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DIGITAL SELF-EFFICACY SKILLS AND INFORMATION COMMUNICATION TECHNOLOGY COMPETENCE AMONG TEACHERS IN THE DIVISION OF BUKIDNON

KHEISTNER T. TINGGOY
Researcher
Phinma-Cagayan De Oro College
tkheistner1@gmail.com

ABSTRACT

The use of digital technologies is one of the most important skills for teachers to improve the teaching and learning process. This study aimed to determine the significant relationship between the digital self-efficacy skills and ICT competence of teachers. It sought to answer the following: (1) the level of teacher's digital self -efficacy skills; (2) level of ICT competence; and (3) significant relationship between the level of digital self-efficacy skills and ICT competence. The respondents were one hundred fifty-four (154) teachers from the public elementary schools of Sumilao and Impasug-ong, Bukidnon. The sample respondents were determined using purposive sampling. This study used a validated researcher-made questionnaire with Cronbach's alpha coefficient of 0.934. Descriptive research method was employed to analyzed the data and Pearson Moment Correlation was employed to determine the relationship between the level of Digital self-efficacy skills and ICT competence.

The findings revealed that there is a significant relationship between the Digital Self-Efficacy Skills and ICT competence of the teachers in Bukidnon. This study claimed that teachers'

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INSTABRIGHT e-GAZETTE
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Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

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digital self – efficacy skills is moderate which needs to be refined especially in the familiarity of terms and digital literacy. On the other hand, their ICT Competence is in Advance level, however, they still need to work on their problem-solving skills and learning skills. This study concludes that if respondents have high digital self-efficacy skills, the more their ICT competence will also improve. It is recommended that teachers constantly practice and undergo workshops that involve statistical tools to enrich their capacity to find accurate interpretations of mathematical data; include the ICT integration approach during In-service Training (INSET) to help them be familiar with technological terms to abreast their knowledge on concepts regarding technologies and plan out a systematized work plan to stay focused and avoid distractions.

Keywords: *Digital Self-Efficacy Skills, ICT Competence*

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Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

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INTRODUCTION

Digital self-efficacy skills and Information Communication Technology (ICT) competence are believed to work together for a better teaching and learning process. The crucial part in a teacher's development is to understand how to acquire and upgrade the knowledge of digital technology to enhance digital self- efficacy. Digital Self Efficacy skills is one of the issues pointed out by Information and Communication Technologies (ITU, 2019) which states that Filipino teachers at this point of time are perceived as very challenged when it comes to digital self-efficacy skills with only 6% have basic internet skills, while only 2% have standard digital skills. Less than 1 % have advanced digital knowledge and skills. This result could also be true among the teachers in Bukidnon. Considering observed instances where teachers sometimes find difficulty in submitting ICT-related outputs on time.

Enclosed in DepEd Order No. 42 s. 2017 entitled "National Adoption and Implementation of the Philippine Professional Standards for Teachers," stipulates that teachers should model exemplary skills and lead learners in developing and evaluating teaching and learning resources, including ICT, for use within and beyond the school.

Moreover, Otte (2019) strongly emphasized that teachers who are digitally effective and trained to use ICT can lead to higher thinking, and can provide creative and individualized options for learners to become also prepared to deal with technological tools. Ensuring the digital efficacy

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INSTABRIGHT e-GAZETTE
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Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

of teachers will help understand deeper if the teachers are digitally effective and equipped to further help themselves in creating more opportunities in the used of ICT and become digitally competent in teaching career and be equally responsible and reflexive in using optimal functions in various educational work-related and non-formal functions.

Despite the issuances and programs of the Department of Education to upskill the teachers for digital competence, there is still a need for teachers to be digitally effective as it would greatly influence the teachers' benefits in the teaching and learning process. Hamutoglu et al. (2020) cited that technological tools, when used properly, can capacitate learning. To cope in this fast-changing world and with education as the niche of acquiring basic and necessary skills, teachers should showcase digital self-efficacy. At the same time, Meng et al. (2019) assert that digital competence can be observed in the ICT-based abilities and experience that can be used to perform ICT-related tasks. When the teacher is digitally effective and can understand how to integrate, their knowledge in the curriculum can capacitate his digital competence in technology.

