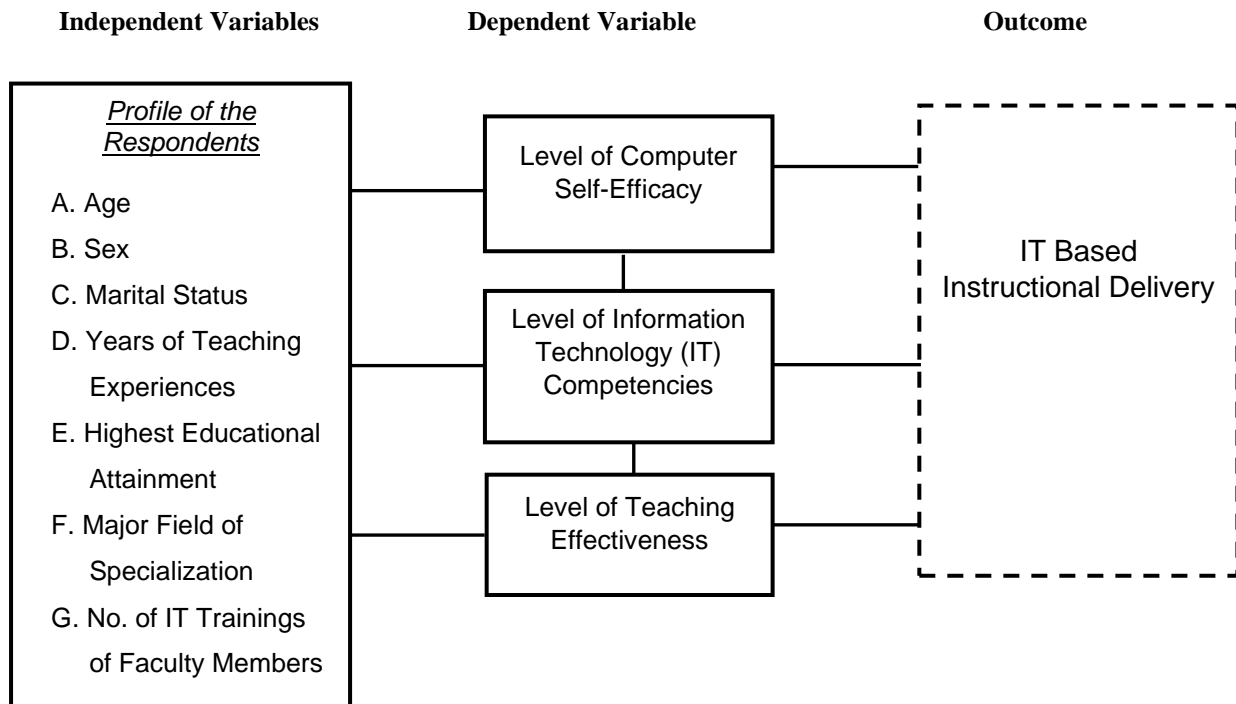
5. Paradigm of the Study

| Independent Variables | Dependent Variable | Outcome |

Figure 1. Schematic Presentation and Illustration of the Relationships among Variables

6. Literature Review

This section presents several related literature and studies which are deemed important and relevant in the conduct of this study.

6.1. Conceptual Literature

6.1.1. The Nature of Computer Self-Efficacy

Although the use of technology improves student learning and motivation (Ciampa, 2014),relying on online learning environments alone likely will not lead to better grades associated with training effectiveness intensions to use computers, their perceived ease of use (Hsia, Chang, & Tseng, 2014), and test performance (Hauser, Paul, Bradley, & Jeffrey,2012).

Although the growth rate of online learning systems is astounding, the lack of research on individual differences affecting users' adoption of online learning is problematic. Bandura (2016)pointed out that as technologies and informational changes continue, personal efficacy is an essential topic for study. Researchers developed the concept within the domain of general computing"

6.1.2. History of Computer Self-Efficacy Measurement

Early measurement computer self-efficacy first stemmed from the acceptance and availability of computers in the 1980s. Murphy, Coover and Owen (1989) published one of the first measures of computer self-efficacy which focused on mainframe computer skills. Researchers criticized the measurement tools of the 1980s because they referred to developed skills rather than envisioned capabilities. Other measures became quickly outdated because they contained references to outdated software programs such as WordPerfect(Compeau & Higgins, 1995).

Cassidy and Eachus (2002) developed the Computer User Self-Efficacy scale, which contained the item, "DOS-based computer packages don't cause many problems for me." Conrad and Munro beliefs with outdated

measurement tools, although their now-antiquated Computer Technology Use Scale referenced VCRs, CDs, and video recorders.

Howard (2014) asserted that many computer self-efficacy measurement instruments are not only outdated but lacked psychometric properties. Chiu and Wang (2008) studied both self-regulation and computer self-efficacy in their study and utilized items from eight different authors.

