Information and Communication Technology (ICT) Instructional Skills' Needs of Pre-Service Teachers

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Abstract

The employability of the graduates in the 21st century includes the need for Information and Communication Technology (ICT) skills. This descriptive-survey study aimed to look into how pre-service teachers of Benguet State University (BSU) perceived their need for ICT instructional skills for their employment. Descriptive and inferential statistics were used. The data were treated with the use of frequency counts, ranking, weighted mean, *t*-test, and agglomerative hierarchical cluster analysis. The respondents reported that there is a high degree of need in terms of ICT instructional skills development particularly on the model digital age work and learning; and to promote and model digital citizenship and responsibility. The Bachelor of Elementary Education (BEE) pre-service teachers have higher degree of need for ICT instructional skills than the Bachelor of Secondary Education (BSE) pre-service teachers. The results have implications for improving instruction and enhancing the curriculum.

KEYWORDS

Information and Communication
Technology (ICT)
Pre-service teachers
Instructional skills
ICT needs
Digital tools

Introduction

"Information and Communication Technology (ICT) can complement, enrich and transform education for the better." – UNESCO, 2019

Information Communication Technology has become an imperative tool in learning and teaching. ICT offers engaging and fast-evolving learning environments, blurs the boundaries between formal and informal education and prompts teachers to discover new ways of teaching and facilitating students to learn. It entails education to re-think what skills and competencies students need in order to become active citizens and members of the workforce in a knowledge society (UNESCO, 2011).

The use of new technologies in education implies new teacher roles, new pedagogies and new approaches to teacher education. The successful integration of ICT into the classroom will depend on the ability of teachers to structure the learning environment in new ways, to merge new technology with a new pedagogy, to develop socially active classrooms, encouraging co-operative interaction, collaborative learning and group work. This requires a different set of classroom management skills. The teaching skills of the future will include the ability to develop innovative

ways of using technology to enhance the learning environment, and to encourage technology literacy, knowledge deepening and knowledge creation. Teacher professional learning will be a crucial component of this educational improvement. However, professional learning has an impact only if it is focused on specific changes in teaching (UNESCO, 2011).

Teaching is becoming one of the most challenging professions in the society where knowledge is expanding uncontrollably and modern technologies are demanding teachers to learn how to use these technologies in their teaching. While new technologies escalate teachers' training needs, they also offer part of the solution. The effective integration of ICT in the schools and classrooms can transform pedagogy and empower students. In this context, it is essential that teachers have the competencies to integrate ICT in their professional practice to ensure the equity and quality of learning. Teachers also need to be able to harness ICT to guide learners in developing Knowledge Society skills such as critical and innovative thinking, complex problem solving, ability to collaborate, and socio-emotional skills. Teacher training and continued on-going, relevant professional development for teachers are essential if benefits from investments in ICTs are to be realized. Training and on-going support must enable teachers to develop the necessary ICT competencies so they can, in turn, ensure their students develop the relevant skills, including digital competencies for life and work (UNESCO, 2018).

Integration of ICT in the lessons of the teachers is one of the problems being faced by teachers today. Computer and/or internet knowledge and skills are inherent in todays learners which make their learning somewhat different compared to those from the past. This poses difficulty to some teachers because they did not have the chance to learn ICT concepts and skills to match the needs of today's learners. It just means that teachers today are not ready to face the new generation of learners because they are not well equipped with ICT skills and concepts. As Dr. Andaya of the Department of Education (DepEd) said *"for the framework to work, a transformational and enabling environment must be in place, while the learners are digital natives, most of the teachers today are digital immigrants"*. Students are all digital natives – fluent "speakers" of the digital language of computers, video games, and the internet, while teachers are digital immigrants who were not born into the digital world but have adopted many aspects of the new technology. The way ICT is used in lessons is influenced by the teachers' knowledge about their subject and how ICT is related to it. Worldwide research has shown that ICT can lead to an improved student learning and better teaching methods. A report made by the National Institute of Multimedia Education in Japan, proved that an increase in the use of ICT in education with integrating technology to the curriculum has a significant and positive impact on students' achievements. The results specifically showed that the students who are continuously exposed to technology through education has better 'knowledge', presentation skills, innovative capabilities, and are ready to take more efforts into learning as compared to their counterparts (Linways Team, 2017).