Dy (2022) cited that in a standard workplace, only a few teachers can use, find and install software they can utilize to perform the task. Therefore, it is expected that teachers must have enough digital self-efficacy skills and be adequately oriented on this professional expertise for continued development. Likewise, the United Nations Educational, Scientific, and Cultural Organization (UNESCO,2020) noted that teachers do need to have enough technical knowledge on technology and digital skills. This scarcity to equal access and use of technological tools in the

INSTABRIGHT e-GAZETTE
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Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

context of learning can lead to barriers of the teaching and learning process. These present factors may greatly affect the successful integration of ICT technology in K-12 classrooms. More than ever, teachers in elementary needed digital self-efficacy skills to apply and integrate ICT to further assist a productive learning environment.

On the other hand, according to Mercader and Gairin (2020), digital competence is highly important that every teacher must possess, especially in the 21st century. As the technology arose, many technological challenges also came up, and with this, every teacher must be willing to participate and solve them positively.

Hence, the Department of Education strengthened the Digital Rise Program on its first components to include digital ICT, where the K to 12 curricula is updated to include productivity tools for Teachers handling ICT subjects. In the study of Hernando -Malipot (2022), the use of ICT-assisted teaching, it can provide teachers with equipment, software content, and skills for daily classroom teaching.

Hence, this study aims to determine the level of digital self-efficacy skills and ICT Competence. This study directs to answer the three research problems, specifically on the level of teacher's digital self -efficacy skills, ICT competence and the significant relationship between the level of digital self-efficacy skills and ICT competence. The researcher, as one of the

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

teachers who encounters the same challenge, finds interest in conducting the study to address the matter and draw significant results.

MATERIALS AND METHODS

Research Design

The researcher utilized the quantitative research design with a descriptive correlational study. According to Leedy and Ormrod (2019), descriptive correlation is a non-experimental research design that can provide valuable information about the relationship between variables in a sample. Moreover, according to Pritha (2021), quantitative correlational research design investigates relationships between variables without anybody, even the researcher cannot manipulate its outcomes. A correlation shows the strength and direction of the relationship between the variables. The direction of a correlation between variables can be either positive or negative.

This study used descriptive correlational research design to determine the significant relationship between the level of digital literacy self-efficacy skills among the Grade 4, 5, and 6 teachers and the level of digital ICT competence among the teachers in Sumilao and Impasug-ong, Bukidnon, whether the direction of the said variables is positive, negative, or zero. The key method to be used in descriptive correlational study is survey research to gather information via survey questionnaires.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

Research Setting

The research was conducted in the schools of Sumilao and Impasug-ong, Bukidnon. *Sumilao* is a municipality in the landlocked province of Bukidnon. The municipality has a land area of 196.95 square kilometers. In the data given by PhilAtlas (2022), its population determined by the 2020 Census was 29,531. Impasug-ong, on the other hand, is a municipality in the landlocked province of Bukidnon. The municipality has a land area of 1,051.17 square kilometers which constitutes 10.01% of Bukidnon's total area. Its population as determined by the 2020 Census was 53,863.

Sumilao and Impasug-ong's cultural background is so rich and congruent to its culture and ethnicity. These two municipalities as part of Bukidnon has also preserved its cultural ethnicity. The place is predominantly inhabited by Higaonons which account to 65% and the 35% are composed of mixed tribes. Their tribes most likely dwell in these areas with corresponding ethnic culture as they believed in "pangampo" and "pamuhat", these are common rituals held in Sumilao and Impaug-ong areas that involves a prayer to "Magbabaya" (God) for preservation, protection and other forms of rituals.

Most areas in Sumilao and Impasug-ong are located in rural communities far from cities. While some other areas near the road have local access to the internet and networks, there are

INSTABRIGHT e-GAZETTE
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Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

still some barangays in the municipalities that lack social networks on information and communication technology providers since they are inaccessible.

The two districts were under the DepEd Division of Bukidnon. Sumilao has twelve (12) elementary schools, while Impasug-ong has thirty-one (31) elementary schools with six (6) schools considered as integrated schools. Most schools have combi and multi-grade classes where teachers are handling two or three grade levels.