Regardless of the validity issues with past computer self-efficacy measurement tools, researchers envisioned theoretical application sand the future usefulness of such developments.

Cassidy and Eachus (2002) envisioned computer self-efficacy measurement instruments as tools to identify students with low computer self-efficacy who may face motivational obstacles and negative perceptions of control in their learning environment. Compeau and Higgins (1995) asserted that low

Levels of computer self-efficacy are associated with high levels of anxiety and stress, which ultimately leads to a decline in performance.

6.1.3.Validity Concerns in Computer Self-Efficacy Scale

Constructs relating to computer-self-efficacy are often used interchangeably in the literature. For instance, Sun and Rueda (2012) investigated relationships among motivational and engagement variables for participants enrolled in online courses in gerontology and engineering at a university in Southwestern United States.

Internet self-efficacy was the overall construct measured by the Web Users Self-Efficacy Scale (Eachus & Cassidy, 2006), although Sun and Rueda operationally defined the construct as computer self-efficacy in their study. An example item contained in the Internet Technology subscale is, "I am not really sure what a modem does." Sun and Rueda concluded that computer self-efficacy had no direct effect on student engagement, which is not surprising considering the measurement tool utilized for the study.

Convergent validity is also a concern with computer self-efficacy measurement tools. Wang, Shannon, and Ross (2013) researched the relationships among 2,139 college students' self-regulated learning, and their characteristics,

Course outcomes, and technology self-efficacy in online learning courses, and they concluded that when students had higher levels of motivation in their online courses, their levels of technology self-efficacy and course satisfaction increased. The Online Technology Self-Efficacy Scale(Miltiadou & Yu, 2000) utilized in Wang et al.'study referenced online learning activities such as opening a browser, replying to a message board, and using email with four subscales. A sample item from the Internet Competencies subscale is," I would feel confident bookmarking a website." As noted by Wang et. al. (2013), their results were not in agreement with Puzziferro's (2008) findings.

Puzziferro measured online technologies self-efficacy with an instrument validated with four separate scales but found them to be unreliable and combined the items into a single construct.

6.1.4.IT-Based Teaching Effectiveness

Education is an important human activity because "investment in education is essential for both professional growth and economic development" (Anderson, 2004).

It is a known fact however, that education will never be complete and will never achieve its purpose without its facilitators, the teachers. This is because teachers occupy the most important part in the educational process (Rao & Kumar, 2004) and "accountable in the educational process" (David & Macayanan, 2010).

Specifically, teachers create impact in the whole educational process and in the lives of students. In fact, "literature consistently finds that teachers make a difference to student learning, with several studies reporting that up to 30 percent of the variance in student test scores in a given year may be attributed to teachers" (Hunt 2009).

This impact can be associated to the fact that "teaching is a specialized skill that involves not only expertise in the given academic field but also the ability to create for the learners an environment where they can get optimal learning gain" (Tan de-Ramos, 2011).

With the important contributions teachers have in the educational process, it is but necessary to always encourage teachers to be at their best, that is, to be effective all the time. Encouraging teachers to be effective is not an impossible task. In essence, "all teachers from the most accomplished to those new to the profession are capable of improving, of becoming more effective" (TEMM, 2012).

To give further enlightenment to the concern of this study, it is but necessary to define teacher effectiveness. "The term teacher effectiveness is used broadly, to mean the collection of characteristics, competencies, and behaviors of teachers at all educational levels that enable students to reach desired outcomes" (Hunt, 2009).

7.Related Studies

7.1.Foreign Studies

Wang et al. (2013) concluded that students with higher levels of technology self-efficacy tended to receive better grades. Wang et al. concluded that "based on this study, the technology self-efficacy included two different dimensions, general computer self-efficacy, and online learning platform-related self-efficacy. This suggests that students who want to succeed in online learning should have confidence in general computer skills as well as in using online learning platforms". Wang et al. made no other mention of computer self-efficacy within the article. The Online Technology Self-Efficacy Scale measure itself, divided into four separate scales, clearly referenced online computing skills.

Ironically, computer self-efficacy has not reached full research potential (Howard, 2014) as envisioned by early investigators. Howard created the Computer Self-Efficacy Scale (CSES) with ever-changing technologies in mind, evidenced by general items such as "computers" contained within items that reference technology. Howard noted that "scale validation is never completed validated beyond those within the current study"

Studies established structure of the CSES and it can be concluded that the items measured computer self-efficacy as postulated by Howard. Instructors and researchers may administer the CSES for general assessment and research purposes with reasonable confidence based on the results of the current study, but they must exercise caution in the interpretation and generalization of results to other populations. Future researchers may consider conducting studies that include online and campus-based students in multiple disciplines to obtain diverse samples. Learning outcomes such as performance measures could provide a foundation for future validation research.

