DIGITAL SKILLS TRAINING FOR TEACHERS: IMPROVING DIGITAL LITERACY AND COMPETENCE

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Abstract

This research aims to assess the digital literacy and competency of teachers at Camp Abelon Elementary School. It also looks at how well-versed the teachers are in technology. The descriptive pre-experimental research approach was used in the study, with thirty-two (32) teachers constituting the study's official respondents. The researcher modified and verified digital literacy and competency questionnaires to increase credibility. According to the research findings, there was a notable improvement in their digital literacy level following the training, as reflected by the overall evaluation rating of basic to intermediate performance. Furthermore, the overall evaluation rating increased from proficient to extremely proficient following the training, indicating a significant boost in the teachers' digital proficiency level. The study's findings also demonstrated a significant difference in digital literacy and digital competence between pre-survey and post-survey results, proving that Learning Action Cell training on digital skills is very effective. The findings would be a cornerstone in the researcher's attempts to improve elementary school teachers' digital literacy and competency through more LAC sessions.

Keywords: *digital competence; digital literacy; ICT literacy*

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Context and Rationale

Newer digital technologies like computers and the Internet, together with radio and television, have been heralded as potentially powerful enablers of educational change and revolution. Various ICTs are claimed to contribute to increasing educational accessibility, bolstering the value of education in the increasingly digital workplace, and improving the quality of education by, among other things, supporting the conversion of teaching and learning into an exciting, dynamic process that is linked to real life (Serezhkina 2021, 7053).

The experience of integrating different ICTs in classrooms and other educational settings throughout the world over the past few decades, however, indicates that it is not always the case that the educational potential of ICTs is fully realized. Effective ICT integration into the educational system is a challenging, all-encompassing process that involves teacher competences, institutional readiness, curriculum and pedagogy, and long-term funding, among other things (Tinio 2003, 200).

The relationship between information and communication technology (ICT) and pedagogical transformation was examined (Wong and Li 2011, 361). They resolved that organizational and pedagogical interventions intermingled to produce effective changes in student learning. As a result, teachers who combine ICT use with pedagogical tactics have a more considerable impact on ICT implementation.

As a result, teachers' information and communication technology skills remain an essential component of educational growth. Suárez-Rodríguez et al. (2012, 1165) define these as the body of knowledge and abilities that instructors must have to use technology tools more as educational resources in their everyday practice. The knowledge of instructors in teaching has been increased to overcome the challenges associated with utilizing ICT in the classroom in light of the growing significance of the ICT transformation process in educational institutions (Son 2012).

In response to the advancement of education in the twenty-first century, the DepEd Computerization Program (DCP) was established in DepEd Order No. 78, s. 2010, Guidelines on the Implementation of the DepEd Computerization Program (DCP). The DCP seeks to provide public schools with the necessary technology to improve instruction and prepare them for the challenges of the twenty-first century.

To accomplish the stated paragraph 3 of DepEd Order No. 42, s. 2016 "Policy Guidelines on Daily Lesson Preparation for the K to 12 Basic Education Program," teachers are empowered to provide high-quality instruction that respects the diversity of students in the classroom, is dedicated to guiding students' achievement, and permits the application of a range of teaching and formative assessment techniques, including the use of ICT.

Therefore, teachers need to know both digital competency and digital literacy. Digital knowledge is important for 21st-century learners, and many schools emphasize competency above literacy. However, it is vital to know the difference. Digital competency answers what and how questions, while why, when, who, and for whom are key questions to digital literacy. For example, digital competency teaches students how to load images from the Internet into web pages or PowerPoint presentations. Digital literacy would assist learners in picking suitable pictures, understanding copyright licensing, citing or seeking permissions, and utilizing alternate language for images to enable persons with visual difficulties. Digital skills are centered on using the right technologies (e.g., Twitter) and how to use them (e.g., tweet, retweet, utilize Tweet Deck), whereas digital literacy includes in-depth inquiries. Why take Twitter over a private forum? Why advocate using it? Who risks harm? (Bali 2016).

However, in the researcher's first Classroom Observation (CO), experienced teachers grumbled about the use of ICT during the delivery of instruction because they lacked

the knowledge and abilities in digital literacy. Only new teachers are skilled and knowledgeable regarding the utilization of digital technologies in classroom observation. Teachers must implement RPMS objective 7: identify, create, arrange, and use relevant instructional resources, such as ICT, to achieve the learning objectives, as stated in DepEd Order No. 2, s. 2015 "Guidelines on the Establishment and Implementation of RPMS in the Department of Education." Teachers must incorporate comprehensive and diverse learning materials, including ICT, to get a perfect rating of seven in the classroom observation performance. Teachers' technology utilization and understanding are clearly linked to their degree of confidence. Moreover, this influences their attitudes about technology integration (Atkins and Vasu 2000, 279). Teachers must build their practical expertise and abilities in virtual environments (Rilling et al. 2005, 213). They must possess the technical know-how to use various computer programs for learning to successfully integrate technology into the classroom (Cunningham 2000, 9). Robb (2006, 334) also emphasizes the importance of school administrators fostering self-directed technology learning among their instructors by supplying suitable resources and a conducive environment.

As a result, the researcher conducted digital competency and digital literacy training for teachers to improve pedagogical learning by implementing ICT tools.

Innovation, Intervention, and Strategy

Using digital literacy in teaching allows teachers to investigate and participate in real-world occurrences, integrating extensive and multidisciplinary learning resources.