In line with the Department of Education's vision, mission, and goal, the vision to provide basic education to produce quality graduates, functionally competent and value-oriented individuals in which it also provides committed teachers to effectively teach young minds in a conducive and friendly learning environment with a strong partnership with its stakeholders. The goal is to commit and serve with sincerity to all children in the community by providing basic elementary education that caters the needs of young individuals, parents, leaders and other stakeholders.

Respondents and Sampling Procedure

The respondents of this study were the one hundred fifty-six (156) public elementary school teachers of Sumilao and Impasug-ong, Bukidnon, who were handling ICT classes in Grades 4, 5, and 6 for the School Year 2022-2023.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

Sample respondents were determined using Purposive Sampling. A total of one hundred fifty-six (156) teachers out of the population served as respondents of the study. However, out of one hundred fifty-six (156) teachers, only one hundred fifty-four (154) of them had answered the survey since the two (2) teachers were on leave. Proportional random sampling was used to determine the number of respondents per school. After determining the exact number of respondents from each school, a lottery method was used in selecting the names of the teacher respondents.

Distribution of Respondents

District/School	Respondents			Total
	Grade 4	Grade 5	Grade 6	
Sumilao				
Kisolon Central Elementary School	5	5	6	16
Sumilao Elementary School	5	5	4	14
San Vicente Elementary School	3	2	2	7
Kilabong Elementary School	1	2	1	4
Puntian Elementary School	1	1	1	3
San Roque Elementary School	1	1	1	3
Ocassion Elementary School	1	1	1	3
Lupiagan Elementary School	1	1	1	3
Licoan Elementary School	1	1	1	3
Kulasi Elementary School	1	1	1	3
Laruk Elementary School	1	1	1	3
Vista Villa Elementary School	1	1	1	3
Total	**22**	**22**	**21**	**65**
Impasug-ong I District				
Impasug-ong Central Elementary School	6	6	7	19
Impalutao Integrated School	1	1	1	3
La Fortuna Elementary School	1	1	1	3
Cawayan Elementary School	1	1	1	3

INSTABRIGHT e-GAZETTE

ISSN: 2704-3010

Volume V, Issue IV

May 2024

Available online at https://www.instabrightgazette.com

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Bontongon Elementary School	1		1	2
Bundaan Elementary School	1	1		2
Capitan Bayong Elementary School	1	1	1	3
Guihean Elementary School	1	1		2
Ilignan Elementary School	1	1	1	3
Intavas Elementary School	1	1	1	3
Kalipayan Elementary School	1	1		2
Kibuwa Elementary School	1	1	1	3
Kubayan Elementary School	1	1	1	3
Magawa Elementary School	1			1
Hinubayan Ha Salagaan Ta	1			1
Bulonay Integrated School	1			1
Dumalaguing Integrated School	1	1	1	3
San Juan Elementary School	1	1	1	3
Kibenton Integrated School	1	1	1	3
Sayawan Elementary School	1	1	1	3
Total	**25**	**21**	**20**	**66**
Impasug-ong II				
Kalabugao Central Elementary School	1	1	2	4
Kalampigan Elementary School	1			1
Nasandigan Elementary School	1	1		2
Minlanaw Elementary School	1			1
Kaanibugan Elementary School	1	1	1	3
Nauwa ta Migpungse	1			1
Hagpa Integrated School	1	1	1	3
Ulayanon Elementary School	1	1	1	3
Kiudto Elementary School	1	1	1	3
Mintapud Elementary School	1			1
New Imbatug Elementary School	1	1	1	3
Total	**11**	**7**	**7**	**25**
Grand Total	**58**	**50**	**48**	**156**

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INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

Research Instrument

The instrument used in this study is a researcher-made survey questionnaire patterned from the study of Limiansi and Hadi (2019). The questionnaire consists of two (2) parts. Part I is about the level of digital self-efficacy skills among teachers. It consists of twenty-five (25) indicators in each self-efficacy skill which are divided into five (5), namely: Information Management, Teaching Technologies, Data Literacy, Familiarity of Terms and Awareness. The questionnaire consists of a 5- point Likert scale, with each having five (5) choices, namely: Very Low (1), Low (2), Moderate (3), High (4), Very High (5).

