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WEB-BASED PROFESSIONAL DEVELOPMENT EFFICACY OF TEACHERS AND DIGITAL SELF-EFFICACY OF STUDENTS

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Abstract: **This study is aimed to find out the relationship between web-based professional development efficacy of teachers and digital self-efficacy of students. This study utilized the non-experimental quantitative research design using descriptive technique involving teachers in Davao Occidental Division, Philippines. The study was conducted on the second semester of School Year 2025-2026. Research instruments on web-based professional development efficacy of teachers and digital self-efficacy of students were used as source of data. Using mean and pearson-r as statistical tools to treat the data, the study showed the following results: The study found to exhibit a high level of web-based professional development efficacy of teachers. This means that the provisions relating to web-based professional development efficacy of teachers is oftentimes observed. The study revealed a high level of digital self-efficacy of students. This indicates that the provisions relating to digital self-efficacy of students are embodied in the item is oftentimes observed.The results of the study also confirm that there is a significant relationship between web-based professional development efficacy of teachers and digital self-efficacy of students. This implies that the higher the web-based professional development efficacy of teachers, the higher is the digital self-efficacy of students. Thus, the null hypothesis of no significant relationship between web-based professional development efficacy of teachers and digital self-efficacy of students was rejected.**

Keywords: **web-based professional development efficacy of teachers, digital self-efficacy of students, school administration and supervision, quantitative research.**

I. INTRODUCTION

In the 21st century, digital literacy has become an essential skill, with technology playing a crucial role in education. Digital self-efficacy, which refers to an individual's belief in their ability to effectively use digital tools and technologies to accomplish tasks, has become an increasingly important determinant of students' academic success. Students who feel confident in their digital abilities are more likely to engage with educational technologies, participate in online learning, and effectively leverage digital resources for learning (Paredes-Aguirre, Campoverde Aguirre, Hernandez-Pozas, Ayala & Barriga Medina, 2024).

However, many students face significant challenges in developing strong digital self-efficacy, leading to issues in academic performance, self-esteem, and overall educational engagement. In India, the limited home access for internet as per government and NGO reports, only about 25% of Indian households have internet access which much lower in rural regions.

Understanding the problems surrounding students' digital self-efficacy is critical for improving educational outcomes in an increasingly tech-driven world (Sindakis & Showkat, 2024).

Meanwhile, one primary challenge to digital self-efficacy is the digital divide, which refers to disparities in access to technology and the internet. Students from low-income families or rural areas may lack the necessary devices, reliable internet connection, or access to modern educational technologies. This is the case in Indonesia. As of 2024, approximately 79.5% of Indonesians are internet users, that leaves around 20.5% of the population, roughly 1 in 5 people, without regular internet access (Widowati, Siswanto & Wakid, 2023).

In the Philippines Under DepEd's DigiEd 2028 initiative, it was reported that 69% of schools have internet connectivity, although, critically, much of this access is confined to faculty rooms only, limiting student This suggests that a significant portion of students lack reliable access, likely affecting their confidence and practice with digital tools contributing to low digital self-efficacy. As of 2023, student-to-computer ratio was around 1 student per 9 computers, and teacher-to-computer ratio about 1 to 30. Gaps in device access can hinder students from developing digital self-efficacy (Serafica, Francisco & Oren, 2023).

In the local context, not all schools in the division have access to internet due to various factors including mainly geographical reason. While the department introduced numerous digital technology to address low performance of students, which is pegged at 12.81% only of students in Reading at the Level in Grades 1-3 in the recent data. This has resulted to lack of familiarity with new technologies that can prevent students from fully engaging in digital learning environments or utilizing technology to its full potential. As digital tools become more sophisticated, students may feel that they are falling behind, further diminishing their sense of digital self-efficacy.

