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Competency Level in Ict Utilization of Pre-Service Teachers: Basis for Enrichment Activities in Technology for Teaching and Learning

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Abstract

The ICT competency standards for the Philippine pre-service teacher's education require the teachers to demonstrate proficiency in the use of technology tools to support teaching and learning. This study used a quantitative descriptive design that sought to determine the competency level of pre-service teachers in ICT utilization. The respondents were chosen through purposive sampling technique. The researchers used a survey questionnaire as the instrument in gathering data in a total of 76 pre-service teachers of President Ramon Magsaysay State University, San Marcelino campus. The pre-service teachers were given survey to determine their competency level in ICT utilization. Mean, frequency and percent distribution and ANOVA were used to analyze and interpret the gathered data. This study revealed that the pre-service teachers has developing competency level in ICT utilization in all educational software including authoring system software, desktop publishing software, drill and practice, educational games software, graphic software, math problem solving software, simulation software and tutorial software except for courseware and utility software which they are proficient. The study shows that there is no significant difference in the course and major and the commonly used available gadgets in utilizing educational software such as authoring system software, courseware, drill and practice software, educational games software, graphics software, tutorial software and utility software. Meanwhile, desktop publishing software, math problem- solving software and simulation has significant difference in the common available gadget and the course and major of pre-service teachers. This study recommends that competency level of the pre-service teachers in utilizing ICT will serve as a basis to improve curriculum, and conduct training/seminars of the pre-service teachers and professional teachers to have an efficient teaching-learning process.

Keywords: *Competency level in ICT utilization, educational software, pre-service teachers.*

BACKGROUND OF THE STUDY

Information and Communication Technology (ICT) plays a vital aspect in facilitating the transition from a traditional teaching technique to a professional and flexible academic setting. Learning will be successful with the assistance of ICT elements and components (Jamieson-Procter et. al., 2013). This includes learning topics such as mathematics, physics, languages, arts, and humanities using technology-based tools and equipment. Teachers and students have enormous potential to use ICT to improve the quality of classroom teaching and learning (Lawrence et. al., 2018).

The study of Habibu et. al., (2012) revealed the teachers Uganda have a strong desire to integrate ICT in the teaching-learning process despite the difficulties they had experienced. Their study implied that the new model of pedagogical enhancing ICT tools for teaching-learning process can be a professional development of teachers.

In the Philippine context, the education system have a vision of creating an ICT- enabled educational system that transforms students into dynamic life-long learners, values-centered, productive and responsible citizens (Perez, 2016). However, Dotong et. al., (2016) highlighted the following challenges to efficient ICT usage in the country: insufficient financial support and infrastructure, human capital, managerial support, as well as behavioral and environmental issues.

Philippine universities improve ICT integration education through the use of ICT as a tool to improve the teaching-learning process. The pre-service teachers have many opportunities to study and utilize ICTs during their studies, particularly during in-school experiences (Jita, 2016). However, due to the rise of Covid 19 pandemic, most universities including Cebu Normal University have utilized online learning since schools are lockdown resulted in problems especially for students without access to technologies (Dayagbil et. al., 2021). As a result, some schools obtained relevant technologies, prepared learning resources, established systems and infrastructure, organize new teaching protocols, and revised curricula. The transition was smooth for some schools but difficult for the schools of various developing countries with limited infrastructure, it was difficult (Pham and Nguyen, 2020).

Additionally, the Philippine government initiated several strategies to address the trend in the 21st century that aims to achieve its vision to the Philippine government online thru the Philippine Digital Transformation Strategy (PDTS) which intends to integrate ICT in education and training to give fair access to opportunities (Alampay, 2013). This enabled the pre-service teachers to go through the introductory task before facilitating any action programs to enhance that competence in which they must go in training focused on ICT skills so they can integrate ICT with the curriculum to create and ICT environment. Hence, ICT competence has become fundamental in education (Nguyen, 2013).

The pre-service teachers must be skilled enough to support meaningful learning, which is measured by students' active, cooperative, purposeful, and constructive behaviors. This may be accomplished by utilizing technology to complete authentic duties that include teaching tactics and material, learning abilities, software and hardware features, student experiences, and much more in order to be effective as a professional teacher (Howland et. al., 2012).

This study aims to measure the competency level of pre-service teachers at President Ramon Magsaysay State University-San Marcelino Campus in terms of different types of ICT educational software.

CONCEPTUAL FRAMEWORK

One of the ICT competency frameworks of the teachers under technological literacy is understanding the role of ICT in accordance with national education objectives, in which instructors need to consider and strive toward the goals that should be reached. Moreover, the domain 4: Technology tools the pre-service teachers must demonstrate proficiency in the use of technology tools to support teaching and learning (Bilbao et.al, 2019). The study by Dantic and Tabligan (2022) revealed that public high school teachers are highly in need ICT training regarding facilitating students with the lessons. It is also supported by Baterna et. al., (2020), ICT training and encouragement of teachers to use suitable cognitive behavioral therapy instruction based on the context of the students were also found to be effective. As a result, developing policies and improving curricula are significant.