Part II of the survey questionnaire is patterned in the study of Dela Fuente and Binas (2020). The data gathered the level of ICT competence whose ICT questions also has twenty-five (25) indicators which are also divided into five competencies, namely: Critical Thinking, Cultural and Social Understanding, Communication, Problem Solving and Learning Skills. The questionnaire consist a 5-point Likert scale which also has five(5) choices, namely: Fundamental (1), Basic (2), Intermediate (3), Advance (4), and Proficient (5).

Validity and Reliability of the Instrument

The instrument used in this study was validated by conducting a pilot test of thirty (30) sample respondents, which are not included in the one hundred fifty-six (156) actual number of respondents in the study. In this research, Cronbach's alpha coefficient was tested with 0.934,

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

which is clearly acceptable, suggesting that the items have a relatively high internal consistency. It is noted that a reliability coefficient of 0.7 is considered acceptable in most social science research and humanities-related studies. This would indicate strong intercorrelations among test items.

Data Gathering Procedure

To follow the ethical procedure of conducting the research and gathering of data, a recommendation letter from the Dean of the Graduate School of Cagayan de Oro College and was brought to the office of the Schools Division Superintendent (SDS) of Bukidnon for approval. Once permission to conduct the study was already approved, it was handed down to the school principal of the concerned schools in the district of Sumilao, Impasug-ong I and Impasug-ong II to ensure that the respondents answered the survey questionnaire. A brief orientation was given to the number of respondents in each school who participated and answered the survey questionnaire.

The questionnaire was personally distributed and administered by the researcher. The respondents were given sufficient time to answer the 50-item survey questionnaire, thus producing more accurate information period. The survey questionnaires were retrieved and tallied for statistical analysis.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

System of Scoring

Part I. Digital Self-Efficacy Skills

Scale	Range	Description
5	4.50 – 5.00	Very High
4	3.50 – 4.49	High
3	2.50 – 3.49	Moderate
2	1.50 – 2.49	Low
1	1.00 – 1.49	Very Low

Part II. Teachers' ICT Competence

Numerical Rating	Range	Description
5	4.50 – 5.00	Proficient
4	3.50 – 4.49	Advance
3	2.50 – 3.49	Intermediate
2	1.50 – 2.49	Basic
1	1.00 – 1.49	Fundamental

Statistical Treatment

In this study, the following statistical tools was used to analyze the data gathered: mean, Standard Deviation, and frequency and percentage, to measure the level of digital self-efficacy skills as well as the ICT competence of the Grade 4, 5, and 6 teachers in the public elementary schools in Sumilao and Impasug-ong, Bukidnon.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

The Pearson Product Correlation moment (μ) was used as the statistical tool to determine the significant relationship between the level of digital self-efficacy skills and the ICT competence among the Grade 4, 5, and 6 teachers in the public elementary schools in Sumilao and Impasug-ong, Bukidnon.

RESULTS AND DISCUSSION

Result of the Test on Relationship between Teachers' Level of Digital Self-Efficacy Skills and ICT Competence

Level of ICT Competence	Level of Digital Self-Efficacy Skills					OVERALL
	Critical Thinking	Cultural and Social Under-standing	Commu nication	Problem -Solving	Learnin g Skills	
Information Management r-value : P-value:	0.641 .00001* S	0.669 .00001* S	0.632 .00001* S	0.540 .00001* S	0.545 .00001* S	0.793 .00001* S
Teaching Technologies r-value : P-value:	0.546 .00001* S	0.538 .00001* S	0.565 .00001* S	0.599 .00001* S	0.553 .00001* S	0.664 .00001* S
Data Literacy r-value : P-value:	0.866 .00001* S	0.844 .00001 * S	0.874 .00001* S	0.834 .00001* S	0.792 .00001 * S	0.599 .00001* S
Familiarity with Terms r-value : P-value:	0.364 .00001* S	0.351 .00001* S	0.425 .00001* S	0.397 .00001* S	0.412 .00001* S	0.462 .00001* S

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

Awareness r-value : P-value:	0.601 .00001* S	0.556 .00001* S	0.580 .00001* S	0.555 .00001* S	0.555 .00001* S	0.676 .00001* S
Overall r-value : P-value:	0.603 .00001* S	0.591 .00001* S	0.615 .00001* S	0.585 .00001* S	0.572 .00001* S	**0.793** **.00001*** **S**

Legend: **significant at p<0.05 alpha level; S – significant; NS – not significant*

The table presents the data on the significant relationship between **Digital Self-Efficacy and ICT competence** of the teachers. The overall **r-value** is **0.793** and **P-value** is **.00001** which is interpreted as **Significant.** Thus the null hypothesis was rejected. This means that when teachers improve their level of digital self-efficacy, they are also putting efforts on increasing their level of ICT competence. This indicates that teachers' digital self-efficacy is correlated with teachers' ICT competence. In this regard, the researcher believed that it is of great significance for teachers to have high digital literacy self-efficacy because teachers who can use and manipulate technological tools effectively can provide high ICT competence in the learning environment.