These gaps in access create a significant barrier to developing digital skills and building confidence in using technology. As more educational resources and activities are shifted online, students who do not have the same level of access to digital tools are at a distinct disadvantage, resulting in feelings of inadequacy and reduced self-efficacy in digital contexts. It is in this context that the web-based professional development efficacy of teachers is seen to support the low digital self-efficacy of students thereby prompted the conducted of this study. This study seeks to underscore the relationship between web-based professional development efficacy of teachers and digital self-efficacy of students to ascertain the relationship between the two variables. Today, the researcher has rarely come across with a study on the study regarding these two variables. It is in this context that the researcher prompted to conduct this study to address contextual gap.

II. BODY OF ARTICLE

Statement of the Problem

This study is aimed to find out the relationship between web-based professional development efficacy of teachers and digital self-efficacy of students. Specifically, this study sought to answer the following objectives:

1. What is the level of web-based professional development efficacy of teachers in terms of:

1.1 General Self-efficacy;

1.2 Interaction Self-Efficacy, and

1.3 Applying Self-efficacy?

2. What is the level of digital self-efficacy of students in terms of:

2.1 Information and Data Literacy;

2.2 Communication and Collaboration;

2.3 Digital Content Creation;

2.4 Safety, and

2.5 Problem-Solving?

3. Is there a significant relationship between web-based professional development efficacy of teachers and digital self-efficacy of students?

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Hypothesis

Ho1. There is no significant relationship between web-based professional development efficacy of teachers and digital self-efficacy of students

III. METHODOLOGY

Research Design

This study employed non-experimental quantitative research design utilizing correlational technique. Non-experimental quantitative research design utilizing a correlational technique is a type of research approach used to examine the relationship between two or more variables without manipulating them. It falls under quantitative research because it involves collecting and analyzing numerical data. The term non-experimental indicates that the researcher does not control or manipulate any variables, unlike in experimental research, where treatments or interventions are applied.

Non-experimental correlational research is a research design used to determine whether and to what degree a relationship exists between two or more quantifiable variables, without establishing cause and effect in which in this study, it will look into the relationship between web-based professional development efficacy of teachers and digital self-efficacy of students.

Statistical Treatment

The following statistical tools were used in the analysis of data.

Mean. This will be used to determine the level of web-based professional development efficacy of teachers and digital self-efficacy of students.

Pearson r. This will be used to determine the significance of the relationship between task web-based professional development efficacy of teachers and digital self-efficacy of students.

IV. RESULTS AND DISCUSSION

Level of Web-based Professional Development Efficacy of Teachers

Shown in Table 1 is the level of web-based professional development efficacy of teachers with an overall mean of 4.15 with a descriptive equivalent of high indicating that all enumerated indicators were oftentimes observed. The overall mean was the result obtained from the mean of the indicators for the specific items from the questionnaire intended for this particular indicator which was appended in this study.

Among the enumerated indicators, general self-efficacy and applying self-efficacy have the the highest mean rating with a mean score of 4.15 or very high, and followed by applying self-efficacy, 4.14 or high.

Table 1. Web-based Professional Development Efficacy of Teachers

Indicators	Mean	Descriptive Levels
General Self-efficacy	4.15	High
Interaction Self-Efficacy	4.14	High
Applying Self-efficacy	4.15	High
Overall	**4.15**	**High**

The result of the study is in consonance with the findings of Ekawati, Mulyono, Arrummaiza, Zulaiha & Ningsih (2021) who reported that Web-based professional development has become an essential tool for improving the efficacy of teachers in modern education. Through online platforms, teachers can access training materials, instructional strategies, and collaborative communities regardless of their geographic location. This accessibility allows educators to continuously update their knowledge and teaching practices in response to evolving educational standards, technologies, and student needs. As a result, web-based professional development supports lifelong learning among teachers and encourages them to remain adaptable and innovative in their instructional approaches.

The result of the study corresponds with the statement of Bragg, Walsh & Heyeres (2021) who noted that another important aspect of web-based professional development is its flexibility and personalization. Teachers can engage in training at their own pace, select courses that align with their specific subject areas, and revisit resources whenever needed. This self-directed learning environment helps educators build confidence in implementing new teaching strategies and integrating digital tools into their classrooms. By strengthening teachers' instructional skills and technological competence, web-based professional development directly contributes to greater teaching effectiveness and improved student learning outcomes.