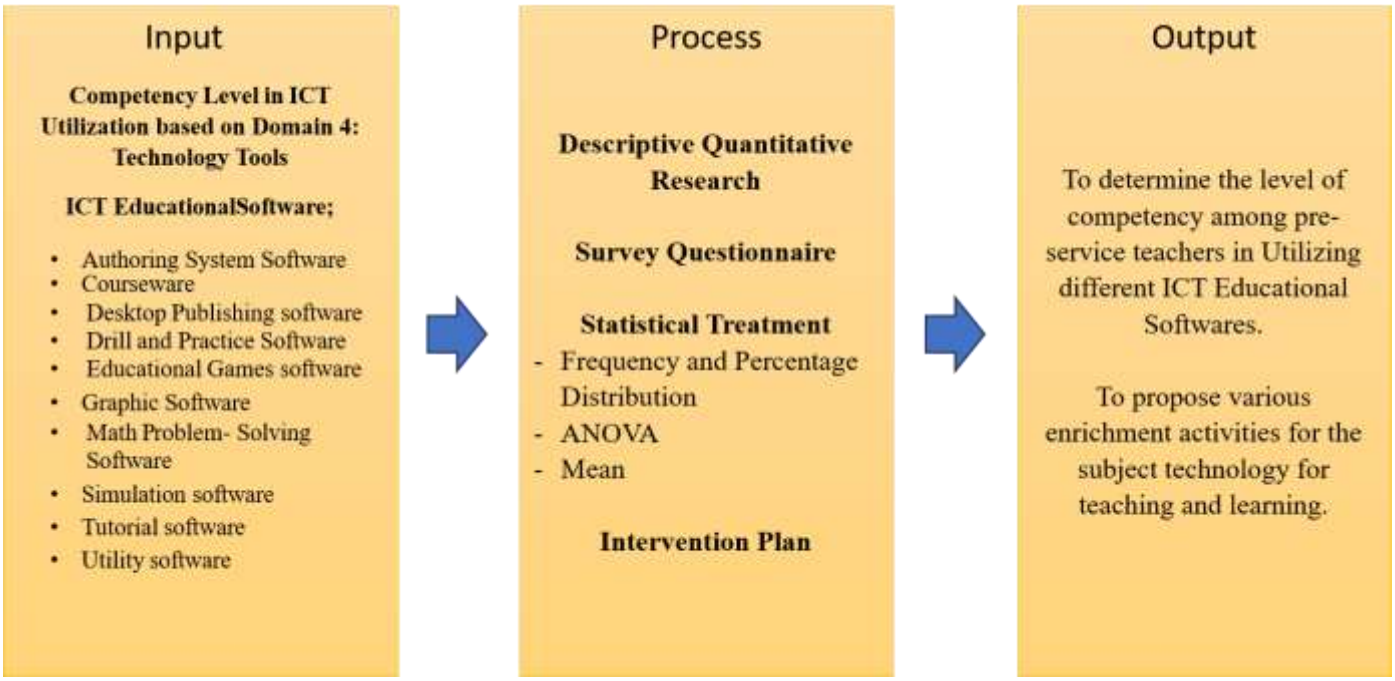

Figure 1. Paradigm of the Study

The study followed the IPO model. In the input column, shows the competency level of pre-service teachers on utilization of different ICT software. It also presents the different ICT Educational Software that can be used by teachers. In the process column, shows the research design, the instrument, and the statistical treatments. Further, in the output column revealed the potential outcome of the study.

Methodology

The study employed a quantitative descriptive methodology to evaluate the ICT utilization competency levels of pre-service teachers at President Ramon Magsaysay State University - San Marcelino Campus. A purposive sampling technique was utilized, targeting fourth-year students from the Bachelor of Secondary Education and Bachelor of Elementary Education programs, resulting in a sample size of 85 respondents for the 2022-2023 academic year. A survey questionnaire was created to measure the competency levels, which underwent construct and content validity assessments by four research specialists. ANOVA was applied to analyze the demographic profiles of the pre-service teachers' responses.

Results and Discussion

This section presents all the data gathered and treated.

Demographic Profile of the Pre-service Teachers

The demographic profile of the pre-service teachers is presented to provide a comprehensive background of their course/major and commonly used available gadgets.

Table 4

Demographic Profile of the Pre-service Teachers

Profile	Frequency	Percent (%)
Course and Major		
BSEd	43	56
4th-year BSEd English	23	30
4th-year BSEd Science	10	13
4th-year BSEd SocialStudies	10	13
TOTAL	43	56
BEEd	33	44
TOTAL	76	100
Common Used Available Gadgets		
Mobile Phone	51	67
Tablets	3	4
PC or Laptop	22	29
TOTAL	76	100

Course and major. The respondents are the BSEd with the highest frequency of forty-three (43) or 56%. It was composed of three major programs, the BSEd English with Twenty-three (23) or 30 %, the BSEd Science and BSEd Social Studies both with only ten (10) or 13%. On the other hand, there are thirty-three (33) or 44% BEEd respondents.

Commonly Used Available Gadgets. Gadgets is a handheld computer which incredibly portable and adequate to do digital tasks. Most of the available gadgets used are Mobile Phone with the highest frequency of Fifty-one (51) or 67%, followed by PC or Laptop with Twenty-two (22) or 29%, and the Tablets with Three (3) or 4%. Most of the pre-service teachers used mobile phones because it is handy and convenient. The study of Sung et. al., (2016) claimed that using mobile phones is better than using desktop or computers. Mobile phones are effective for different ages of users and courses. It provides adequate use in the lessons, independent learning, collaborative learning and game-based learning in formal and informal education.

Competency Level in Utilizing Different Types of Educational Software

Competency level is describe as the ability to perform a task successfully while demonstrating the necessary skills and characteristics. The competency level in utilizing different educational software tends to make the pre-service teachers knowledgeable in implementing teaching quality integrated with ICT integration.

Authoring System Software Competency

Authoring system software is an educational software that is used to create learning lessons. It is one of the most essential

software in teaching. The pre-service teachers use this software to create slide and video presentations thus making them more creative in the interactive learning environment. The top application authoring system software are Canva, Prezi and Microsoft PowerPoint. Table 5 presents the common features of authoring system software where pre-service teachers are familiar with.