The significant relationship between teachers' level of digital self-efficacy and their ICT competence has several impacts for education and teacher training. It can be discerned that there may be a need to incorporate more technology-related topics into the teacher training curriculum. This will help improve teachers' digital self-efficacy and ICT competence, which will, in turn, enhance their teaching effectiveness. In addition, professional development programs should

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

focus on enhancing teachers' digital self-efficacy and ICT competence. Such programs can be designed to provide teachers with the necessary skills and knowledge to integrate technology effectively into their teaching practices.

Furthermore, schools need to consider the digital self-efficacy and ICT competence of potential teachers when making hiring decisions. This can help ensure that schools hire teachers who have the necessary skills and knowledge to effectively integrate technology into their teaching practices.

Recent researches highlighted the importance of teachers' digital self-efficacy in information management and ICT competence in enhancing students' learning outcomes (Agyei & Voogt, 2021; Çoklar, Çetin-Dindar, & Tuncer, 2021; Yukselturk & Bulut, 2021). According to the findings of these studies, teachers who have a higher level of digital self-efficacy and ICT competence are more likely to integrate technology into their teaching practices effectively, which can lead to improved student engagement, motivation, and achievement. The significant relationship between the teachers' level of digital self-efficacy and their level of ICT may promote future teaching developments.

Meanwhile, **Information Management** obtained the **highest** correlation value of **0.793** with the teachers' ICT Competence among the other variables, which is interpreted as **Significant**. This result means that the teachers' confidence in searching the Internet to find the

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

answer to a course-related question, finding, managing and editing digital information, engaging with an online information and communication network, understanding attitudes regarding legal and ethical aspects, privacy and security of information, and paraphrasing information collected online and tell the reference are very well associated with their ICT competence.

Teacher education programs should focus on developing teachers' digital competencies, particularly in information management and ICT, to enhance their digital self-efficacy. Additionally, schools should provide opportunities for teachers to engage in ongoing professional development programs that focus on enhancing their digital competencies and self-efficacy in using technology to support student learning. Schools should ensure that teachers have access to appropriate technology and technical support. Providing teachers with the necessary tools and support can increase their confidence in using technology and help them overcome any technical challenges they may encounter, which can further enhance their digital self-efficacy.

This supported the claims of Margahi et al. (2018), who proposed the idea that digital self-efficacy skills have positive implications on teacher-learner engagement. Teachers who have a high influence on engaging their learners, especially in using ICT, are of great significance in having a productive learning environment inside and outside the classroom.

On the other contrary, **Familiarity with Terms** obtained the **lowest** with the correlation value of **0.462,** which is interpreted as **Significant** with the **P-value** of **.00001**. This means

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

that compared to other variables, even if the teachers are not that familiar with the terms, it is not known to be affecting and having a depth impact to their ICT competence. As technology develops at a fast rate, so does the content to be taught. Though still, it has a significant relationship with ICT competence, obtaining the least correlation value among the other variables on teachers' digital self-efficacy indicates that the teachers' confidence in mastering ICT-related terms such as URL, Google Drive, etc., is least associated with their ICT competence.

This result shows that further studies may be able to focus on developing other aspects of teachers' digital competencies that are more relevant to enhancing student learning outcomes; and the educational agencies to provide teachers with more targeted professional development programs that focus on enhancing specific areas of digital competencies. For example, if teachers have low digital self-efficacy in terms of designing and developing technology-based learning resources because of a low level of familiarity with terms, they could be provided with training that specifically addresses this area. Finally, if the significance of teachers' digital self-efficacy in familiarity with terms and ICT competence is found to be low, it may be necessary to explore other factors that can influence the effective integration of technology in the classroom, such as the availability of technology resources, teacher-student relationships, and the pedagogical approach used in teaching with technology.