To attain digital literacy among teachers, the researcher conducted a LAC session on various digital literacy tools spearheaded by ICT experts and other skillful teachers in school. During the LAC session, the teachers were taught how to utilize applications such as Microsoft Excel, Microsoft Word, and Microsoft PowerPoint to aid them present the lessons to the pupils digitally, and Edmodo, Google Classroom, Kahoot.com, Facebook, and Messenger to help them organize and interact with pupils digitally. Popular mail applications such as G-mail and Yahoo were also taught for the teachers to send private mails to the pupils and their parents. The session was conducted with the aim of enhancing their digital skills and skillfully managing diverse instructional materials that encompass other disciplines.

Action Research Questions

Digital technology and practices have enormous potential for improving digital literacy and digital competency. This study intended to investigate the effects of digital skills training on the Camp Abelon Elementary School Teachers' digital literacy and digital competency in terms of the utilization of ICT in the learning process during the School Year 2020-2021. In particular, the following questions are the focus of this action research:

1. What is the level of teachers' digital literacy before and after the conduct of the digital skills training?
2. What is the level of teachers' digital competence before and after the conduct of the digital skills training in terms of:
    2.1. Operational Internet skills;
    2.2. Formal Internet skills;
    2.3. Informational Internet skills;
    2.4. Communicational Internet skills; and
    2.5. Content Creation Internet skills?

3. Is there a significant difference in the teachers' digital literacy and competence before and after the conduct of digital skills training?
4. What intervention can be designed to enhance the teachers' digital skills in terms of digital literacy and competency in the context of Camp Abelon Elementary School?

Action Research Method

Research Design

This study used a descriptive pre-experimental research approach. The goal of a descriptive research design is to gather data in order to describe a population, circumstance, or phenomenon methodically. More precisely, rather than addressing the why of the research challenge, it assists in addressing the what, when, where, and how concerns. The descriptive research approach may require utilizing a wide range of research techniques to examine the variables under investigation. While qualitative data is occasionally employed for descriptive purposes, quantitative data is mostly used in this work.

Pre-experimental designs are research schemes in which a subject or a group is observed after a treatment has been applied to test whether the treatment has the potential to cause change. This kind of design is distinct from experiments in two ways indicated by the prefix pre-: (1) Pre-experiments are a less sophisticated type of design than experiments; they are created to foresee potential issues with the causal inference that experiments may later face; and (2) Pre-experiments are frequently sorts of investigation that are conducted in advance of actual experiments, offering hints or signals that an experiment is worthwhile (Frey 2021).

Participants and Other Sources of Data and Information

The research participants include thirty-two (male and female) teachers at Camp Abelon Elementary School, Pagadian City, during the third grading period of the School Year 2020-2021. Participants were elementary school teachers who taught a variety of subjects. They all came from varied cultural and economic backgrounds and had at least a few years of teaching experience. Universal sampling was used in the study since all teachers in the school are considered official respondents of the study.

Research Instrument

The survey questionnaires used in this study comprise two parts. The first part was the teachers' digital literacy questionnaire, adapted from Al Khateeb's (2017, 38-51) survey questionnaire. The second part was on teachers' digital competence, adapted from van Deursen, Helsper, and Eynon's (2014) survey questionnaire. To better fit the individuals and the situation, a few essential changes were made. Online proficiency in communication, informational processing, formal online proficiency, operational proficiency, and content creation internet skills were all part of the digital competency.

Data Gathering Procedure

The researcher informed the research participants initially in the data collection process of the study's relevance and goal, the advantages and dangers involved, the need for their commitment, and the confidentiality of their answers. The research participants' informed consent was obtained in accordance with ethical guidelines. It was requested that each participant participate voluntarily. They were not forced to participate; rather, they were asked to do so voluntarily. To safeguard the integrity of the research, the researcher sought authorization from the Schools Division Superintendent's office, which granted permission for the research to be conducted at Camp Abelon Elementary School.

The survey questionnaires were administered before and after digital skills training via one of the electronic survey platforms, Google Forms. The questionnaires were also pilot-tested by the Camp Abelon Elementary School teachers before their official administration. These questionnaires were used to study in-service teachers in the Philippines who attended an LAC session to enhance their digital skills.

Data Analysis

The survey was divided into two categories: digital literacy and digital competency. To measure digital literacy, the researcher measured the mean and standard deviation. Each question's choices translate into three categories: "Basic," "Intermediate," and "Advanced."

Question	Scale/Range	Qualitative Description
Choice 1	1.00-1.66	Basic
Choice 2	1.67-2.33	Intermediate
Choice 3	2.34-3.00	Advanced

For the digital competency, the data was analyzed by using Microsoft Excel to find the mean and standard deviation (SD).

Weight	Scale/Range	Description
5	4.51 – 5.00	Very High proficiency
4	3.51 – 4.50	High proficiency
3	2.51 – 3.50	Proficient
2	1.51 – 2.50	Low Proficiency
1	1.00 – 1.50	Very Low Proficiency

In order to guarantee the instruments' validity and dependability, the pilot test results were used to measure the reliability of the test questions. Following the pilot test, the question paper had no substantial changes. The test items were reanalyzed after administration to confirm the reliability of the test questions. The reliability results of the pilot tests, as well as the proper administration of the test, showed that the instrument was indeed dependable.