The result of the study is consistent with the statement of Saptono, Herwin & Firmansyah (2021) who declared that online professional development fosters collaboration and professional networking among educators. Virtual workshops, discussion forums, and shared digital resources enable teachers to exchange ideas, discuss challenges, and learn from diverse perspectives across schools and regions. Such collaboration helps teachers reflect on their practices and adopt evidence-based strategies that enhance classroom performance. Consequently, web-based professional development not only improves individual teacher efficacy but also promotes a culture of continuous improvement and collective growth within the education community.

Level of Digital Self-Efficacy of Students

Shown in Table 2 is the level of digital self-efficacy of students with an overall mean of 4.11 with a descriptive equivalent of very high indicating that all enumerated indicators were oftentimes observed. The overall mean was the result obtained from the mean of the indicators for the specific items from the questionnaire intended for this particular indicator which was appended in this study.

Among the enumerated indicators, communication and collaboration has the highest mean rating with a mean score of 4.13 or high, digital content creation, 4.12 or very high, safety, 4.11 or high, problem-solving, 4.10 or high, and effort and information and data literacy, 4.09 or high.

Table 2. Digital Self-Efficacy of Students

Indicators	Mean	Descriptive Levels
Information and Data Literacy	4.09	High
Communication and Collaboration	4.13	High
Digital Content Creation	4.12	High
Safety	4.11	High
Problem-Solving	4.10	High
Overall	**4.11**	**High**

The result of the study resonates with the statement of Ibrahim & Aldawsari (2023) who suggested that digital self-efficacy refers to students' confidence in their ability to effectively use digital technologies to accomplish academic tasks and solve problems in learning environments. In today's technology-driven education system, students are increasingly required to use computers, online platforms, and digital tools for research, communication, and collaboration. When students possess strong digital self-efficacy, they are more willing to explore new technologies, engage with digital learning resources, and overcome challenges related to technology use. This confidence encourages independent learning and helps students adapt to modern educational environments where digital literacy is essential.

The result of the study corresponds with the statement of Rohde, Marciniak, Henninger, Homan, Ries, Paersch & Kleim (2024) who confirmed that digital self-efficacy plays an important role in improving students' academic performance and engagement. Students who believe in their ability to use digital tools effectively are more likely to participate actively in online discussions, complete digital assignments, and utilize educational applications that support their learning. They tend to approach technological challenges with a positive attitude and persistence rather than frustration or avoidance. As a result, high digital self-efficacy can lead to increased motivation, better problem-solving skills, and more effective use of digital resources in academic tasks.

The result of the study is consistent with the statement of Shaikh, Alsharief, Amin, Noordin & Shaikh (2023) who acknowledged that digital self-efficacy is developed through continuous exposure to technology, supportive learning environments, and guidance from teachers and peers. When students receive proper instruction on how to use digital tools and are given opportunities to practice these skills, their confidence gradually improves. Teachers who integrate technology into classroom activities and provide constructive feedback can significantly enhance students' digital competence. Consequently, fostering digital self-efficacy among students is essential for preparing them to succeed in both academic settings and the increasingly digital world beyond the classroom.

Significance on the Relationship between Web-based Professional Development Efficacy of Teachers and Digital Self-efficacy of Students

Illustrated in Table 3 were the results of the test of relationship between variables involved in the study. The overall correlation had a computed value of 0.464 with a probability value of $p<0.01$ which is significant at 0.05 level. Hence the null hypothesis which states that there is no significant relationship between web-based professional development efficacy of teachers and digital self-efficacy of students is rejected.

Table 3. Significance on the Relationship between Web-based Professional Development Efficacy of Teachers and Digital Self-efficacy of Students

Pair	Variables	Correlation Coefficient	p-value	Decision on Ho
IV and DV	Web-based Professional Development Efficacy of Teachers and Digital Self-Efficacy of Students	0.464	0.000	Reject

The result of the study confirms the statement of Sehar & Alwi (2023) who asserted that There is a significant relationship between the web-based professional development efficacy of teachers and the digital self-efficacy of students, as the skills and confidence teachers gain through online professional learning directly influence how effectively students use digital technologies. Teachers who participate in web-based professional development improve their instructional strategies, technological competence, and self-efficacy in applying digital tools in the classroom. When teachers feel confident and capable of integrating technology into their lessons, they are more likely to create engaging, interactive, and technology-rich learning experiences for students, which in turn fosters students' confidence in using digital tools themselves.