7.2.Information Technology in the Industry and Education

The evolution of information technology (IT) has radically altered the way in which companies in this industry have worked, especially in regard to customer service refinement and improvement of business operation (Law, Leung, Au, & Lee, 2013). The role of IT has, thus, thoroughly shifted from a backstage supporting tool to a substantial strategic tool (Ham, Kim, & Jeong, 2005; Law et al., 2013; Melián-González & Bulchand-Gidumal, 2016).

In view of the changes that have taken place, researchers and industry professionals have become aware of the IT potential to, among other things, establish competitive advantages, reduce costs, increase productivity, improve organizational performance and to develop the learning process organizational (Real, Leal, & Roldán, 2006; Law et al., 2013). Some work has been done with the purpose of verifying the effect that the implementation of IT applications or objects have in the development of the work (Ham et al., 2005). However, to understand the influence that IT has on organizational variables is necessary to consider more than just IT objects (Real et al., 2006; Bulchand-Gidumal & Melián-González, 2011). It is also important to understand how the implemented technologies are used to manage the information within the company and how organizational actors dominate them as working tools (Tippins & Sohi, 2003).

In other words, the fact of owning technological tools might not generate, from the company, competitive advantages, and it might be misunderstood and misused. In this sense, to have a tool to assess the IT adapted to the hospitality industry, reflecting the real complexity of the concept, which not only involves hardware and software of a company but also the knowledge we have of IT, is critical.

The use of IT has become an important reference in the creation of strategic alliances, of the development of methods and in the communication with customers and partners. In addition, customers, increasingly demanding, made the industry to develop various types of IT applications, including self-service kiosks, online check-in, and internet and email applications (Law et al., 2013). However, studies that explored the influence of IT on the organizational performance (Dos Santos & Peffers, 1995; Dewett & Jones, 2001; Tippins &Sohi, 2003; Dodgson et al., 2013), paradoxically to what was expected, do not always find a positive result. In other words, investments do not always contribute, directly, to increase productivity (Solow, 1987). One explanation is that there are contextual variables that can act as moderators in the relationship between investment in IT and organizational performance (Bulchand-Gidumal & Melián-González, 2011). Some studies highlight the organizational learning (Tippins & Sohi, 2003; Real, Leal, & Roldán, 2006), others highlight the human ability (Bharadwaj, 2000; Powell & Dent-Micallef, 1997). Tippins & Sohi (2003), which have studied the relationship between IT and organizational performance through resource-based view (RBV), understand that

IT per se may not generate a sustainable advantage (Barney, 1991), and should not be studied as a stand-alone feature, because it can be easily imitated by competitors. These authors believe that IT can provide benefits for the organization if combined with other organizational resources through the complementarity and co-specialization (Powell & Dent-Micallef, 1997). Given the concept of co-specialization, understood as the fact that a resource has little or no value without the presence of another, Tippins and Sohi (2003) developed the concept of IT competency, understood as "as the extent to which a firm is knowledgeable about and effectively utilizes IT to manage information within the firm. Included in this conceptualization is the assumption that firms also possess IT objects"(Tippins & Sohi, 2003).

The concept of IT competency has three dimensions. The first is the IT objects that are related to tools, like software, hardware, operating systems, support staff, internet, and intranet. The second dimension is the IT operations understood as methods, processes and skills required to complete a focal task. Finally, the third dimension is IT knowledge linked up to how the company has technical awareness of IT objects (Tippins & Sohi, 2003). This perspective was considered the most appropriate, and thus, followed in this study.

In respect of the differences of IT competency between managers and employees in the industry, the results of their study clearly show that there are significant dissimilarities. IT competency is better for managers than for employees. Managers are more satisfied with the kind of IT objects they use than employees. They use them more efficiently; they have more knowledge, and know how to use them better in their working processes, than employees do. This probably relates to the characteristics of the industry, especially the high turnover of employees and limited development opportunities. This might hinder the assimilation of the existing IT, in terms of knowledge and good use to extract better results of the work.

As proposed by Law et al. (2013), the industry has utilized various technologies to develop better customer relationships and to meet an increasingly demanding market. However, how technologies are used to manage the information within the company and how the organizational actors dominate, as working tools, are still far from reaching full capacity.

The mean knowledge of professionals, especially of employees, is probably signaling that they need more information and education/training, in respect of to use existing technologies and to increase the IT competency. Broadly, Information Technology is defined as the use of computers to study, send, retrieve, store and manipulate information used widely in business organizations and now in the field of education as well.

Many of the Schooling Systems are now using Information Technology to provide better understanding of difficult concepts to students in classroom and at home. Information technology has made both teaching and learning easier:

The use of Information Technology in classroom has left behind the traditional methods of giving long boring lectures. Using IT, the teachers can create interesting audio and visual presentations which will keep the students engaged and will give them a greater understanding of all the concepts. Beside this, such methodology can give rise to interactive sessions between students and teachers. Everyone likes watching animated videos. Using Information Technology, the whole classroom can be digitalized thus making both teaching and process of learning much easier.