The data were analyzed and interpreted using descriptive statistics, which include the mean, which represents the average, and the standard deviation, which represents the variability of numerical observations. To verify the null hypothesis that there is no discernible difference in the teachers' digital literacy and digital competence during the pre-survey and post-survey activities, the Paired-Samples t-test was used. The p-value, or level of marginal statistical significance, was used in conjunction with this statistical test procedure to determine whether to accept or reject the null hypothesis. The predictive analytics software Statistical Package for the Social Sciences (IBM SPSS Statistics 20) was employed in order to perform each of these statistical analyses.

Results and Discussion

The information gathered from the teacher participants of Camp Abelon Elementary School, Pagadian City Division, of the School Year 2021 – 2022 is presented, examined, and explained in this part. This investigation's central point is on the teachers' digital literacy and digital competence.

Level of teachers' digital literacy before and after the digital skills training. Describing the level of teachers' digital literacy before and after training is crucial for assessing the impact of training programs, identifying areas for improvement, monitoring progress, enhancing teaching, and learning practices, and promoting digital inclusion.

Table 1: Teacher's Digital Literacy in the Pre-Survey and Post-Survey Results

Statement Indicators	Pre-Survey			Post-Survey		
	Mean	SD	Description	Mean	SD	Description
1. I can use different search engines to find information.	1.88	0.89	Intermediate	2.34	0.64	Intermediate
2. I use some filters when searching to compare and assess the reliability of the information I find.	1.69	0.89	Intermediate	2.19	0.58	Intermediate
3. I classify the information in a methodical way using folders. I backups of information or files I have stored.	1.69	0.77	Intermediate	2.28	0.67	Intermediate
4. I can use advanced features of several communication tools (e.g. using Skype and sharing files).	1.94	0.77	Intermediate	2.28	0.76	Intermediate
5. I can share files and content using simple tools.	1.66	0.90	Basic	2.06	0.70	Intermediate
6. I use features of online services (e.g., public services, e-banking, online shopping …etc.).	1.69	0.91	Intermediate	1.97	0.68	Intermediate
7. I pass on or share knowledge with others online (e.g., via social networking tools or in online communities).	1.87	0.88	Intermediate	2.32	0.68	Intermediate
8. I can produce simple digital content (e.g., text, tables, images, audio files) in at least one format using digital tools.	1.47	0.89	Basic	2.31	0.58	Intermediate
9. I can apply basic formatting (e.g., insert footnotes, charts, tables) to the content I or others have produced.	1.69	0.75	Intermediate	2.28	0.72	Intermediate
10. I know that content can be covered by copyright.	1.66	0.73	Basic	2.16	0.62	Intermediate
11. I can modify simple functions of software and applications as changing default settings.	1.59	0.77	Basic	2.06	0.61	Intermediate
12. I can take basic steps to protect my devices (e.g., using anti-viruses and passwords).	1.66	0.70	Basic	2.09	0.80	Intermediate
13. I am aware that my credentials (username/password) can be stolen. I know I should not reveal confidential information online.	1.63	0.89	Basic	2.31	0.68	Intermediate
14. I understand the health risks associated with the use of digital technology (e.g., risk of addiction).	1.81	0.82	Intermediate	2.16	0.75	Intermediate
15. I understand the positive and negative impact of technology on the environment.	1.44	0.78	Basic	2.09	0.72	Intermediate
16. I find support when a technical problem occurs or when using a new program.	1.47	0.79	Basic	2.22	0.60	Intermediate

17. I can use digital technologies to solve (non-technical) problems.	1.84	0.71	Intermediate	2.31	0.63	Intermediate
18. I can solve technological problems by exploring the settings and options of programs or tools.	1.30	0.67	Basic	1.94	0.61	Intermediate
19. I am aware that I need to update my digital skills regularly.	1.56	0.88	Basic	2.00	0.71	Intermediate
Overall	**1.66**	**0.83**	**Basic**	**2.18**	**0.68**	**Intermediate**

Hypothetical Mean Range: 1.00 -1.66 = Basic, 1.67 - 2.33 = Intermediate, 2.34 - 3.00 = Advanced

Table 1 shows the assessment of teachers' digital literacy before and after digital skills training. The overall average of 1.66 with an SD of 0.83 in the Pre-Survey result revealed that the general assessment rating of teachers towards digital literacy may be categorized as basic. However, there was a noticeable gain in their digital literacy level after the training, as evidenced by an overall assessment rating of 2.18 and an SD of 0.68 in the Post-Survey, regarded as an intermediate performance.

There are five sections to test teachers' digital competence: operational internet skills, formal internet skills, informational internet skills, communicational internet skills, and content creation internet skills. The respondents' operational digital competency is described in three sub-sections under the heading "operational internet skills": using internet-based search engines, running the internet environment, and operating fundamental mobile phone operations.