Table 5

Competency level of pre-service teachers in utilizing Authoring system software

Feature	Mean	SD	Verbal Description	Rank
1. apply different templates	2.38	0.56	D	2
2. design your own presentation tools	2.37	0.54	D	4
3. create and edit video presentation	2.29	0.54	D	5
4. modify preset fonts and color scheme	2.49	0.62	D	1
5. manage the Design features (background remover, draw tool, QR code generator, actions/movement and emoji integration).	2.37	0.61	D	3
Total	2.38	2.87	D	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

Table 5 reveals that among the features of Authoring System Software, feature 4, modify preset fonts and color scheme got the first rank with a mean of 2.49 and standard deviation of 0.62, meanwhile feature 3, create or edit video presentation got the fifth rank with a mean of 2.29 and standard deviation of 0.54 both perceived as developing (D) competency skill among the pre-service teachers.

The overall grand mean is 2.38 and standard deviation is 2.87 means the competency level is developing. This suggests that pre service teachers need to attend seminars and workshops to enhance their skill on authoring system software. However, Pappas (2016) pointed out that software assistance provides advanced security protocols to assure the safety of the data. Han, Cho, Kim, and Park (2019), claimed that the authoring system software is a multimedia technology that has a positive impact on the perception and adoption of learning technology. It allows the users to generate and organize information into a specified course framework (McGarry, 2021). The authoring tool requires a permanent place on your desktops or computers; the fact that you have Internet access is no longer relevant because computer video authoring tools enable users to perform more diverse and complex tasks. Teachers should be skillful in word processor to complete all written reports for both co-teachers and students in a timely manner. It should be proficient in spelling, create tables, insert hyperlinks and make formatted documents (Fort, 2017).

Courseware Competency

Courseware can create customized tutorials for instructors or as individual lessons for learners. The pre-service teachers used it to set up virtual meeting, upload learning materials, collect learning tasks and evaluate student's activities. It enables the teachers to improve access and efficiency while fulfilling all students' particular needs and expectations. The top application in the courseware are Google classroom and Zoom. Table 6 shows the common features of courseware where pre-service teachers' skills are assessed.

Table 6

Competency level of pre-service teachers in utilizing courseware

Feature	Mean	SD	Verbal Description	Rank
1. set up virtual meeting	3.04	0.90	P	1
2. utilize virtual discussion using the chat	2.45	0.62	D	4
3. create invitation links	2.92	0.89	P	2
4. post and upload assignments, quiz, links, and files to virtual classroom	2.45	0.68	D	3
5. export graded activities to excel format	2.21	0.68	D	5
Total	2.61	0.75	P	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

Among the features of Courseware, feature 1, set up virtual meeting got the first rank with the mean of 3.04 and standard deviation of 0.90 which perceived as proficient (P) competency. This is true because during the two and half years pre-service teachers exposed to these platforms in their online learning. Meanwhile feature 5, export graded activities to excel format got the fifth rank with the mean of 2.21 and standard deviation of 0.68 which perceived as developing (D) competency since they are just students they did not experience it.

The overall grand mean is 2.61 and standard deviation of 0.75 which perceived as proficient (P) competency. This means that the pre-service teachers can handle most tasks independently and had advance knowledge on the skills and functions of the courseware. In the study of Utomo (2020) showed that a Google Classroom is a combined approach of a distance learning application, a WhatsApp group for broadcast messaging, and Zoom for video conferencing for distant learning media. In addition, A'yun (2021) claimed that Google Classroom provides a mechanism for professors and students in virtual courses to interact face to face. During the Covid-19 epidemic, it was one of the most popular online learning sites. Moreover, Henukh (2020) claimed that courseware provides beneficial learning for teachers and students to plan lectures, particularly in task management, resulting in considerable increases in student learning independence.

Desktop Publishing Software Competency

Desktop publishing software can bring together text and images to make creative and standardized flyers, brochures, handouts, and newsletters. These flyers, brochures, handouts, and newsletters can be used in school publications or just to inform everyone in school activities and announcements. The top applications in desktop publishing software are Canva, Adobe InDesign, and Microsoft Publisher. Table 7 presents the common features of desktop publishing software.

Table 7

Competency level of pre-service teachers in utilizing desktop publishing software

Feature	Mean	SD	Verbal Description	Rank
1. create publishing formats	2.26	0.66	D	3
2. utilize virtual discussion using the chat	2.22	0.60	D	4
3. display different templates	2.37	0.65	D	1
4. design info-graphic tools	2.34	0.58	D	2
5. apply the asset library(list of templates, shapes, designs and other features)	2.21	0.64	D	5
Total	2.28	0.62	D	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

Table 7 shows that among the features of desktop publishing software, feature 3, display different templates got the first rank with the mean of 2.37 and standard deviation of 0.65, meanwhile, feature 5, apply the asset library (list of templates, shapes, designs, and other features) got the fifth rank with the mean of 2.21 and standard deviation of 0.64, both perceived as developing (D) competency. The overall grand mean is 2.28 and the standard deviation is 0.62, which is perceived as developing (D) competency. This means that the pre-service teachers are in need of training and workshops in deskstop publishing software to be able to make flyers, hand outs and any other materials. According to Murray (2019), most schools are teaching their students the fundamental use of publishing software programs, and some projects are being created using this software. Moreover, Publisher is one of the effective application used for desktop publishing. It allows user to manage features such as page size, text, graphics, and borders (Microsoft Publisher 2003; The Publisher Environment, 2022). Furthermore, the users must be creative in applying different designs and layouts to acquire proficiency skills in applying features in desktop publishing software (Indeed Editorial Team, 2022).

Drill and Practice Software Competency

Drill and practice software is an educational software that allows the pre-service teachers to review their students about the previous lesson. It is also used to prepare students for their exams. The practice of exercising plays a crucial role in boosting students' participation in class. The top applications in drill and practice software are Quizlet, Kahoot, and Quizizz. Table 8 presents the common features of drill and practice software.

The table shows that among the features of Drill and practice software, feature 5, apply additional formatting features including bold, italicize letters, add highlighters, underline, audio recording and suggestions got the first rank with the mean of 2.20 and standard deviation of 0.65, meanwhile feature 1, apply in the class activities got the fifth rank with the mean of 1.99 and standard deviation of

0.60, both features perceived as developing (D) competency.