According to Wu et al. (2019), students who have poor learning outcomes are often associated with teachers' lack of ICT integration. Teachers on each end take an active part in the

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

teaching and learning process. It may be reflected in how the students can better understand what they learned when the teacher practice proficiency in handling ICT-related tasks.

As this study has found that teachers' digital self-efficacy in familiarity with terms and ICT competence are found with the lowest significance among the other variables, it suggests that familiarity with terms as a variable of teachers' digital self-efficacy may not play a significant role in enhancing student learning outcomes through technology integration. According to Sogar (2021), in such a case, it may be necessary to explore other factors that can influence teachers' effective integration of technology in the classroom.

CONCLUSION/RECOMMENDATION/FINDINGS/SUMMARY

Summary

Digital technologies is one of the most important skills for teachers to improve the teaching and learning process. This study aimed to determine the significant relationship between digital self-efficacy skills and ICT competence of teachers. It sought to answer the following: (1) the level of teacher's digital self-efficacy skills; (2) the level of ICT competence; and (3) the significant relationship between the level digital self-efficacy skills and ICT competence. The participants were the one hundred fifty-four (154) public elementary school teachers in Sumilao and Impasug-ong, Bukidnon during the School Year 2022-2023.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

This study used a quantitative research design and descriptive correlational study. This study used a validated researcher-made questionnaire patterned from the study of Limiansi & Hadi (2019) for digital self-efficacy skills and Dela Fuente and Biñas (2020) for ICT competence. The Cronbach's alpha coefficient of internal consistency calculated for the reliability of the instrument was determined as 0.934. Descriptive research method was employed to analyze the data and Pearson Moment Correlation was employed to determine the relationship between the level of Digital self-efficacy skills and ICT competence. The data collected were analyzed using mean and standard deviation to determine the level of the teachers' Digital Self-Efficacy Skills and ICT competence and Pearson Moment Correlation to determine the significant relationship between the two (2) variables.

Findings

1. Information Management and Teaching Technologies got a High level of digital self-efficacy skills, while Digital Literacy, Familiarity with Terms and Awareness are Moderate.

2. The teacher's level of ICT Competence was Advance in terms of Critical Thinking, Cultural and Social Understanding and Communication, while Intermediate only in Problem-Solving and Learning Skills.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

3. There is a significant relationship between the level of Digital Self-Efficacy Skills and the level of ICT competence among the public elementary school teachers in Sumilao and Impasug-ong, Bukidnon.

CONCLUSION

In the light of the findings found by the researcher, the Digital Self-Efficacy Skills of Teachers on Information Management, Teaching Technologies, Data Literacy, Familiarity of Terms and Awareness are Moderate. Thus, their digital Self – efficacy is only limited and needs to be refined further to hone their experience. Meanwhile, the ICT competence of teachers in Critical Thinking, Cultural and Social Understanding, Communication, Problem Solving, and Learning Skills are at an Advance level, which means they are digitally equipped. Moreover, the Digital Self-efficacy skills of teachers have a strong and significant relationship with their ICT competence; thus, the null hypothesis is rejected. Therefore, it can be inferred that if teachers have a higher level of digital self-efficacy skills the more they will become proficient with their ICT competence.

RECOMMENDATION

Based on the results of the study, it is recommended by the researcher that:

1. In terms of digital self-efficacy skills, teachers must enhance their ability to infer whether the data is mathematically correct or not. With this, teachers need to undergo seminar-workshops

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

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that involve statistical tools like Excel and Spreadsheets to enrich their capacity to find accurate interpretation of mathematical data.

2. Teachers should also consider undergoing In-service Trainings (INSET) on ICT integration to help them become familiar with technological terms to abreast their knowledge of concepts regarding technologies.

3. Regarding ICT Competence, teachers must upskill their problem-solving skill when faced with distractions or problems during school-based Learning Action Cell (LAC) sessions. Teachers should systematize work schedules for schools and make a work plan to manage tasks and achieve the task before the deadlines. Distribute the work evenly and delegate people when assigned to a bigger task.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue IV
May 2024
Available online at https://www.instabrightgazette.com

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