Table 2.1: Teacher's Digital Competence in the Pre-Survey and Post-Survey Results in terms of Operational Internet Skills

OPERATIONAL INTERNET SKILLS	**Pre-Survey**			**Post-Survey**		
	Mean	**SD**	**Description**	**Mean**	**SD**	**Description**
A.1 Operating Basic Mobile Phone Functions						
1. I know how to connect to a WIFI network.	3.47	1.72	Proficient	4.22	0.89	High Proficiency
2. I know how to download apps to my mobile device.	3.59	1.27	High Proficiency	4.59	0.49	Very High Proficiency
3. I know how to turn my mobile phone off.	3.72	1.37	High Proficiency	4.72	0.45	Very High Proficiency
4. I know how to keep track of the costs of mobile app use.	2.69	1.60	Proficient	4.00	0.83	High Proficiency
5. I know how to install apps on a mobile device.	2.94	1.01	Proficient	4.66	0.77	Very High Proficiency
Total	**3.28**	**1.47**	**Proficient**	**4.44**	**0.76**	**High Proficiency**
A.2 Operating the Internet Environment						
1. I know how to open a new tab in my browser.	3.63	1.19	High Proficiency	4.56	0.50	Very High Proficiency
2. I know how to go to the previous page when browsing the Internet.	3.22	1.29	Proficient	4.34	0.89	High Proficiency
3. I know how to use the refresh function.	3.97	1.05	High Proficiency	4.31	0.68	High Proficiency
4. I know how to use shortcut keys (e.g. CTRL-C for copy, CTRL-S for save).	3.69	1.31	High Proficiency	4.25	0.83	High Proficiency
5. I know how to bookmark a website.	3.69	1.38	High Proficiency	4.56	0.66	Very High Proficiency

6. I know how to download files.	3.44	1.43	Proficient	4.63	0.56	Very High Proficiency
7. I know how to upload files.	3.63	1.14	High Proficiency	4.59	0.50	Very High Proficiency
8. I know how to adjust privacy settings.	3.88	0.99	High Proficiency	4.34	0.77	High Proficiency
9. I know how to download/save a photo I found online.	3.69	1.01	High Proficiency	4.34	0.59	High Proficiency
10. I know how to open downloaded files.	4.03	0.95	High Proficiency	4.47	0.56	High Proficiency
11. I know which apps/software are safe to download.	3.97	0.88	High Proficiency	4.22	0.60	High Proficiency
12. I know how to make pop-ups or ads disappear.	2.53	1.17	Proficient	4.50	0.66	High Proficiency
13. I know some good ways to avoid computer viruses.	3.03	1.21	Proficient	4.44	0.55	High Proficiency
14. If a technical problem occurs while I am using the Internet, I usually know how to fix the problem.	2.69	1.13	Proficient	4.47	0.48	High Proficiency
Total	**3.50**	**1.25**	**Proficient**	**4.43**	**0.65**	**High Proficiency**
A.3 Operating Internet-based Search Engines						
1. I know how to open a Web address directly without using a search engine like Google.	2.19	1.46	Low Proficiency	4.06	0.90	High Proficiency
2. I know how to complete online forms.	2.72	0.92	Proficient	4.09	0.72	High Proficiency
Total	**2.45**	**1.25**	**Low Proficiency**	**4.08**	**0.82**	**High Proficiency**
Overall	**3.08**	**1.32**	**Proficient**	**4.32**	**0.74**	**High Proficiency**

Hypothetical Mean Range: 1.00 – 1.50 = Very Low Proficiency; 1.51 – 2.50 = Low Proficiency; 2.51 – 3.50 = Proficient; 3.51 – 4.50 = High Proficiency; 4.51 – 5.00 = Very High Proficiency

Van Deursen, Van Dijk, and Peters (2012, 827-837) measured internet skills using one of the domains called "Operational," which pertains to the skills to operate digital media.

In the first sub-section, teachers exhibited a proficient performance during the pre-evaluation phase, as evidenced by the mean of 3.28 with an SD of 1.47 and highly proficient performance after the post-survey activity as manifested in the overall mean of 4.44 with an SD of 0.76. Hence, after the digital skills training, teachers have improved their performance in operating basic mobile phone functions.

In the second sub-section, teachers performed proficiently during the pre-survey phase, as indicated by a mean of 3.50 with an SD of 1.25, and highly proficiently following the post-survey activity, according to an overall mean of 4.43 with an SD of 0.82. As a result of the digital skills training, teachers' proficiency in operating fundamental internet environments has improved.

Nevertheless, teachers performed poorly operating internet-based search engines during the pre-survey phase, as seen by a mean of 2.45 with an SD of 1.25. However, after the post-survey activity, they exhibited a highly proficient performance, represented by an overall mean of 4.08 with an SD of 0.65. Teachers' competency in operating internet-based search engines has increased due to digital skills training.

Finally, teachers' digital competence in Operational Internet Skills may be proficient before digital training with an overall mean of 3.08 and an SD of 1.32 and extremely proficient after digital training with an overall mean of 4.32 and an SD of 0.74.

Table 2.2: Teacher's Digital Competence in the Pre-Survey and Post-Survey Results in terms of Formal Internet Skills

FORMAL INTERNET SKILLS	Pre-Survey			Post-Survey		
	Mean	**SD**	**Description**	**Mean**	**SD**	**Description**
1. I have no problems finding my way around a website.	2.03	1.48	Low Proficiency	4.56	0.63	Very High Proficiency
2. I know where to click to go to a different webpage.	2.69	1.02	Proficient	4.16	0.56	High Proficiency
3. I find it easy to find a website I visited before.	3.06	1.09	Proficient	4.84	0.69	Very High Proficiency
4. I end up on websites knowing how I got there.	2.44	1.07	Low Proficiency	4.34	0.71	High Proficiency
5. All the different website layouts make working with the Internet easy for me.	2.94	1.30	Proficient	4.03	0.85	High Proficiency
6. I find the way in which many websites are designed confusing.	3.22	1.36	Proficient	4.03	0.85	High Proficiency
7. I never get tired when looking for information online.	2.41	1.32	Low Proficiency	4.19	0.79	High Proficiency
Overall	**2.68**	**1.37**	**Proficient**	**4.17**	**0.76**	**High Proficiency**

Hypothetical Mean Range: 1.00 – 1.50 = Very Low Proficiency; 1.51 – 2.50 = Low Proficiency; 2.51 – 3.50 = Proficient; 3.51 – 4.50 = High Proficiency; 4.51 – 5.00 = Very High Proficiency

One of the domains used in measuring internet skill is "Formal," which pertains to the ability to work with the unique digital media structures, like menus and hyperlinks (van Deursen, Van Dijk, and Peters 2012, 827-837).