ICT has provided better possibilities to teaching professions, but it has placed more requirements on teachers like to learn new technologies and on how to effectively use these new technologies in their teaching. In the Philippines, the Commission on Higher Education (CHED) obliged teacher education institutions to provide Educational Technology Laboratory Requirements (CMO 52, series 2007, Sec 5-C) to ensure the exposure of would-be teachers in the utilization of modern instructional technologies and to support the development of their 21st century skills and achievement of ICT utilization competencies described in the National Competency-Based Teacher Standards. Provision of instructional technologies has given learning institutions chances to integrate ICTs in the teaching and learning process.

Education students need not only know how to use ICTs but they are expected to possess competence and confidence in using them in learning and in the future - teaching. Teacher education institutions need to explore these possibilities to unveil more efficient ways of preparing future teachers to be more competent and efficient in the 21st century. The country's Teacher Education and Development Program (TEDP) conceptualizes a teacher's career path as a continuum that starts with the entry to a teacher education program and concludes when a teacher reaches retirement from the formal service. This continues when they enter the real world of teaching. The experiences encountered by the students in their pre-service training contribute a

lot in shaping the would-be teachers. One of the skills that future teachers need to develop is their ICT-pedagogy skills.

Developing teachers' ICT competencies are affected by the experiences and technology supports that are provided by the institution. The presence of instructional technologies in schools though, does not guarantee its maximum utilization by the teachers. This was confirmed by Lubrica et al. (2012) in their survey among Teacher Education Institutions that SUCs in CAR have available instructional technologies but utilization is not maximized due to inadequate knowledge and skills in regards to bridging technology and pedagogy in teacher education. According to UNESCO (2011), *"It is not enough to install technology into classrooms – it must be integrated to learning."*

The problem faced by education graduates in the field is how to cope up with the demands of today's generation on both teaching and learning system. We know for a fact that more demands on the integration of ICT in teaching and learning in almost all of the subjects being taught is much considered in today's generation. It is within this importance that soon to be teachers should be ready and at the same time capable of such need. It is in this light that this study was conducted to help pre-service teachers to be ready in their field once they enter actual teaching job.

Exploring possibilities to improve teaching and learning experiences must be a continuing process. Pre-service teachers should be equipped with ICT instructional skills when they will be employed as teachers. It is along this reality and challenges which limits the pre-service teachers of the Benguet State University that this study was conducted. The information gathered from the study hopes to serve as a feedback to the university and the colleges as to the sufficiency and quality of instruction they provide to their students particularly in the ICT/IT related subjects. The study also will serve as a basis in enhancing or re-aligning the curriculum particularly on the ICT/IT related subjects.

This study gathered from the responses of pre-service teachers of 2016-2017, whether they possess certain ICT instructional skills essential for employment. Specifically, it determined the perception of pre-service teachers on the ICT instructional skills needs and compared the ICT instructional skills needs of pre-service teachers as to degree program.

Methodology

The study employed descriptive research design. Data were gathered through survey questionnaires; and follow-up interviews and observations were done to substantiate the data gathered. Clustering of data was done to group similar indicators together. Also, descriptive-comparative design was applied to compare the ICT instructional needs of the pre-service teachers as to degree program.

Based on literature search, a questionnaire was constructed. Items were crafted from CMO 52 s. 2007 – section 5: Facilities and Equipment Requirements (revised policies and standards for teacher education) and International Society for Technology in Education (ISTE) standards. The questions were more on the ICT instructional skills. There are four major sections on the said ICT skills (Table 1) and under each major sections are 4 subsections. Such examples of the subsections are customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources; communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital age media and formats; advocate, model, and teach self the legal and ethical uses of digital information and technology, including respect for copyright, intellectual property, and appropriate documentation of sources; and use of search engines and online databases.