Table 8

Competency level of pre-service teachers in utilizing Drill and practice software

Feature	Mean	SD	Verbal Description	Rank
1. apply in the class activities	1.99	0.60	D	5
2. design a study set	2.01	0.62	D	2
3. use a flashcards	2.01	0.58	D	4
4. create a tests and quizzes	2.09	0.52	D	3
5. apply additional formatting features including bold, italicize letters, add highlighters, underline, audio recording and suggestions	2.20	0.61	D	1
Total	2.06	0.59	D	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

The overall grand mean is 2.06 and the standard deviation of 0.59 and perceived as developing (D) competency. This denotes that the pre-service teachers is in need of trainings and workshops on drill and practice software to enhance their skills. Wang et. al (2021) agreed that the Quizlet application had a significantly positive result in the good beliefs and confidence of the students in learning the Chinese language as their foreign language. Thus, in the study of Rathakrishnan et. al (2018) proved that drill and practice software is a more effective method of teaching and learning than traditional strategies.

Educational Games Software Competency

Educational games software is one of the educational software that can motivate the students in the class. It is also used in the collaborative activities of the students. The top application of educational software is Sheppard software, Quizlet, and Socrates. Table 9 introduces the common features of educational games software that leads to measure teacher's competence.

Table 9

Competency level of pre-service teachers in utilizing Educational games software

Feature	Mean	SD	Verbal Description	Rank
1. facilitate the given educational games to the students for motivation	1.89	0.66	D	2
2. categorize the games for every lesson	1.47	0.64	B	4
3. manage activities	1.82	0.76	D	3
4. raise the difficulty based on grade level	1.47	0.62	B	5
5. apply sound and visual effects	2.01	0.68	D	1
Total	1.73	0.67	D	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

The table reveals that among the features of Educational games software, feature 5, apply sound and visual effects got the first rank with the mean of 2.01 and standard deviation of 0.68 while feature 4, raise the difficulty based on grade level got the fifth rank with a mean of 1.47 and standard deviation of 0.62 both features are viewed as developing (D).

The overall grand mean is 1.73 and the standard deviation of 0.67 while the competency level of pre-service teachers is developing which is perceive that trainings, seminars or workshops are needed to further improve their skills on educational games software. Nowadays, the student-centred teaching strategy requires the classroom settings to have an active learning and collaborative environment by using educational games software, and simulations (Vlachopoulos and Makri, 2017). Moreover, Jevtic et. al., (2015) revealed that there are two-thirds of the students surveyed prefer to learn through educational games software because they believe it is a useful way to learn in school. In contradict, Dominguez et al. (2013), claimed that the use of educational games software caused low academic performance. This study was supported by Mackay (2015), if the teachers are not knowledgeable enough to use educational games software, it creates conflict in the

teaching and learning process. The use of educational game software must be connected to the specific lesson and engage students to the significant of this software to utilize it skillfully (Jaaska & Aaltonen, 2022).

Graphics Software Competency

Graphics software is one of the educational software that allows pre-service teachers to create attractive instructional materials by adding shapes, templates, designs, etc. It is typically used to enhance the colors of the pictures and make a collage. It helps pre-service teachers do creative lessons and presentations. The top applications in graphics software are Adobe Photoshop, Canva, and Picsart. Table 10 presents the common features of graphics software that pre-service teachers must possess.

Table 10

Competency level of pre-service teachers in utilizing Graphics software

Feature	Mean	SD	Verbal Description	Rank
1. modify sizes of images and templates	3.01	0.90	P	1
2. apply variety of colors, shapes, drawing tools, and other design	2.43	0.62	D	2
3. organize preset fonts and color scheme	2.37	0.61	D	4
4. manage different templates	2.41	0.64	D	3
5. use background remover	1.95	0.73	D	5
Total	2.43	0.70	D	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

The table shows that among the features of competency level in graphics software, feature, modify sizes of images and templates got the first rank with the mean of 3.01 and standard deviation of 0.90, which is viewed as proficient (P) competency. Meanwhile, feature 5, use background remover ranked fifth with mean of 1.95 and standard deviation of 0.73, and perceived as developing (D) competency.

The overall grand mean is 2.43 and the standard deviation is 0.70, this denotes that the competency level of pre-service teachers is developing and must be enhance through attendance to seminars/webinars on graphic software. Graphics software is equipped with editing features, such as painting, design, editing images, graphic presentation animation, and some desktop publishing software (Zhaofang, 2022). In addition, Alhajri (2016) agreed that the use of graphic design establishes a positive learning atmosphere and enthusiastic inspiration for their students. This can also encourage creativity and visionary thinking. Moreover, many teachers go beyond text and tables and use graphic elements to illustrate their educational materials to provide valuable context and information (Valli, 2017). To be skilled, the user must be creative and clearly understand the connection of various elements such as space, texture, color, line, size, form, and shape of the graphic software (Doyle, 2014).

Math Problem-solving Software Competency

Math problem-solving software is used to capture or write any mathematics problem and solve the equations with solutions automatically. Math problem-solving software is essential for both BEEd and BSEd pre-service teachers. The top applications for this software are Mathway, Photomath, and Microsoft Excel. Table 11 presents the common features of math problem-solving software where the pre-service teachers' skills were assessed.