The estimation of teachers' digital competence in terms of formal internet skills before and after digital skills training is shown in Table 2.2. The Pre-Survey result indicated that the general evaluation rating of teachers toward digital competence is proficient, with an overall mean of 2.68 and an SD of 1.37. However, there was a substantial improvement in their digital competence level following the training, as implied by an overall evaluation rating of 4.17 and an SD of 0.76 in the Post-Survey, considered a highly proficient performance.

Table 2.3: Teacher's Digital Competence in the Pre-Survey and Post-Survey Results in terms of Informational Internet Skills

INFORMATIONAL INTERNET SKILLS	Pre-Survey			Post-Survey		
	Mean	**SD**	**Description**	**Mean**	**SD**	**Description**
1. It is easy for me to find information.	3.59	1.33	High Proficiency	4.50	0.92	High Proficiency
2. I don't need to take a course on finding information online.	3.03	1.38	Proficient	4.10	0.72	High Proficiency
3. I know how to use a wide range of strategies when	3.59	1.20	High Proficiency	4.34	0.85	High Proficiency

searching for information.						
4. I find it easy to decide what the best keywords are to use for online searches.	3.09	0.99	Proficient	3.69	0.56	High Proficiency
5. I am confident selecting search results.	3.75	1.00	High Proficiency	4.44	0.50	High Proficiency
6. I normally look at more than the top three search results.	4.13	0.78	High Proficiency	4.46	0.50	High Proficiency
7. I find it easy to verify information I have retrieved.	3.63	0.74	High Proficiency	4.47	0.56	High Proficiency
8. I feel confident in my evaluation of whether a website can be trusted.	3.77	0.93	High Proficiency	4.48	0.50	High Proficiency
9. I generally compare different websites to decide if information is true.	3.91	0.88	High Proficiency	4.19	0.53	High Proficiency
10. I carefully consider the information I find online.	3.79	0.90	High Proficiency	4.49	0.61	High Proficiency
Overall	**3.63**	**1.08**	**High Proficiency**	**4.31**	**0.69**	**High Proficiency**

Hypothetical Mean Range: 1.00 – 1.50 = Very Low Proficiency; 1.51 – 2.50 = Low Proficiency; 2.51 – 3.50 = Proficient; 3.51 – 4.50 = High Proficiency; 4.51 – 5.00 = Very High Proficiency

Table 2.3 compares teachers' digital abilities regarding informational internet capabilities before and after receiving digital skills training. Consequently, the Pre-Survey and Post-Survey findings demonstrated the same level of digital competence, which is defined as highly proficient. This is reflected in the pre-survey overall mean of 3.63 with an SD of 1.08 and the post-survey overall mean of 4.31 with an SD of 0.69.

Table 2.4: Teacher's Digital Competence in the Pre-Survey and Post-Survey Results in terms of Communicational Internet Skills

COMMUNICATIONAL INTERNET SKILLS	**Pre-Survey**			**Post-Survey**		
	Mean	**SD**	**Description**	**Mean**	**SD**	**Description**
1. I know when I should and should not share information online.	3.75	0.97	High Proficiency	4.53	0.50	Very High Proficiency
2. I am careful to make my comments and behaviors appropriate to the situation I find myself in online.	3.81	0.98	High Proficiency	4.50	0.50	High Proficiency
3. I know how to change who I share content with (e.g. friends, friends of friends or public).	3.94	0.66	High Proficiency	4.16	0.62	High Proficiency
4. I know how to remove friends from my contact lists.	3.75	1.01	High Proficiency	4.59	0.58	Very High Proficiency
5. I am confident about writing a comment on a blog, website, or forum.	3.56	0.75	High Proficiency	4.31	0.63	High Proficiency
6. I feel comfortable deciding who to follow online (e.g., on services like Twitter or Tumblr).	3.18	0.79	High Proficiency	4.31	0.55	High Proficiency

7. I know how to use emoticons (e.g., smileys, emojis or text speak).	3.84	0.91	High Proficiency	4.34	0.59	High Proficiency
8. I know which information I should and shouldn't share online.	3.81	0.81	High Proficiency	4.03	0.59	High Proficiency
Overall	**3.79**	**0.87**	**High Proficiency**	**4.35**	**0.60**	**High Proficiency**

Hypothetical Mean Range: 1.00 – 1.50 = Very Low Proficiency; 1.51 – 2.50 = Low Proficiency; 2.51 – 3.50 = Proficient; 3.51 – 4.50 = High Proficiency; 4.51 – 5.00 = Very High Proficiency

Van Dijk and Van Deursen (2014, 507-526) have finalized a framework for assessing digital competency by including interpersonal and content-generation abilities in the survey questionnaire. The ability to generate, comprehend, and share meaning with other people through message systems like e-mail, chat rooms, and instant messaging is referred to as communication abilities on the Internet. The ability to find, choose, assess, and act upon contacts online; to encode, decode, and exchange messages online; to draw attention online; to profile; to pool knowledge and exchange meaning with others in peer-to-peer networking; and to exchange meaning in order to make decisions and carry out transactions while comprehending the meanings of others/partners are all included in this.