Information Technology has given rise to various tools and application which can be used by School administration and teachers to track the progress of individual students and the parents can also be kept up to date about the achievement of their child. This technology can also be useful for the teachers to help the students in their weak subjects and provide them some extra time and notes. Thus, IT has saved the teachers from old methods of maintaining student records on books and registers.

Many schools have now digitalized their classroom, by encouraging the students to use information technology to submit their tests, homework and assignments. The teachers also promote the use of electronic books to read the lectures. These digital books can be read anywhere in a café, on the train and at home according to convenience. This advancement has played an important role in protecting our environment as less books means less cutting down of the trees.

In the modern world of today every student knows how to use computer, tablet and mobile phones. The information technology can be used to direct this addiction in a positive manner by introducing tablets and PCs in class room for the purpose of interactive sessions, to see the relevant videos, share knowledge, to solve queries and concepts by using Facebook or What's app private classroom groups. The use of this technology will make education more fun and entertaining for both the teachers and the students.

Introduction of virtual classroom has completely displaced the traditional classroom methodologies. Thanks to this advancement now a student can attend lectures from any part of the world, all he needs is a good internet

connection and his personal computer. This technology allows the student to study in their own comfort zone at any part of the day they like. There are many sites which are providing free online education services like the Khan's Academy which allows the student to acquire education on any topic they like, irrespective of their age and school curriculum.

Plus, now the students can acquire their academic papers using Electronic learning from areas which were once isolated from the rest of the world.

Few years back the students had to spend hours in library to search for information or data they need for their dissertation or assignment. Thanks to information technology they can now access any information they want using their computers or mobile phones. They can search Google and YouTube for any sort of article they are looking for thus making their writing much more comprehensive and understandable.

In a traditional classroom when a teacher asks the student to conduct group study or do an assignment, it used to create confusion because every student has got their own opinion and group discussions would create a total mess. Thanks to information technology now the discussions can be conducted on social media forums or using tools and applications where they can upload their task and collaborate with one another in a perfect manner.

Information technology is playing a major role for both, the students, to achieve a better understanding, learning and education while teachers to keep themselves up to date and improve their teaching skills.

Awofala (2012) claimed that teacher effectiveness is synonymous to individual teachers' performance and "teacher effectiveness is encompassed in knowledge, attitudes, and performance" (Hunt, 2009). Teacher effectiveness is important because the "effectiveness of every teacher is the life of every educational institution" (Rao & Kumar, 2004).

In particular, teacher characteristics are one of the factors that influence teachers' overall effectiveness (Anderson, 2004; Pagani & Seghieri, 2002). "Teacher characteristics are relatively stable traits that are related to and influence the way teachers practice their profession" (Anderson, 2004).

Specifically, "effective teachers are those who achieve the goals they have set for themselves or which they have set for them by others" (Anderson, 2004). They enable their students to attain "specific learning objectives as well as broader goals such as being able to solve problems, think critically, work collaboratively, and become effective citizens" (Hunt, 2009). Additionally, "the work of effective teachers reverberates far outside of school walls. Their students develop a love of learning and a belief in themselves that they carry with them throughout their lives" (TEMM, 2012). It must be recognized also that "the quality of a teacher can make the difference of a full year's growth in learning for a student in a single year" (Hunt, 2009).

Evaluation of teacher's effectiveness is are a must, evaluating teachers to help them be effective is necessary. Evaluating the performance of teachers in educational institutions is tantamount to evaluating the learning of students. Teacher effectiveness scale in higher education: Development and psychometric properties International Journal of Research Studies in Education 3 Macayanan, 2010) therefore evaluation of teacher effectiveness in higher education is important (Hoyt & Pallet, 1999).

Evaluations are considered important because through evaluations, performance and effectiveness can be determined (David & Macayanan, 2010). "Specific measures are necessary to identify particular strengths and behaviors upon which individual teachers can improve" (Pagani & Seghieri, 2002). It must be noted however that "measuring teacher effectiveness has remained elusive in part because of the ongoing debate about what an effective teacher is and does" (Goe, Bell, & Little, 2008). One way at shedding light into this elusiveness is looking at teacher effectiveness from the standpoint of students. Goe, Bell, and Little (2008) recognized that "student ratings be included as part of the teacher's evaluation process". Such recognition is "based on the premise that students are the direct consumers of the services provided by teachers and are therefore in a good position to assess and evaluate their teachers' performance" (Goe, Bell, & Little, 2008). Students have a great deal to share about their experiences in school and they can play an active role in the improvement of teaching quality and their learning as well. Therefore, the perspective of students is of great value. "Student ratings is a necessary source of evidence of teaching effectiveness for both formative and summative decisions" (Berk, 2005) and evaluations given by students are an essential component of any evaluation system for teachers (Berk, 2005). Recognizing the important role of students in evaluating teacher effectiveness, the present study aimed the development and determination of psychometric properties of a scale that can measure teacher effectiveness in higher education from the perspective of students.