Table 11

Competency level of pre-service teachers in utilizing Math problem-solving software

Feature	Mean	SD	Verbal Description	Rank
1. create simple layout	1.89	0.51	D	1
2. apply math notations or equations	1.83	0.50	D	4
3. follow step by step solution	1.89	0.42	D	2
4. create graphics with text explanation	1.87	0.50	D	3
5. manage built-in glossary and help sections	1.75	0.49	D	5
Total	1.84	0.50	D	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

The table shows that among the features of Math problem-solving software, feature 1, create simple layout got the first rank with the mean of 1.89 and standard deviation of 0.51 on the other hand, feature 5, manage built-in glossary and help sections got the fifth rank with the mean of 1.75 and standard deviation of 0.49 both perceived as developing (D) competency, overall grand mean is 1.84 and a standard deviation of 0.50, this shows that the competency level of pre-service teachers is developing that advance hands-on training workshop is needed to intensify skills in using math problem-solving software.

For the past decades, teachers have traditionally utilized math problem-solving software like Microsoft Excel to compute grades and present in graphical form. Furthermore, Photomath and math method had a good influence on the students' mathematics performance (Amparo et. al., 2022). The teachers must develop high-order thinking skills as one of the most substantial mathematical skills, to utilize ICT and apply the various equations in math applications such as Microsoft Excel, Photo Math, and Mathway (Kortesi et al., 2015).

Simulation Software Competency

Simulation software is one of the most helpful educational tools for pre-service teachers, which enables them to do virtual experiments in class and discuss science and physics concepts. The top applications for simulation software are Phet Interactive Simulations, LabsLand, and EMANIM. Table 12 presents the common features of simulation software where the pre-service teachers must acquire.

Table 12

Competency level of pre-service teachers in utilizing Simulation software

Feature	Mean	SD	Verbal Description	Rank
1. interact with simulation features	1.86	0.72	D	2
2. modify parameters	1.78	0.67	D	5
3. use audio and radio buttons	1.91	0.79	D	1
4. apply measurements in your experiments with various instruments that is available in every simulation features (rulers, stop-watches, volunteers and thermometers)	1.86	0.71	D	3
5. use simulation in a live or recorded discussion	1.80	0.73	D	4
Total	1.84	0.72	D	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

The table reveals that among the features of simulation software, feature 3, use audio and radio buttons ranked first with the mean of 1.91 and a standard deviation of 0.79, while, feature 2, modify parameters, got the fifth rank with a mean of 1.78 and a standard deviation of 0.67, and both perceived as developing (D) competency.

The overall grand mean is 1.84 and the standard deviation is 0.72, this reveals that the competency level of pre-service teachers is developing, viewed as initiatives to take part in seminars and trainings on simulation software is required to make teaching more meaningful. Simulation software can help to enhance learning and teaching in several disciplines in master courses (Campos et al., 2020). Bliya (2021) pointed out that the usage and practice of simulation software can help to improve the performance of middle school students. Moreover, Nasser et. al.,(2017) found out that the students in science, physics, and other subjects had insufficient academic performance without simulations. As a result, the study of Perkins et al.,(2012) strongly agreed that the curriculum should be changed in the instructional content, modern teaching approach, and mostly the integration of ICT including education software to create a responsive learning environment while utilizing simulations such as PhET (Physics Education Technology) which was developed by the University of Colorado at Boulder. To develop skills in simulation software, the teacher must acquire critical thinking skills to create open-ended scenarios that can encourage the students to actively participate in the class (Ding et al., 2017).

Tutorial Software Competency

Tutorial software is one of the most essential foundations of teaching because it is used by pre-service teachers to gather lessons and make activities with specific videos. It is an educational software that caters to educational videos that can catch students' attention. The top applications in tutorial software are Khan Academy, Teacher Training Videos, and YouTube. Table 13 presents the common features of tutorial software that a pre-service teacher must gain skill.

Table 13

Competency level of pre-service teachers in utilizing Tutorial software

Feature	Mean	SD	Verbal Description	Rank
1. apply lesson from different courses	2.04	0.60	D	2
2. use activity dashboard	1.99	0.58	D	3
3. modify library content	1.97	0.59	D	4
4. assess tests and quizzes	2.11	0.60	D	1
5. manipulate the tracking progress features	1.91	0.52	D	5
Total	2.00	0.58	D	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

The table shows that among the features of Tutorial software, feature 4 assess tests and quizzes got the first rank with the mean of 2.11 and standard deviation of 0.60 meanwhile feature 5, manipulate the tracking progress features got the fifth rank with the mean of 1.91 and standard deviation of 0.52 which both perceived as developing (D) competency.

The overall grand mean is 2.00 and a standard deviation of 0.58 which is perceived as developing (D) competency. This shows that the competency level of pre-service teachers is developing thus hands-on learning and practice will lead to mastery of skills on the features of tutorial software. In addition, the use of tutorial software as an educational tool improves the content of the video, meets the student's interest, and promotes interactive learning with the video (Brame, 2016). On the other hand, Cihangir (2021) affirmed that YouTube as an educational tutorial software has a problem with having absurd advertisements, premium suggestions, and bullying comments. Likewise, Chintalapati (2017) claimed that YouTube has limited content and quality for academic purposes. To be skilled, teachers must be able to communicate digitally, create activities and information, and create various academic documents (Saad et al., 2020).

Utility Software Competency

Utility software is useful educational software that can be used in both face-to-face and online exams. In-service and pre-service teachers can create quizzes, tests, and record scores, and it was often used during the COVID-19 pandemic. The top applications of utility software are Google Forms, Microsoft Forms, and Typeform. Table 14 introduces the common features of utility software where the skills of the pre-service teachers are presented.

Table 14

Competency level of pre-service teachers in utilizing Utility software

Feature	Mean	SD	Verbal Description	Rank
1. create quizzes and tests	2.68	0.75	P	3
2. customize your quizzes and tests	2.78	0.81	P	2
3. share the quiz or test via link or email	2.79	0.79	P	1
4. edit the recorded scores	2.45	0.60	D	4
5. evaluate scores and/or item analysis	2.34	0.60	D	5
Total	2.60	0.71	P	

Legend: Skilled(S) (3.50-4.00), Proficient (P) (2.50-3.49), Developing (D) (1.50-2.49), Beginning (B) (1.00-1.49)

The table reveals that among the features of Utility software, feature 3, share the quiz or test via link or email got the first rank with the mean of 2.79 and standard deviation of 0.79 and perceived as proficient (P) competency. On the other hand, feature 5, evaluate scores and/or item analysis got the fifth rank with the mean of 2.34 and standard deviation of 0.60 and viewed as developing (D) competency.