Table 2.4 compares teachers' digital abilities before and after getting digital skills training regarding communicational internet skills. As a result, the data from the Pre-Survey and Post-Survey indicated the same level of digital competence, described as very skilled or highly proficient. This is reflected in the pre-survey overall mean of 3.79 with a standard deviation of 0.87 and the post-survey overall mean of 4.35 with a standard deviation of 0.60.

Table 2.5: Teacher's Digital Competence in the Pre-Survey and Post-Survey Results in terms of Content Creation Internet Skills

CONTENT CREATION INTERNET SKILLS	**Pre-Survey**			**Post-Survey**		
	Mean	**SD**	**Description**	**Mean**	**SD**	**Description**
1. I would feel confident writing and commenting online.	2.81	0.85	Proficient	4.56	0.70	Very High Proficiency
2. I would feel confident putting video content I have created online.	2.22	1.06	Low Proficiency	4.00	0.73	High Proficiency
3. I know how to create something new from existing online images, music, or video.	2.47	0.93	Low Proficiency	4.16	0.62	High Proficiency
4. I know how to make basic changes to the content that others have produced.	2.41	1.05	Low Proficiency	4.19	0.79	High Proficiency
5. I know how to design a website.	2.47	1.25	Low Proficiency	4.38	0.65	High Proficiency
6. I know which different types of licenses apply to online content.	2.19	1.24	Low Proficiency	4.06	0.56	High Proficiency
Overall	**2.43**	**1.10**	**Low Proficiency**	**4.22**	**0.70**	**Very High Proficiency**

Hypothetical Mean Range: 1.00 – 1.50 = Very Low Proficiency; 1.51 – 2.50 = Low Proficiency; 2.51 – 3.50 = Proficient; 3.51 – 4.50 = High Proficiency; 4.51 – 5.00 = Very High Proficiency

According to Van Dijk and Van Deursen (2014, 507-526), content creation skills are the ability to develop acceptable quality content for publication on the Internet. Textual, musical, visual, multimedia, images, and remixed content are all included.

Table 2.5 shows the measurement of teachers' digital ability in terms of content creation internet skills before and after digital skills training. According to the Pre-Survey results, teachers' general assessment rating of digital competence is of low proficiency, with an overall mean of 2.43 and an SD of 1.10. However, following the training, there was a significant improvement in their digital competence level, as evidenced by an overall assessment rating of 4.22 and an SD of 0.70 in the Post-Survey, which is regarded as extremely proficient performance.

Table 2.6: Summary of the Level of Teachers' Digital Competence

Categories		Pre-Survey			Post-Survey		
		Mean	**SD**		**Mean**	**SD**	**Interpretation**
1	Operational Internet Skills	3.08	1.32	Proficient	4.32	0.74	High Proficiency
2	Formal Internet Skills	2.68	1.37	Proficient	4.17	0.76	High Proficiency
3	Informational Internet Skills	3.63	1.08	High Proficiency	4.31	0.69	High Proficiency
4	Communicational Internet Skills	3.79	0.87	High Proficiency	4.35	0.60	High Proficiency
5	Content Creation Internet Skills	2.43	1.10	Low Proficiency	4.22	0.70	Very High Proficiency
	Overall Mean	**3.12**	**1.10**	**Proficient**	**4.22**	**0.70**	**Very High Proficiency**

Hypothetical Mean Range: 1.00 – 1.50 = Very Low Proficiency; 1.51 – 2.50 = Low Proficiency; 2.51 – 3.50 = Proficient; 3.51 – 4.50 = High Proficiency; 4.51 – 5.00 = Very High Proficiency

Table 2.6 clearly summarizes the level of digital proficiency among teachers. The pre-survey activity's total mean of 3.12 for the five categories of digital competency reveals that teachers are typically proficient, meaning that they are fairly skilled in those digital online capabilities. However, the overall mean of 4.22 for the five categories of digital competency in the post-survey activity implies that teachers are typically quite adept in those digital online capabilities.

Table 3.1: Test of Significant Difference in the Teachers' Digital Literacy

Groups	N	Means	SD	t - value	p - value	Decision	Interpretation
Pre-Survey	32	32.94	15.85	-2.31*	0.02	Reject H_o	Significant Difference
Post-Survey	32	41.38	13.14				

**. The difference is significant at the 0.05 level (2-tailed).*

Table 3.1 demonstrates the test of significant difference in teachers' digital literacy. Tested at 0.05 level of significance using paired-samples t–test, the table depicts that t - value is equal to – 2.31 and a p – value of 0.02, deducing a vivid significant difference in teachers' digital literacy. The findings further connote that the post-survey entails a mean of 41.38 and an SD of 13.14, which is considerably higher than the results obtained during the pre-survey, with a lower mean of 32.94 and an SD of 15.85.

According to Maedy, Aminuddin, and Dharmono (2018), conducting an ICT program with skilled ICT instructors to enhance digital skills has proven effective for the participants, trainers, and organizers. The instructors would gain much knowledge, gaining a great deal from the training and possessing the requisite knowledge, skills,

attitudes, courage, and dedication to succeed in the program. It provided resources that teacher educators could use to better impart their knowledge to their students by enabling them to gain proficiency in using ICT. The training also provided a venue for trainers and organizers to provide participants with community extension services. This is in line with the results of the teachers' digital literacy in Camp Abelon Elementary Schools.