Their study focused with the development and psychometric properties of a scale that measures teacher effectiveness in higher education. Extant literature on effective teachers served as bases for the construction of a

107-item initial scale and 497 higher education students served as participants. Results of the study showed that there were four dimensions of teacher effectiveness in higher education. These dimensions identified in the scale possess the psychometric properties of internal consistency and validity. Thus, the resulting Teacher Effectiveness Scale in Higher Education (TESHE) is a psychometrically sound scale that measures the multidimensional aspects of teacher effectiveness in higher education.

7.3. Relevance of the Related Literature and Studies

The conceptual literature and studies included in this study are relevant and related to this present study as it deemed and emphasized computer self-efficacy as a means to improve student learning and motivation. However, relying on online learning environments alone likely will not lead to better grades associated with training effectiveness intensions to use computers, their perceived ease of use and test performance. Thus, this study will take place in the case of Iloilo among HEIs.

Further, this review of the aforementioned literature may serve as the guide for the proponent to understand why IT is used by School administration and teachers to track the progress of individual students and the parents can also be kept up to date about the achievement of their child.

The related studies focused on the use of IT for instruction delivery and its effectiveness in view of the changes that have taken place to wit researchers and industry professionals. They have become aware of the IT potential too, among other things, establish competitive advantages, reduce costs, increase productivity, improve organizational performance and to develop the learning process. Since many of the higher educational institutions in Iloilo are now using information technology to provide better understanding of difficult concepts to students in classroom. It is deemed in this review of related studies that information technology has made both teaching and learning easier.

8. Methodology

This section includes and discusses the research design, respondents of the study, sampling design, research instrument including its validity and reliability, data-gathering procedure, and data analyses.

9. Research Design

The purpose of this study aimed to determine the computer self-efficacy, IT competencies and teaching effectiveness in IT based instructional delivery as perceived by ABM faculty members among Higher Education Institutions (HEIs) in Iloilo.

This survey-correlation research will be conducted from July 2019 to October 2019 in Iloilo Province. According to Trochim (2006), survey-research involves the use of questionnaires and statistical surveys to gather data about people and their thoughts and behaviors. A correlational study, according to Leedy and Ormrod (2001), explores relationships among different things. It may tell about the extent to which two human characteristics are associated with one another, or it may give information about the degree to which certain human behaviors occur in conjunction with certain environmental conditions.

The independent variables were only limited to the demographic profiles while the intervening variables are the level of computer self-efficacy and the level of IT competency. The dependent variable is the teaching performance of the respondents.

9.1. Locale of the Study

Iloilo is a province located in the region of Western Visayas in the Philippines. Iloilo occupies a major southeast portion of the Visayan island of Panay and is bordered by the province of Antique to the west, Capiz to the north, the Jintotolo Channel to the northeast, the Guimaras Strait to the east, and the Iloilo Strait and Panay Gulf to the southwest.

9.2. Respondents of the Study

The respondents will be the faculty members of among selected HEIs in the province of Iloilo. They will be randomly selected using unrestricted random sampling. Unrestricted random sampling is a kind of sampling method where there are no restrictions imposed and every member in the population has an equal chance of being included in the sample. The sample size will be determined using the *Slovin's* formula. They will be classified according to their demographic profiles namely age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and no. of IT trainings.

Table 1. Distribution of the Participants

Category	f	%
A. Entire group		
B. Sex		
Male		
Female		
C. Age		
20 - 35years old		
36 – 50 tears old		
51 – 65 years old		
D. Marital status		
Single		
Married		
E. Years of Teaching Experiences		
10 years and below		
11 – 20 years		
21 years and above		
F. Highest Educational attainment		
Bachelor's degree		
Master's degree		
Doctorate degree		

9.3. Data Gathering Instruments

A researcher-made instrument will be used to gather the data needed. The instrument was consisted of four parts. The first part was the demographic profile sheet intended to gather personal data of the respondents namely sex, age, marital status, years of teaching experiences and highest educational attainment. Part two was the Computer Self-Efficacy Questionnaire. Part three was the Information Technology (IT) Competency Self-Assessment Questionnaire. And part four, IT-Based Teaching Effectiveness Instrument: A Self-Assessment Questionnaire.

The researcher-made instrument was submitted for content validity and reliability using the *Good and Scates* criteria. All comments, corrections and recommendations for the improvement or revision was incorporated in drafting the final instrument and copies was reproduced for administration.