The researcher first asked permission from the dean of the College of Teacher Education (CTE) to gather data. The researcher obtained an informed consent from the respondents and explained the study being undertaken. The researcher also respected and protected their anonymity and confidentiality. In the questionnaire, it is their option if they wanted to write their name or not. Also, follow up interviews were done voluntarily.

Pre-testing of the questionnaire was done to selected third year BSE and BEE students of the CTE, Benguet State University. After which, the Cronbach's Alpha was used to determine the score.

To ensure the validity and reliability of the questionnaire, it was first subjected to the analysis and critique by the researcher's colleagues as experts in the field of ICT. After which, the result was consulted to a statistician and agreed that the questionnaire passed the reliability mark of 0.94. After ensuring the reliability of the questionnaire, the researcher personally distributed and collected the questionnaire from the respondents. Total enumeration was employed with 316 pre-service teachers who participated in the survey. Two hundred ten (210) respondents were BSE and one hundred six respondents (106) were BEE.

The data gathered were treated using frequency counts, ranking, and weighted mean from a four-point scale. The *t*-test was employed to determine the significant differences in the results according to the specified variables. Also the agglomerative hierarchical cluster analysis was used to analyze the group/cluster based on their current knowledge and skills and their training needs.

The study used a 4-point Likert scale as:

Scale	Range	Descriptive Interpretation
4	3.26-4.00	High Degree of Need (HDN)
3	2.51-3.25	Moderate Degree of Need (MDN)
2	1.76-2.50	Low Degree of Need (LDN)
1	1.00-1.75	No Need (NN – Already competent in this skill)

Results and Discussion

ICT Instructional Skills Needs of Pre-Service Teachers

ICT is a broad term that touches all about the hardware and software components referring to computers, programs, applications and the likes. It refers to everything that makes use of technology and communication, thus, ICT is integrated in almost all aspects of life in today's world. As such ICT is integrated in the learning process of every student either formal or informal, inside the school or outside the school. In this study, the ICT instructional skills needs of pre-service teachers are categorized into four.

In general, results showed that the respondents have high need for ICT instructional skills (Table 1) which means that they lack the ICT instructional skills needed for employment. Specifically, out of all the items only information sharing and retrieval has a moderate degree of need among the respondents. They claimed that they are fairly capable of using different search engines, making use of social networking sites like Facebook and Twitter for information sharing and using online databases thus they have the knowledge to use it confidently in their future profession.

The moderate need of ICT skills in information sharing and retrieval particularly in making use of social networking sites like Facebook and Twitter for information sharing and use of search engines can be explained by the common use of students nowadays. Most of the students have a Facebook account and it is widely used, it is attributed to the trend now. It helps

Table 1

ICT Instructional Skills Needs of Pre-service Teachers at Benguet State University, 2016-2017

ICT instructional needs indicators	Weighted Mean	DE	Rank
1. Design and develop digital age learning experiences and assessments	3.39	HDN	1
2. Model digital age work and learning	3.36	HDN	3
3. Promote and model digital citizenship and responsibility	3.37	HDN	2
4. Information sharing and retrieval	3.19	MDN	4
Overall Weighted Mean	3.33	HDN	

students communicate, share and be updated of what is going on between and among their relatives, friends, classmates and others. It has been proven that Facebook is used most of the time (Lascano, 2013), and is already a part of their daily lives.

For the use of search engines like Google, Yahoo, and others, students make use of them every time they surf the internet because it is the usual interface of the web browser and at the same time considered as user-friendly. Ozonuwe et al. (2018) found out that students and faculty were aware of, and are familiar with the internet and search engines. Majority of the respondents overwhelming choose Google, Yahoo and MSN as their preferred search engines. Students usually make use of search engines in doing their research or assignments. This agrees with the statement of dummies.com (2017) that most people who are using a search engine are doing it for research purposes. They are generally looking for answers or at least for data with which to base a decision. They are looking to find a site to fulfill a specific purpose. Making use of such information sharing and retrieval does not need to be enrolled in a class for you to know how to make use of it but rather it can be learned through self-learning because of its user-friendly features. This agrees with the study of Lascano (2013) that Facebook is popular or famous because of its user friendly features and its acceptability to the public.