Table 3.2: Test of Significant Difference in the Teachers' Digital Competence

Groups	N	Means	SD	t - value	p-value	Decision	Interpretation
Pre-Survey	32	3.25	0.59				Significant
Post-Survey	32	4.32	0.20	-14.60*	0.00	Reject H_o	Difference

*. *The difference is significant at the 0.05 level (2-tailed).*

Table 3.2 elucidates the test of significant difference in the teachers' digital competence. As shown in the table, *the - t-value is equal to - 14.60 and a statistical significance p–value of 0.00,* which signifies a significant difference in the teachers' digital competence. The results further explicate that the post-survey resulted in a mean of 4.32 with an SD of 0.20, which is quite higher than the results obtained from the pre-survey, having a considerably lower mean of 3.25 with an SD of 0.59. With the post-survey exhibiting a numerical dominance over the pre-survey, the efficiency of the digital training is highly attained. Hence, the greater the mean of the post-survey indicates a higher degree of teachers' digital competence.

According to Serezhkina (2021, 7053), a person with the knowledge, abilities, and attitudes necessary to utilize digital technologies to accomplish various life goals is said to possess digital competence. Teachers now have two responsibilities in the education system due to digitalization: they must develop the competencies necessary for students to succeed in a digital environment and build their own digital competencies.

Several existing Internet competence assessments are solely concerned with the technical aspects of the Internet. 'Button knowledge,' as these technicalities are known, is a term used to describe them. On the other hand, Internet skills are now commonly recognized as a more complex topic. Several conceptualizations emphasize the importance of accounting for both basic Internet skills and abilities needed to understand and utilize Internet content when measuring Internet skills (Van Dijk and Van Deursen 2014, 507-526). A technologically focused view is avoided by considering both content- and medium-related Internet competencies.

Intervention program designed to enhance the teachers' digital skills in terms of digital literacy and competence. To increase digital literacy among teachers, the researcher conducted an LAC session on different digital literacy tools in school, which was led by ICT professionals and other skilled teachers. During the LAC session, teachers learned how to use applications such as Microsoft Word, Microsoft Excel, and Microsoft PowerPoint to help them digitally present lessons to pupils, as well as Edmodo, Google Classroom, Kahoot.com, Facebook, and Messenger to help them organize and interact with pupils. Teachers were also trained to use popular mail applications like Gmail and Yahoo to send private messages to pupils and their parents. The program was designed to assist them in enhancing their digital skills and handle varied teaching resources from other disciplines.

Conclusion and Recommendations

This study's objective is to examine instructors' critical thinking skills, as well as the knowledge and skills needed to organize, implement, assess, and create ICT-based courses. It is not unexpected that a significant proportion of Camp Abelon Elementary teachers were discovered to be digitally illiterate due to inexperience, lack of training, lack of prior knowledge, or simply being poor performers. There was a lack of didactic ICT abilities, as well as diverse digital learning methodologies and digital construction.

As seen by the results of determining their digital literacy after the LAC session, they only have a rudimentary understanding of their digital competencies. They appear to be very skilled, highly proficient, and proficient in operating abilities as measured by their digital competency. They are revealed to have little to no difficulty with formal online abilities, such as digital proficiency. They are proficient in formal online skills as a measure of digital competency. They are demonstrated to be extremely proficient in terms of communication internet abilities, and proficient in terms of content production as their digital competency.

The current study results show that most instructors lack the level and standards of digital competency needed to be successful educators in the twenty-first century. Social awareness, pedagogical compatibility, and technology proficiency are three knowledge domains that must be linked to achieve digital competency. As a result, teachers' technical expertise and confidence determine their level of technology competency when it comes to using Bernard technology. Furthermore, pedagogical compatibility refers to instructors' awareness of how technology might aid classroom practice and contribute to the curriculum's objectives. Finally, instructors' social awareness is the ability to deal with the various social aspects of the school or class culture.

The researcher wishes for the LAC session to be improved in consideration of what the respondents find most challenging to understand in terms of digital literacy and digital competency for the researcher to find improvement in their level of understanding in terms of digital literacy and digital competency. The circumstances or questions in which the respondents have the lowest means in each category will serve as the foundation for the improved LAC session. More particularly, operational, informational, formal, communicational, and content creational abilities in digital competency. From the results shown in this paper, the researcher wishes to improve the digital competency based on the following categories: Operational, Formal, Informational, Communicational, and Content Creational skills.

1. Operational- The LAC session will specialize on fixing technical problems, as shown in the conclusions that teachers should know how to fix a problem when a technical problem occurs, that they should be knowledgeable in tracking costs and purchases in their mobile apps and teach them methods for opening Web addresses that don't include search engines.
2. Formal- The LAC session will specialize in navigating through the internet by teaching them how to customize the website layout depending on their liking, as teachers find website designs confusing.
3. Communicational- The LAC session will focus on teachers finding and analyzing the important words relevant to the data they wish to find in search engines, as teachers should know how to search data in Websites.
4. Content Creation- The LAC session will specialize in editing and making changes to content others have produced so that video and photo lesson supplements will be easy to understand and cater to the context of the lessons.