Responses were given the following numerical weights and descriptions:

Weight   Description

5	Strongly agree
4	Agree
3	Uncertain
2	Disagree
1	Strongly disagree

To interpret the scores, the researcher used the following scales of means and interpretations:

Computer Self-Efficacy Questionnaire

Mean Scores	Interpretation
4.21 – 5.00	Very high
3.41 – 4.20	High
2.61 – 3.40	Average
1.81 – 2.60	Low
1.00 – 1.80	Very low

Information Technology (IT) Competency Self-Assessment Questionnaire

Mean Scores	Interpretation
4.21 – 5.00	Very Highly Competent
3.41 – 4.20	Highly Competent
2.61 – 3.40	Moderately Competent
1.81 – 2.60	Least Competent
1.00 – 1.80	Very Least Competent

IT-Based Teaching Effectiveness Instrument: A Self-Assessment Questionnaire

Mean Scores	Interpretation
4.21 – 5.00	Very Effective
3.41 – 4.20	Effective
2.61 – 3.40	Average
1.81 – 2.60	Ineffective
1.00 – 1.80	Very Ineffective

9.4. Validity of the Instrument

The questionnaire was subjected and submitted for content validity evaluated by 5 experts in the area of study in order to determine how accurate a conclusion, measurement, or concept corresponds to what is being tested using the *Good and Scates*. Suggestions and comments of the validators were integrated in the instruments.

9.5. Reliability of the Instrument

After the process of validation of the instrument utilizing the *Good and Scates* validity test, it was subjected to reliability test for consistency through a pilot test administered to selected higher educational institutions namely Iloilo City Community College and ABE International College.

To determine the reliability coefficient, the data that was gathered in the pilot test was subjected to statistical procedure using Cronbach Alpha. The results show a .809 coefficient which is greater than .70. Thus, the questionnaire is deemed reliable.

9.6. Data Gathering Procedure

To gather the needed data, the researcher secured permission from the selected HEIs in Iloilo province. Upon their approval, the respondents were selected using the unrestricted random sampling method. Then, the researcher administered the instrument to the randomly selected respondents. The respondents were given enough time to answer the questions. Upon retrieval of the papers, the scores obtained was tallied, classified, tabulated, analyzed and interpreted using appropriate statistical methods.

9.7. Statistical Tools Used

The data gathered were subjected to certain statistical treatments. For the purpose of this study, both descriptive and inferential statistics were used.

Frequency Count. Frequency Count was used to determine the number of participants belonging to a class or category of the independent variables.

Percentage Analyses. Percentage Analyses was utilized to determine which portion of the participants belongs to a class or category of the independent variables.

Mean. To determine the level of knowledge, extent of practices and level of work performance among respondents, the means was employed.

Standard Deviation. Standard Deviation was utilized to find out the homogeneity or heterogeneity of the samples.

t-test for independent samples. The t-test for independent samples was used to determine the significance of the differences in the intervening variables.

Mann-Whitney Test. Mann-Whitney U test was employed to determine the significance of the difference among respondents' work performance.

Kruskal-Wallis H test. THE Kruskal-Wallis H test (sometimes called the "one-way ANOVA on ranks") was used determine the significant differences in the inferential analyses of data.

Spearman rho. Spearman rho was utilized to measure the strength of association of the variables.

Coefficient of Nonlinear Relationship (Eta Correlation). Eta Correlations was utilized to determine the significant relationships among variables.

The .05 alpha level was used as the criterion for the acceptance or rejection of the null hypotheses.

All data gathered for the study was analyzed using the computer-processed statistical software known as the Statistical Package for the Social Sciences (SPSS).

10. Results and Discussion

This part presents the results summary, discuss the conclusions and recommendation of the study to determine the level of computer self-efficacy, competency and teaching effectiveness of Teachers as bases for IT-based instructional delivery among Higher Education Institutions in Iloilo, Philippines for the Academic Year 2019 - 2020.

Specifically, this study sought answer to the following questions:

1. What is the profile of Teachers in terms of age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended?

2. What is the level of computer self-efficacy of Teachers when taken as a whole and when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended?

3. What is the level of competency of Teachers when taken as a whole and when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended?

4. What is the level of teaching effectiveness of Teachers when taken as a whole and when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended?

5.   Are there significant differences in the level of computer self-efficacy of Teachers classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended?

6.   Are there significant differences in the level of competency of Teachers when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended?

7.   Are there significant differences in the level of teaching effectiveness of Teachers when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended?

8.   Are there significant relationships among the level of computer self-efficacy, competency and teaching effectiveness of Teachers?

11. Summary

This study determined the level of computer self-efficacy, competency and teaching effectiveness of Teachers. The respondents in this study were the sample of Teachers purposively taken from Higher Education Institution in Iloilo City.

The descriptive research method was used as the research design of the study. A researcher-made questionnaire on the level of computer self-efficacy, competency and teaching effectiveness of Teachers were used to gather data from the respondents. They were classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended. The validity of the questionnaire was determined by presenting the questionnaire to the panel of experts with the use of the Eight-Point Criteria of Good and Scates. The reliability was tested to 30 Teachers in the province of Iloilo.

The data were gathered, tabulated and subjected to statistical analyses. Both descriptive and inferential statistics were used in this study. The statistical tools used were the frequency count, percentage, mean, Mann-Whitney U-test, Kruskal Wallis H test and Spearman rho with the aid of computers' Statistical Package for Social Sciences Software (SPSS). The level of significance was set at 0.05 alpha.