According to the study of Sito (2017), the capacity to assess and use technology, particularly the application of software in doing tasks, showed that the respondents can navigate the internet and use state-of-the-art technologies to source out reliable and relevant information. They can present and communicate their ideas and information through computers and similar technologies. Familiarity with present-day equipment and gadgets is indispensable in these technology-driven times.

The highest perceived ICT instructional skills need is design and develops digital age learning experiences and assessments. The respondents claimed that they lack the capability to design or adapt relevant learning experiences that incorporate digital tools and resources to promote learning creativity. This shows that they cannot develop technology-enriched learning environments that enable them to pursue their individual curiosities and become active participants in setting their own educational goals, managing

their own learning, and assessing their own progress. This adds up the skill to customize and personalize learning activities to address their diverse learning styles, working strategies, and abilities using digital tools and resources. Thus, providing them with multiple and varied formative and summative assessments aligned with content and technology standards, and use resulting data to inform learning and teaching is also missing. Crompton (2014) reports that the way learning and teaching happens in today's classrooms often looks very different than it did just a decade ago. A big part of this change is the increasing number and variety of digital resources available for educators and learners. These new digital tools make it possible for teachers to offer more student-centered learning experiences and allow students to better meet their diverse learning styles, working strategies and abilities. A valid example is the teacher asks the students to choose from a list of seminal Philippines documents of historical and literary significance from primary source digital archives. Next, students are given a choice of working with their choice of digital technology to document and present (to the teacher or the class) how the speaker/author chose specific words for meaning and tone. Students may work individually or with a partner for this task. With this activity, the teacher shows students how they can access historical primary documents from the internet. The teacher then allows the students to choose which historical and literary documents they wish to study. The students also have a choice of digital presentation tools and must decide how to manage their own time and presentation style. The teacher gives the students the choice of working individually or in pairs for this activity, and they are allowed to choose their digital tools and resources. Finally, the teacher can assess whether the students meet the learning objective based on the evidence of understanding they present using their chosen method.

Promote and model digital citizenship and responsibility was identified as the second highest ICT instructional skills need. The respondents affirmed that they lack the skill to advocate, model, and teach self the legal and ethical uses of digital information and technology, including the respect for copyright, intellectual property, and appropriate documentation of sources. This explains that they are incapable to address the diverse needs of all learners by using learner-centered strategies providing equitable access to appropriate digital tools and resources thus, promoting and modelling digital etiquette and

responsible social interactions related to the use of technology and information is lacking. Crompton (2014) stated that the past decade has seen an exponential increase in digital tools and opportunities, which carry the need for students to master a new set of life skills for behaving responsibly online. Even as they sit in their classrooms, they are able to connect with people across the globe instantaneously via chats, email, blogs, social media, virtual conferences, comments and more. This new capability brings great opportunity but also some risk. Many of these connections happen with strangers, who could potentially pose some of the same dangers as strangers they meet in the street. And the anonymous nature of the internet can make negative personal interactions, such as cyberbullying, even more likely. Contrary to popular belief, however, digital natives do not pick up these skills through osmosis. It falls on parents and educators to teach them how (Crompton, 2014). Just as a teacher would talk to students about etiquette and safety before they enter a public place on a school trip, so must they remind students of what is expected of them online. Students are much more likely to understand good digital citizenship — the norms of appropriate, responsible technology use — when teachers model it on a regular basis. It is also important for all educators to spend time directly teaching and actively promoting digital citizenship. And keep in mind that it is not just one person's job to teach digital citizenship in a school, but everyone's shared responsibility. A concrete example is the teacher starts the lesson by showing the students a presentation about South Korea that includes proper citations for sources and images. After meeting with a class from South Korea on Skype, the teacher asks the students to use the safe email program to connect with Korean students. The teacher then asks the students to create a digital presentation to share cultural traditions, events, customs and rituals, which they develop during class time to ensure equitable access to all. With the said activity, the teacher modeled good digital citizenship by properly citing the sources and photographs he/she used in the presentation. The students are able to choose a tool to create their presentations. These tools are used during class time to ensure equitable access to all. The teacher models digital etiquette by using Skype with the class. Students will also get to practice responsible digital etiquette while using a safe email program and finally, students connect with students from another country by using multiple digital age communication tools.