The overall grand mean is 2.60 and standard deviation of 0.71 and perceived as proficient competency (P). This indicates that the pre-service teachers are knowledgeable and competent enough to perform the features of utility software. Utility software was defined by Swan (2022) used to create online and print surveys, perform statistics, analyze and gather data, and make quizzes, exams, and polls. It makes grading easy simplifies the process for students. In fact, it can create a culture of collaboration and self-assessment (Guhlin, 2017). Moreover, in the study of Jazil et. al.,(2016) figure out that most students applied positive attitudes in utilizing software to make immediate feedback

every after doing quiz/test so that students can work out their suggested feedback.

Difference in the Competency Level of the Pre-service teachers in utilizing Educational software

A one-way analysis of variance between the groups refer to competency level of pre-service teachers in utilizing different educational software.

Authoring System software is one educational software that allows pre-service teachers to make a lesson through slide and video presentations.

Table 15

One-Way Analysis on Variance of the competency level pre-service teachers in utilizing Authoring system software by Demographic Profile

Profile	Source	Sum Squares	of df	Mean Square	F-value	P-value	Decision/ Interpretation
Course and Major	Between Groups	0.434	3	0.145	0.839	0.477	Accept H_o
	Within Groups	12.412	72	0.172			Not Significant
	Total	12.846	75				
Commonly Used Available Gadgets	Between Groups	0.452	2	0.226	1.330	0.271	Accept H_o
	Within Groups	12.395	73	0.170			Not Significant
	Total	12.846	75				

The table 15 shows that there is no significant difference in both courses and majors and the commonly used available gadgets of pre-service teachers in utilizing authoring system software. This means that both courses and majors and the commonly used available gadgets of pre-service teachers have the same competency level. The authoring system software is useful for all course and commonly used available gadgets of pre- service teachers due to its ability in making creative ICT instructional materials. According to Khademi (2012), there is an enormous action from teaching institutions in the use of E- learning and boosting the population to prefer the best Authoring system software to create an accurate course for E-learning. Enhancing authoring tools is important to improve the easy the usage to having a skilled output. It is helpful for all BSEd and BEEd pre-service teachers in the times of the pandemic COVID 19 to join online classes.

Table 16

Significant Difference of the competency level pre-service teachers in utilizing Courseware by Demographic Profile

Profile	Source	Sum of Squares	df	Mean Square	F-value	P-value	Decision/ Interpretation
Course and Major	Between Groups	0.288	3	0.096	0.582	0.629	Accept H_o Not Significant
	Within Groups	11.898	72	0.165			
	Total	12.187	75				
Commonly Used Available Gadgets	Between Groups	0.085	2	0.042	0.256	0.775	Accept H_o Not Significant
	Within Groups	12.102	73	0.166			
	Total	12.187	75				

Table 16 reveals that there is no significant difference in both courses and majors and the commonly used available gadgets of pre-service teachers in utilizing courseware. This explains that both courses and majors and commonly used available gadgets have the same competency in using the courseware. The use of courseware can make the pre-service teachers and professional teachers productive in which they can easily learn the lesson and activities. This software is useful for having virtual classes. Alfadda (2021) claimed that they have a strong positive correlation between the use of Zoom and the behavioural attitudes of the students. It was supported by the study of Selvaraj (2021) as he pointed out that the use of online platforms such as Google Meet, Google classroom majorly, Zoom and Microsoft teams are the preference for synchronous online classes might have been attributed to the fact that it resembles regular face-to-face classes more which is a must in higher education.

Table 17

One-Way Analysis on Variance of the competency level pre-service teachers in utilizing Drill and practice software by Demographic Profile

Profile	Source	Sum of Squares	df	Mean Square	F-value	P-value	Decision/ Interpretation
Course and Major	Between Groups	0.854	3	0.285	1.549	0.209	Accept H_o Not Significant
	Within Groups	13.228	72	0.184			
	Total	14.082	75				
Commonly Used Available Gadgets	Between Groups	0.977	2	0.488	2.720	0.073	Accept H_o Not Significant
	Within Groups	13.105	73	0.180			
	Total	14.082	75				

As shown on the table, there is no significant difference in both courses and majors and the commonly used available gadgets of pre-service teachers in utilizing drill and practice software. This connote that both course and major and commonly used available gadgets of pre-service teachers have the same competency level. The drill and practice software is effective in creating interactive discussions in the class. Hill (2018) mentioned that drill and practice software can be used for many skills such as learning language, learning factual information, and solving problems in mathematics, physics, chemistry, electricity, nursing, etc. It altered the hard level based on the ability of the students in strengthening their learning. Educational games software can be a part of a teacher's motivation before the start of the lesson. It is used to make their students highly engage in the class through collaborative activities.

Table 18

One-Way Analysis on Variance of the competency level pre-service teachers in utilizing Educational games software by Demographic Profile

Profile	Source	Sum of Squares	df	Mean Square	F-value	P-value	Decision/ Interpretation
Course and Major	Between Groups	0.237	3	0.079	0.478	0.698	Accept H_o Not Significant
	Within Groups	11.874	72	0.165			
	Total	12.111	75				
Commonly Used Available Gadgets	Between Groups	0.373	2	0.186	1.159	0.319	Accept H_o Not Significant
	Within Groups	11.738	73	0.161			
	Total	12.111	75				

Table 18 presents that there is no significant difference in both courses and majors and the commonly used available gadgets of pre-service teachers in utilizing educational games software because this software is used to make the students more engage in learning. This describes that both course and major and commonly used available gadgets of pre- service teachers have the same competency level, as Connolly et al.,(2012) addressed that games as motivation are adequate to attain various learning goals. Moreover, Zapalska et al., (2012) supported that students are more likely to engage in learning while they are playing because it can boost their decision-making.