12. The findings of the study

1.   Majority of Teachers were 36 – 50 years old, female, married, bachelor's degree, general education, 11 – 20 years of teaching experience and 11 – 20 number of trainings.

2.   The level of computer self-efficacy of Teachers when taken as a whole was (M = 4.51) very high. When classified according to sex the self-efficacy of the male was (M = 4.58) very high and the female was (M = 4.49) very high self-efficacy. As to age, the level of self-efficacy of the teachers 20 – 35 years old was (M = 4.51) very high self-efficacy, 36 – 50 years old was (M=4.51) very high self-efficacy and 51 years old and above was (M = 4.53) very high self-efficacy. As to civil status the self-efficacy of the single was (M = 4.55) very high self-efficacy and the married was (M = 4.50) very high self-efficacy. As to years of teaching experience the self-efficacy of the 10 years and below was (M = 4.54) very high self-efficacy, the 11 – 20 years was (M = 4.51) very high self-efficacy and the 21 years and above was (M= 4.48) very high self-efficacy. As to educational attainment, the self-efficacy of Bachelor's Degree teachers was (M = 4.50) very high self-efficacy, the MA Degree was (M =4.53) very high self-efficacy, and the Doctorate Degree was (M = 4.71) very high self-efficacy. When classified according to major field of specialization the self-efficacy of the ABM was (M = 4.57) very high self-efficacy, the general education was (M= 4.49) very high self-efficacy and the social sciences was (M =4.54) very high self-efficacy. As to number of IT trainings attended, the 10 and below was (M = 4.55) very high self-efficacy, the 11 - 20was (M = 4.49) very high self-efficacy and the 21 trainings and above was (M = 4.53) very high self-efficacy. The level of teaching competencies of non-education graduate teachers when taken as a whole was (M = 4.26) very highly competent. When classified according to sex the competencies of the male were (M = 4.38) very highly competent and the female was (M = 4.22) very highly competent. As to age, the competencies of the young teachers was (M = 4.20) highly competent and the older teachers was (M = 4.33) very highly competent. As to civil status, the competencies of the single teachers was (M = 4.20) highly competent, the married was (M = 4.21) very highly competent and the widow was (M = 4.39) very highly competent. When classified according to length of services the competencies of the short service teachers were (M = 4.25) very highly competent and the longer service teachers was (M = 4.27) very highly competent. As to educational attainment, the competencies of the doctorate degree was (M = 4.58) very highly competent, the master's degree with Ph.D. units was (M = 4.55) very highly competent. The master's degree teachers were (M = 4.20) highly competent and the bachelor's degree was (M = 4.23) very highly competent. As to major field of specialization the mathematics teachers was (M = 4.07) highly competent the English was (M = 4.35) very

highly competent, Filipino was (M = 4.16) highly competent, Science was (M = 4.36) very highly competent, social studies was (M = 4.17) highly competent, MAPEH was (M = 4.38) very highly competent, and the Tech Voc was (M = 4.33) very highly competent.

3. The level of computer competency of Teachers when taken as a whole was (M = 4.51) very highly competent. When classified according to sex the competency of the male was (M = 4.54) very highly competent and the female was (M = 4.49) very highly competent. As to age, the level of competency of the 20 – 35 years old teachers was (M = 4.53) very highly competent, the 36 – 50 years old was (M = 4.50) very highly competent and the 51 years old and above was (M = 4.52) very highly competent. As to civil status the competency of the single was (M = 4.50) very highly competent and the married was (M = 4.51) very highly competent. As to years of teaching experience the computer competency of the 10 years and below was (M = 4.52) very highly competent, the 11 – 20 years was (M = 4.51) very highly competent and the 21 years and above was (M= 4.48) very highly competent. As to educational attainment, the competency of Bachelor's Degree teachers was (M = 4.49) very highly competent, the Master's Degree was (M = 4.53) very highly competent, and the Doctorate Degree was (M = 4.63) very highly competent. When classified according to Major Field of specialization the competency of the ABM was (M = 4.56) very highly competent, the General Education was (M= 4.48) very high and the Social Sciences was (M = 4.53) very highly competent. As to number of IT trainings attended, the 10 and below was (M = 4.53) very highly competent, the 11 - 20 was (M = 4.48) very highly competent and the 21 trainings and above was (M = 4.53) very highly competent.