The third in rank with high degree of need is the model digital age work and learning. The respondents pointed out that they were not very capable of demonstrating fluency in technology systems and the transfer of current knowledge to new technologies and situations. This shows that they cannot collaborate with student peers, parents, and community members using digital tools and resources to support student's success and innovation. The respondents are also restricted in communicating relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats. Hence, to model and facilitate effective use of current and emerging digital tools to locate, analyse, evaluate, and use information resources to support research and learning is lacking. Crompton (2014) described that there are a lot of good things about learning and teaching in the age of technology. We have more options for tools than ever — including a plethora of digital devices, programs and apps, websites and other resources — that enable both students and teachers to do things they have never been able to do before. Of course, this brave new world has also ushered in new challenges that previous generations never even imagined. Students need to learn how to effectively and appropriately use these digital tools, and it is the teacher's job to model what that looks like. Modelling should be woven into our teaching as a general best practice. For example, modelling good digital citizenship is something teachers should be conscious of at all times. Students are watching to see how their teachers cite the work of others in presentations and how they interact with others on the web. Students are also looking for modelling of specific skills. If you wanted to know how to do something important, such as set your house alarm, you would probably want someone to show you what that looks like. Millions of students have discovered that video tutorials and screencasts on websites such as YouTube give them an invaluable teaching tool: watching others model how to complete tasks, such as drawing a self-portrait, solving a math problem or conducting a scientific experiment. These short clips can be especially helpful for homework help when the teacher is not available. A given example would be the teacher begins the lesson by conducting a digital presentation on Robert Rauschenberg that shows how this artist used media to create layered imagery. Next, the teacher models a web search to select an image, then demonstrates how to use a digital drawing program to practice layering and overlay. Students conduct their own web searches to select a series of images, and then use the digital

tool to create one image from the series of layered images. Finally, the students post their image to a web-based collaborative program, Edmodo, for peer evaluation. Given the said activity, the teacher provides examples of digital artwork and how that can be replicated using another digital drawing tool. The students use a web-based collaborative program for peer sharing and critiquing. Both the teacher and the students use digital tools to communicate and share. The teacher models appropriate web searching skills and proper use of copyrighted imagery/information.

In conclusion, the pre-service teachers perceived that they were slightly provided with instruction and training in ICT instructional skills and thus they are not so much ready to work in the teaching world particularly with the ICT instructional skills on hand.

Comparison of ICT Instructional Skills Needs of Pre-Service Teachers as to Degree Program

The degree program was classified either as Bachelor of Elementary Education (BEE) or Bachelor of Secondary Education (BSE). BEE is designed to prepare individuals intending to teach in the elementary level (CMO 74, s 2017). BSE

is designed to equip learners with adequate and relevant competencies to teach in their chosen area of specialization/major in the secondary level (CMO 75, s 2017).

In this study, there are 316 respondents, a combination of male and female students. It is composed of 210 Bachelor of Secondary Education (BSE) students and 106 Bachelor of Elementary Education (BEE) students as shown in Table 2. The respondents are all 4th year students who are currently having their out campus (OJT) training to different DepEd schools in Baguio and Benguet. This means that the respondents have finished all of their academic requirements and are ready to practice what they have learned inside the classroom to the real world setting.

Those enrolled in BSE degree perceived themselves to be more significantly capable in the four categories of the ICT instructional skills at hand than those in the BEE degree (Table 3). This implies that the BSE group has developed better capacity of the said ICT skills, thus, they may have an easier time adjusting to their field of work. Also, the type of pedagogy they have experienced may explain the findings.