Graphics software can help pre-service teachers have digitally artistic learning materials. This software provides the students to clearly understand the visuals related to the specific topic.

Table 19

One-Way Analysis on Variance of the competency level pre-service teachers in utilizing Graphics software by Demographic Profile

Profile	Source	Sum of Squares	df	Mean Square	F-value	P-value	Decision/ Interpretation
Course and Major	Between Groups	0.591	3	0.197	0.914	0.439	Accept H_o Not Significant
	Within Groups	15.520	72	0.216			
	Total	16.111	75				
Commonly Used Available Gadgets	Between Groups	0.837	2	0.418	2.000	0.143	Accept H_o Not Significant
	Within Groups	15.274	73	0.209			
	Total	16.111	75				

Table 19 reveals that there is no significant difference in both courses and majors and the commonly used available gadgets of pre-service teachers in utilizing graphic software. This indicates that both course and major and commonly used available gadgets of pre-service teachers have the same competency level. The graphic software allows the pre-service teachers to create attractive presentations and videos to catch the student's attention. Ratnasari (2015) emphasized the use of computers in graphics software teaching helps students increase their computer literacy, enriches their ability to work with the Internet, web design, and graphics, develops their interest in computer graphics, and develops their knowledge, skills, and abilities. It was also stated that the use of gadgets is far more often than desktop computers and even laptops. This implies that mobile gadgets can be even more substantial as a learning tool. Tutorial software is a software used to create learning lessons. It is necessary for both BSEd and BEED because making lesson is one of their foundation in teaching.

Table 20

One-Way Analysis on Variance of the competency level pre-service teachers in utilizing Tutorial software by Demographic Profile

Profile	Source	Sum of Squares	df	Mean Square	F-value	P-value	Decision/ Interpretation
Course and Major	Between Groups	1.072	3	0.357	1.380	0.256	Accept H_o Not Significant
	Within Groups	18.648	72	0.259			
	Total	19.719	75				
Commonly Used Available Gadgets	Between Groups	0.677	2	0.338	1.297	0.280	Accept H_o Not Significant
	Within Groups	19.043	73	0.261			
	Total	19.719	75				

Table 20 presents that there is no significant difference in both courses and majors and the commonly used available gadgets of pre-service teachers in utilizing tutorial software. This means that both course and major and commonly used available gadgets of pre-service teachers have the same competency level. The tutorial software is valuable to the pre-service teachers because many lessons from the descriptive type and video types can be integrated into the teaching, giving the students a vivid knowledge of the specific lesson. Nerval (2016) believes that tutorials are essential to strengthen students' academic performance. Likewise, tutorial software helps students to acquire knowledge and skills. Riley (2017) stated that the videos can be integrated to teach any subject online, face-to- face, and in a hybrid class. For face-to-face, the teacher can easily play the video with the use of any computer and laptop projected on a large screen. Utility software is an educational software appropriate to BSEd and BEEd pre-service teachers. It can be used in any gadget since

everyone can access it to make quizzes, and tests and record scores.

Table 21

One-Way Analysis on Variance of the competency level pre-service teachers in utilizing Utility software by Demographic Profile

Profile	Source	Sum of Squares	df	Mean Square	F-value	P-value	Decision/ Interpretation
Course and Major	Between Groups	0.465	3	0.155	0.721	0.543	Accept H_o Not Significant
	Within Groups	15.490	72	0.215			
	Total	15.955	75				
Commonly Used Available Gadgets	Between Groups	1.157	2	0.578	2.853	0.064	Accept H_o Not Significant
	Within Groups	14.799	73	0.203			
	Total	15.955	75				

Table 21 shows that there is no significant difference in the courses and majors and commonly used available gadgets of pre-service teachers in utilizing utility software. Utility software is necessary for all courses and majors. The pre-service teachers can perform this on mobile phones, computers or laptops, and tablets. It is where they can make quizzes or tests and score either online or offline. The study of Sari (2020) claimed that the positive features of utility software such as Google forms as an effective learning assessment tool provide efficiency in time and energy, less cost, detailed results, and helpful features. Simply, Google Forms as an assessment tool can alleviate the lecturer's workload. Ruhizan (2014) stated that the integration of ICT into the teaching and learning environment aids students by allowing them to acquire the ability to seek information and evaluation, cooperation, communication, and problem solving. Educational software has become an essential teaching tool for instructors as part of their classes. The educational software can provide easy use and immediate access to the content, which is prepared for use in teaching processes (Sahin, 2021).

This finding contradicts to the study conducted by Romani (2023), he emphasized that the teachers may have sufficient ICT skills utilizing educational software in the class. Due to much educational software, the teacher finds hard time choosing appropriate application for the learning needs of the students (Yefremenko, 2021).

On the other hand, the study conducted by Owal (2020), Educational software applies to all types of software designed specifically for effective learning processes. It includes all of the lessons that teachers can use to help students gain high-level skills and knowledge. In addition, engagement is a relevant advantage of using educational software for students as a learning tool, as it promotes interaction with multimedia content, making it more enjoyable than traditional learning.

Desktop publishing software is used to publish school or classroom information and announcements. This software benefits pre-service teachers because they can simply put text, drag, and adjust the desired designs by using computers and laptops.