4. The level of teaching effectiveness of Teachers when taken as a whole was (M = 4.70) very effective. When classified according to sex the teaching effectiveness of the male was (M = 4.67) very effective and the female was (M = 4.71) very effective. As to age, the level of teaching of effectiveness of 20 – 25 years old teachers was (M = 4.71) very effective, the 36 -50 years old was (M = 4.69) very effective and the 51 years old and above was (M = 4.72) very effective. As to civil status the teaching of the single was (M = 4.70) very effective, the married was (M = 4.70) very effective. As to years of teaching experience the teaching of the 10 years and below was (M = 4.72) very effective, the 11 – 20 years was (M = 4.69) very effective and the 21 years and above was (M= 4.70) very effective. As to educational attainment, the teaching of BS Degree teachers was (M = 4.69)very effective, the Master's Degree was (M =4.71) very effective, and the Doctorate Degree was (M = 4.73) very effective. When classified according to major field of specialization the teaching effectiveness of the ABM was (M = 4.72) very effective, the General Education was (M= 4.69)very effective and the Social Sciences was (M =4.74) very effective. As to number of IT trainings attended, the 10 and below was (M = 4.75) very effective, the 11 - 20 was (M = 4.68) very effective and the 21 trainings and above was (M = 4.70) very effectiv.

5. There were no significant differences in the level of self-efficacy of Teachers when classified according to sex (U = 3511, p = 0.135), civil status (U = 3453, p = 0.824), age (H = 0.056, p = 0.972), length of teaching experience (H = 1.106, p = 0.602)educational attainment (H = 1.797, p = 0.407), field of specialization (H = 2.160, p = 0.340) and number of IT trainings attended (H = 1.060, p = 0.588).

6. There were no significant differences in the level of competence of Teachers when classified according to sex (U = 3642, p = 0.259), civil status (U = 3376, p = 0.652), age (H = 0.217, p = 0.897), length of teaching experience (H = 0.253, p = 0.881)educational attainment (H = 0.628, p = 0.730), field of specialization (H = 2.008, p = 0.336) and number of IT trainings attended (H = 0.946, p = 0.623).

7. There were no significant differences in the level of teaching effectiveness of Teachers when classified according to sex (U = 3513, p = 0.135), civil status (U = 3371, p = 0.639), age (H = 0.798, p = 0.671), length of teaching experience (H = 1.322, p = 0.576)educational attainment (H = 0.041, p = 0.980), field of specialization (H = 1.126, p = 0.542) and number of IT trainings attended (H = 2.888, p = 0.236).

8. There were significant relationships among the level of computer self-efficacy and competencies (r = 0.740, p = 0.000) level of self-efficacy and teaching effectiveness (r = 0.367, p = 0.000) and level of competence and teaching effectiveness (r = 0.435, p = 0.000) of teachers.

13.Conclusions

Based on the findings, the following conclusions were drawn:

1. Majority of Teachers were 36 – 50 years old, female, married, bachelor's degree, general education, 11 – 20 years of teaching experience and 11 – 20 number of trainings.

2. There was a very high level of computer self-efficacy of Teachers, when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended were all very high computer self-efficacy.

3. There was a very high level of competency of Teachers when taken as a whole, and when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended were also very high information technology competencies.

4. There was very effective teaching of Teachers when taken as a whole, and when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended were also very effective teaching.

5. There were no significant differences in the level of computer self-efficacy of Teachers classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended. The null hypothesis that there were no significant differences in the level of computer self-efficacy of Teachers classified according to variables were not rejected.

6. There were no significant differences in the level of competency of Teachers when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended. The null hypothesis that there were no significant differences in the level of competencies of Teachers classified according variables were not rejected

7. There were no significant differences in the level of teaching effectiveness of Teachers when classified according to age, sex, marital status, years of teaching experiences, highest educational attainment, major field of specialization, and number of IT trainings attended. The null hypothesis that there were no significant differences in the level of computer self-efficacy of Teachers classified according variables were not rejected.

8. There were significant relationships among the level of computer self-efficacy, competency and teaching effectiveness of Teachers. This led to reject the null hypothesis.

Recommendations

The following recommendations were based on the foregoing findings and conclusions by the researcher:

1. The Teachers who are non-information technology graduate can make use of computers as instructional tool, they should learn from other teachers on how to present their lesson in PowerPoint and other digital media devise.

2. Teachers can effectively manage their classroom when students are using computers and can make instructional delivery affective and efficient. Teachers should possess or purchase their own personal computers for learning, instructional and personal purposes.

3. The school administrators should have seminars on computer-based technical knowledge in using various software application for instructional use besides Microsoft Office Application and other counterparts for the enhancement of learnings.

4. Teachers should have their own stored files using electronic mails and google drives and its counterparts for the storing of data and instructional materials.

5. The teachers should present the minimum content of subject matter, tailored to the students' knowledge and should allow the student to organize and distribute part of the assignments to be performed in the subject.

6. The Higher Education Institutions administrators should give opportunities for scholarship to teachers in order to be updated with the recent trends in computer technology.

7. The teachers should present complicated lessons with use of multi-media presentations and be able to incorporate creativity in delivering of lessons through the use of computers.

Similar studies on computer self-efficacy, information technology (IT) competency and teaching effectiveness on other level and venue is recommended in order to validate the results of this study.

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