The significant differences in the ICT instructional skills needs could be attributed to the differences in teaching methods, styles and guidance given to the respondents. As Sito (2017) mentioned that there is common knowledge among educators that teaching methods and strategies do impact learning. Teachers teach the way they have been trained. Another would be the variation in the inclusion of ICT in the courses handled. This finding is related to the position of the DepEd (2017) - with the emerging trend in ICT education, the key is addressing

Table 2

Profile of the Respondents

Degree	Number	Year Level
Bachelor of Secondary Education (BSE)	210	4th Year
Bachelor of Elementary Education (BEE)	106	4th Year
Total	316	

Table 3

Comparison of ICT Instructional Skills Needs of Pre-Service Teachers as to Degree Program

ICT instructional needs indicators	Degree		t-value	p-value
	BEE	BSE		
1. Design and develop digital age learning experiences and assessments	3.52	3.26	12.29*	0.001
2. Model digital age work and learning	3.49	3.23	18.36*	0.000
3. Promote and model digital citizenship and responsibility	3.51	3.23	23.94*	0.000
4. Information sharing and retrieval	3.38	2.99	8.12*	0.015
t-stat = 9.54* p-value = 0.002				

Note: *- significantly different

technology gaps among teachers and students. DepEd's Bureau of Curriculum Development Director Jocelyn Andaya said in a speech during the Education Summit last December 5, 2017 that closing the technological gaps in ICT is the first step to enhancing the quality of education in the Philippines. *"For the framework to work, a transformational and enabling environment must be in place. While the learners are digital natives, most of the teachers today are digital immigrants."* Students are all digital natives – fluent "speakers" of the digital language of computers, video games, and the internet, while teachers are digital immigrants who were not born into the digital world but have adopted many aspects of the new technology. It is within this context that DepEd has been working in terms of closing the technological gaps in ICT. Andaya also said that teachers should adapt to technological advances in education to allow maximum learning with the use of modern gadgets. It is assumed that the respondents in the BSE degree had ICT learning experiences that enabled them to develop an overall sense of fair confidence so that they reported lower level of perceptions of their ICT instructional skills needs. With these findings, the null hypothesis is rejected.

In the hierarchical clustering analysis (Figure 1), the first cluster consists of model digital age work and learning; and to promote and model digital citizenship and responsibility. It showed that the respondents do not have current knowledge and skills on the said cluster. This identifies the top priority training needs of the respondents. These skills needed by the respondents are more on the: [1]demonstrate fluency in technology systems and transfer of current knowledge to new technologies and situations; [2]collaborate with students peers, parents, and community members using digital tools and resources to support students success and innovation; [3]communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats; [4]model and facilitate effective use of current and emerging digital tools to locate, analyse, evaluate, and use information resources to support research and learning; [5]advocate, model, and teach self the legal and ethical use of digital information and technology, including respect for copyright, intellectual property, and appropriate documentation of sources; [6]address the diverse needs of all learners by using learner-centered strategies providing equitable access to
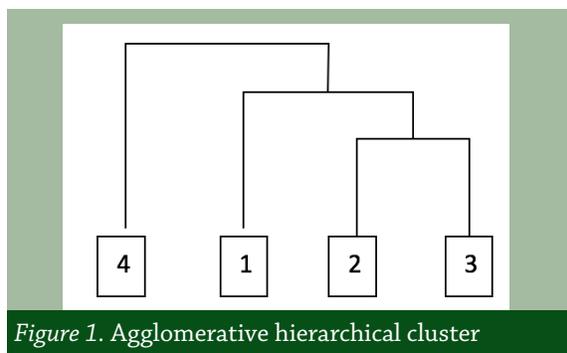

Figure 1. Agglomerative hierarchical cluster

appropriate digital tools and resources; [7]promote and model digital etiquette and responsible social interactions related to the use of technology and information; and [8]develop and model cultural understating and global awareness by engaging with colleagues and students of other cultures using digital age communication and collaboration tools.