Action Plan

TIME FRAME	STRATEGIES/ACTIVITIES	SUCCESS INDICATOR
March 2021	Preparation of the action-research proposal for approval	Action research proposal and approval done
April 2021	Preparation of the materials to be used	Materials are ready
April to June 2021	Administration of the pre-survey test, actual Intervention for one month, and the post-survey test.	All of the observation techniques were applied as prepared on the researcher's plans were successfully covered
July 2021	Interpret the data collected during the implementation on the effectiveness of the study.	Results and discussions done
Next school year	Application of the suggestions and recommendations of the study	Progress of the Camp Abelon Elementary school's teachers in terms of their digital skills, as well as the integration of

References

Al Khateeb, Ahmed Abdulteeef M. 2017. "Measuring Digital Competence and ICT Literacy: An Exploratory Study of In-Service English Language Teachers in the Context of Saudi Arabia." *International Education Studies* 10, no. 12: 38-51.

Atkins, Nancy Ellen, and Ellen Storey Vasu. 2000. "Measuring knowledge of technology usage and stages of concern about computing: A study of middle school teachers." *Journal of Technology and Teacher Education* 8, no. 4: 279-302.

Bali, Maha. 2016. *Knowing the Difference Between Digital Skills and Digital Literacies, and Teaching Both*. International Literacy Association. https://www.literacyworldwide.org/blog/literacy-now/2016/02/03/knowing-the-difference-between-digital-skills-and-digital-literacies-and-teaching-both.

Cunningham, Kevin. 2000. "Integrating CALL into the writing curriculum." *The Internet TESL Journal* 6, no. 5: 9-22. http://iteslj.org/Articles/CunninghamCALLWriting/.

DepEd Order No. 2, s. 2015. *Guidelines on the Establishment and Implementation of the results-based performance management system RPMS in the Department of Education.* Department of Education, Philippines. https://www.deped.gov.ph/2016/06/17/do-42-s-2016-policy-guidelines-on-daily-lesson-preparation-for-the-k-to-12-basic-education-program/.

DepEd Order No. 42, s. 2016. *Policy Guidelines on Daily Lesson Preparation for the K To 12 Basic Education Program.* Department of Education, Philippines. https://www.deped.gov.ph/2016/06/17/do-42-s-2016-policy-guidelines-on-daily-lesson-preparation-for-the-k-to-12-basic-education-program/.

DepEd Order No. 78, s. 2010. *Guidelines on the Implementation of the DepEd Computerization Program (DCP).* Department of Education, Philippines. https://goo.gl/QTSJ2W.

Frey, Bruce B. ed. 2021. *The Sage encyclopedia of research design*. SAGE Publications.

Maedy, Ripani, Prahatama Putra Aminuddin, and Dharmono Dharmono. 2018. "THE PRACTICALITY AND EFFECTIVENESS OF LESSON PLAN SET ON NATURAL SCIENCE SUBJECT IN TRAINING THE CRITICAL THINKING SKILLS OF JUNIOR HIGH SCHOOL STUDENTS."

Rilling, Sarah, Anne Dahlman, Sarah Dodson, Claire Boyles, and Ozlem Pazvant. 2005. "Connecting CALL theory and practice in preservice teacher education and beyond: Processes and products." *Calico journal*: 213-235.

Robb, Th. 2006. "Helping teachers to help themselves." *Teacher education in CALL* 14: 334-347.

Selwyn, Neil. 2012. *Education in a digital world: Global perspectives on technology and education*. Routledge.

Serezhkina, Anna. 2021. "Digital skills of teachers." In *E3S Web of Conferences*, vol. 258, p. 07083. EDP Sciences.

Son, Jeong-Bae, Sang-Soon Park, and Moonyoung Park. 2017. "Digital literacy of language learners in two different contexts." *Jalt Call Journal* 13, no. 2: 77-96.

Suárez-Rodríguez, Jesús, Gonzalo Almerich, Natividad Orellana, and Isabel Díaz-García. 2018. "A basic model of integration of ICT by teachers: competence and use." *Educational technology research and development* 66: 1165-1187.

Tinio, Victoria L. 2003. "ICT in Education". 200.

van Deursen, Alexander JAM, Ellen Helsper, and Rebecca Eynon. 2014. "Measuring digital skills: From digital skills to tangible outcomes."

van Deursen, A., Van Dijk, J., Peters, O. 2012. Proposing a Survey Instrument for Measuring Operational, Formal, Information and Strategic Internet Skills. *International Journal of Human-Computer Interaction* 28, no. 12, 827-837.

van Deursen, Alexander JAM, and Jan AGM Van Dijk. 2014. "The digital divide shifts to differences in usage." *New media & society* 16, no. 3: 507-526.

Wong, Emily ML, and Sandy C. Li. 2011. "Framing ICT implementation in a context of educational change: A structural equation modelling analysis." *Australasian Journal of Educational Technology* 27, no. 2: 361-379.

Financial Report

The table below shows the breakdown of expenses before, during, and after the conduct of this action research.

General Descriptions	Quantity	Unit	Unit Price	Total Estimated Costs
Short Bond paper sub. 20	3	reams	₱ 275.00	₱ 825.00
Ink for printer	4	bottles	₱ 271.25	₱ 1,085.00
Internet Costs			₱ 1,000.00	₱ 1,000.00
Printing and Binding	5	copies	₱ 60.00	₱ 300.00
Ballpen	2	pcs	₱ 20.00	₱ 40.00
Snacks (50 participants)			₱ 35.00	₱ 1,750.00
Total				**₱ 5,000.00**