Table 22

One-Way Analysis on Variance of the competency level pre-service teachers in utilizing Desktop publishing software by Demographic Profile

Profile	Source	Sum of Squares	df	Mean Square	F-value	P-value	Decision/ Interpretation
Course and Major	Between Groups	1.503	3	0.501	2.094	0.109	Accept H_o Not Significant
	Within Groups	17.231	72	0.239			
	Total	18.734	75				
Commonly Used	Between Groups	1.630	2	0.815	3.479	0.036	Reject H_o Significant
	Within Groups	17.104	73	0.234			

Available Gadgets	Total	18.734	75

Based from the table, there is no significant difference in courses and majors of the pre-service teachers in utilizing desktop publishing software. It is essential in making attractive designs of handouts, brochures, and flyers for learning. However, this software has a significant difference in commonly used available gadgets used by the pre-service teachers.

As Hanson (2021) emphasized that desktop publishing software can be performed on a computer or laptop by dragging an object to make different page layout including book and magazine. It is also typically used in text formatting and typesetting. The use between mobile phones and computers can cause technical distinctions in which the size and some available features are smoothly applied in mobile phones. Simulation software is typically used by the pre-service teachers especially the BSEd General Science majors and the pre-service teachers in the BEED whose focus on science topics because this software can do online laboratories and experiments that can be seen and explained without using actual equipment. It is also helpful for the pre-service teachers to easily discuss science-related concepts and disciplines.

Table 23

One-Way Analysis on Variance of the competency level pre-service teachers in utilizing Simulation software by Demographic Profile

Profile	**Source**	**Sum of Squares**	**df**	**Mean Square**	**F-value**	**P-value**	**Decision/ Interpretation**
Course and Major	Between Groups	3.637	3	1.212	3.077	0.033	Reject H_o Significant
	Within Groups	28.365	72	0.394			
	Total	32.002	75				
Common Used Gadgets Available	Between Groups	0.619	2	0.309	0.720	0.490	Accept H_o Not Significant
	Within Groups	31.383	73	0.430			
	Total	32.002	75				

As seen on the Table 23, there is a significant difference in courses and majors because BSEd-Science pre-service teachers on the use of simulation to explain science and physics/basic math concepts. However, there is no significant difference in common available gadgets of pre-service teachers in utilizing simulation software. This software is effective on mobile phones, computers/laptops, and tablets. Simulations can support the teaching of the pre-service teachers to show virtual and imaginary occurrences in a specific topic. According to the study by Chernikova et. al., (2020) stressed the use of simulations in learning resulted in a positive effect on the students, which facilitated their learning to have complex skills across domains for the development of knowledge and skills. In addition, the findings of this study showed that the participants had a very high level of engagement and satisfaction with the use of simulations for learning science concepts in the subjects of physics, chemistry, and biology (Almasri, 2022).

Math problem solving is one educational software used by pre-service teachers, BSED General Science majors, and BEED pre-service teachers whose focus on math and science equations. With this software, the pre-service teachers vividly understand the math and science equations in teaching.

Table 24

One-Way Analysis on Variance of the competency level pre-service teachers in utilizing Math problem-solving software by Demographic Profile

Profile	**Source**	**Sum of Squares**	**df**	**Mean Square**	**F-value**	**P-value**	**Decision/ Interpretation**
Course and	Between Groups	1.192	3	0.397	3.282	0.026	Reject H_o

Major	Within Groups	8.717	72	0.121			Significant
	Total	9.909	75				
Commonly	Between Groups	0.742	2	0.371	2.956	0.058	Accept H_o
Used	Within Groups	9.167	73	0.126			Not Significant
Available Gadgets	Total	9.909	75				

Table 24 shows that there is a significant difference in the courses and majors because BSEd-Science and BEEd pre-service teachers are more likely to have different math-related lessons such as simple formulas and equations. However, there is no significant difference in commonly used available gadgets in utilizing math problem solving software of the pre-service teachers since they can be utilized on mobile phones, computers/laptops, and tablets.

According to Al-Hilli (2018) the use of information and communication technology such as math problem-solving software in student's mathematical reasoning skills is effective. Therefore, the goal of teaching is to develop wise decision-making, creative solving problems, and the power of reasoning of the students. This was supported by the studies of Minero (2020) and Falloon (2019), they figure out that the teachers who teach mathematics lessons use math problem-solving software for understanding arithmetic and acquiring math skills, while simulation is useful for science teachers to enhance high-order thinking skills in introducing simple science concepts to their students. The desktop publishing software has a significant difference from the commonly used available gadgets because it uses the computer or laptop effectively to enhance the quality of production, including text and any graphics design (Piazza et al., 2016). Thus, it is essential that all pre-service teachers be competent in the utilization of desktop publishing software, math problem-solving software, and simulation software.

CONCLUSIONS

From the aforementioned findings, the following conclusions were derived:

1. Most of the respondents are BSEd pre-service teachers who use mobile phones as commonly used available gadgets.
2. The competency level in ICT utilization of pre-service teachers resulted "Developing" (D) in authoring software, desktop publishing software, drill and practice software, educational games software, graphic software, math problem-solving software, simulation software, and tutorial software. Meanwhile, they were observed as "Proficient" in utilizing courseware and utility software.
3. There is the same competency level among the pre-service teachers in utilizing all the software except for desktop publishing software, math problem solving software and simulation software because of their course and majors.
4. There is an increase instructional efficiency and enhancement of ICT skills on the use of different educational software through hands-on learning make a more engaging way of learning.

RECOMMENDATIONS

In view of the findings and conclusions, the researchers offer the following recommendations.

1. All pre-service teachers must have their own mobile phones, laptops and tablets with appropriate system specifications to run the softwares.
2. For Developing (D) competencies, proposed trainings, seminars/webinars, workshops to improve the ICT skills and for Proficient (P) competencies advance knowledge and skills must be enhanced.
3. Pre-service teachers should take initiative to further enhance skills in ICT utilization through online tutorials and online workshops.
4. To integrate the lesson in the different educational softwares, a seminar-workshop type method will be employed in the class.

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