The second cluster is the design and develop digital age learning experiences and assessments. This finding means that the respondents have fair knowledge and skill on this particular cluster as compared to the first cluster. This identifies the next priority training needs of the respondents. This pertains to [1]design or adapt relevant experiences that incorporate digital tools and resources to promote students learning creativity; [2]develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress; [3]customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources; and [4]provide students with multiple and varied formative and summative assessments aligned with content and technology standards, and use resulting data to inform learning and teaching.

The last cluster is the information sharing and retrieval. This simply shows that most of the respondents are currently knowledgeable and skilled in this aspect. This would be considered as the last training priority of the respondents. This comprises of [1]use of search engines; [2]making use of social networking sites like Facebook and Twitter for information sharing; and [3]use of online databases.

Conclusions

In the 21st century skills, it is a must for students to know how to integrate and make use of ICT skills in teaching. This helps both students and teachers in the teaching and learning process. The findings indicate that the respondents are not capable to apply ICT skills because they perceived that they lack ICT education from their curricular programs specifically ICT subjects. With these, it can be concluded that they believe they needed more instruction and practices on the said skill. Also, they see the importance of ICT instructional skills needed for them to be competent in their chosen degree or field.

Relative to the differences in the ICT instructional skills needs according to degree program, such distinctions are attributed to instructors' teaching methods and strategies as well as the curricular program. Different ICT skills factors which needed to be in place, the more capable the respondents are. The findings imply that the quality of instruction and practice can really prepare students in the real field of work. As UNESCO (2018) said successful integration of ICT into teaching and learning requires rethinking the role of teachers and reforming their preparation and professional development. It calls for promoting a culture of quality in all its aspects: staff support, student support, curricula design, course design, course delivery, strategic planning and development.

Recommendations

It has been noted that the respondents of the study felt that they lack the capability in terms of ICT instructional skills. Interview with the mentors of the institution can validate the data. Moreover, a survey of the employers of earlier batches can objectively corroborate the claim of the respondents.

The priority ICT instructional skills need of the respondents which are on model digital age work and learning; and promote and model digital citizenship and responsibility may be looked into by the administrators and teachers. One way would be by developing these skills during their teaching-learning methods and strategies.

Teachers should contain in their methods and strategies the use of ICT technologies to enhance learning and at the same time inculcate the importance of ethics. Teachers should exert effort to create innovations to make learning active and enjoyable. Continuous upgrade for both teachers and students may be considered by the administration to cope up with the demands of today's learners through seminars, trainings, and/or workshops.

For the design and develop digital age learning experiences and assessments, it would be worthwhile for the mentors to engage students in learning activities that would enhance these skills. Teaching methods and strategies can be adopted that will engage students in more group work that includes the incorporation of ICT skills. They can be assigned tasks related to web searching or web mining, doing correspondence with the use of different computer applications, incorporating computer educational applications and showing their projects or outputs by using or preparing materials with ICT skills.

For the information sharing and retrieval, teachers should maintain this skill by incorporating it in their activities in the class. Teachers should give research assignments or group projects making use of the internet and the World Wide Web (www) as a part of their lessons for them to sustain their knowledge and skill in this particular ICT aspect.

Overall, the College as well as the BSU administration should think about enhancing its curricula alongside enhancing the teaching methods and strategies pertaining to the different ICT skills needed by the students. Also, UNESCO (2018) mentioned that teacher training and continued on-going, relevant professional development for teachers are essential if benefits from investments in ICTs are to be realized. Training and on-going support must enable teachers to develop the necessary ICT competencies so they can, in turn, ensure their students develop the relevant skills, including digital competencies for life and work.

Sito (2017) mentioned that educational reform in all levels of education may be undertaken. The curricula can be enriched and enhanced to meet the demands in response to the ASEAN integration and to meet the mandate

of globalization. Also, for the realization of the BSU's vision as a premier university delivering world-class education that promotes sustainable development amidst climate change.

A similar study involving other pertinent variables can be carried out to cover a broader perspective.

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