The result of the study is in line with the statement of Guo & Chiang (2025) who suggested that the impact of teachers' web-based professional development efficacy on students' digital self-efficacy is evident in specific domains such as information literacy, communication and collaboration, digital content creation, safety, and problem-solving. For example, a teacher trained through web-based professional development may design assignments that require students to research online effectively, collaborate through digital platforms, or create multimedia projects. When teachers model competent digital behaviors and provide structured guidance, students develop confidence in performing similar tasks, strengthening their digital self-efficacy. Essentially, students mirror and learn from the teachers' digital competence and instructional practices.

The result of the study corroborates the statement of Sharma & Saini (2022) who confirmed that the relationship between teachers' professional development efficacy and students' digital self-efficacy is reinforced through a supportive, technology-enabled learning environment. Teachers with high web-based professional development efficacy are better at scaffolding digital tasks, offering timely feedback, and encouraging experimentation with new tools, which reduces students' fear of making mistakes and promotes independent learning. Consequently, web-based professional development not only enhances teachers' professional growth but also creates conditions for students to develop stronger digital self-efficacy, indicating a mutually reinforcing relationship between teacher capability and student digital confidence.

V. CONCLUSION

Based from the findings of the study, conclusions are drawn in this section. The study found to exhibit a high level of web-based professional development efficacy of teachers. This means that the provisions relating to web-based professional development efficacy of teachers is oftentimes observed. The study revealed a high level of digital self-efficacy of students. This indicates that the provisions relating to digital self-efficacy of students are embodied in the item is oftentimes observed.

The results of the study also confirm that there is a significant relationship between web-based professional development efficacy of teachers and digital self-efficacy of students. This implies that the higher the web-based professional development efficacy of teachers, the higher is the digital self-efficacy of students. Thus, the null hypothesis of no significant relationship between web-based professional development efficacy of teachers and digital self-efficacy of students was rejected.

VI. RECOMMENDATIONS

The results of this study revealed that there is a high level of web-based professional development efficacy of teachers. The researcher recommends that the teachers may improve in the area of interaction self-efficacy as this is the lowest among all the indicators. Teachers may develop strong digital literacy skills by strengthening their ability to read and navigate online course materials. becoming comfortable with digital texts, multimedia resources, and online learning platforms helps teachers fully understand course content and engage more effectively with the material; actively participate in online interactions by encouraging to interact with colleagues in web-based learning action cell environments through discussion boards, group activities, and collaborative tasks. active participation promotes knowledge sharing, diverse perspectives, and professional networking; engage in online questioning and discussions by asking questions and respond to peers' inquiries in online forums. doing so enhances understanding, clarifies concepts, and contributes to a collaborative learning community; strengthen online research skills by practicing searching for relevant and credible information to support their learning in web-based learning action cell. using educational databases, professional websites, and scholarly sources can improve the quality of knowledge gained from online learning; maintain self-directed learning habits since online professional development often requires independent learning, teachers should set personal learning goals, manage their time effectively, and remain motivated to complete course requirements, and apply learned knowledge to classroom practice by reflecting on the knowledge gained from web-based pd and implement applicable strategies in their teaching practice to enhance student learning outcomes.

The study revealed a high level of digital self-efficacy of students. The researcher recommends that students may improve in the area of problem-solving since this is the lowest among all the indicators. The students may be encouraged to strengthen their digital problem-solving skills by actively engaging with digital technologies in academic activities. First, students should develop the ability to identify technical issues that occur while using digital tools and learning platforms. This can be achieved through regular exposure to different digital environments and guided practice in recognizing common technical challenges.

Second, students may learn to apply multiple strategies when resolving technical problems. They should be encouraged to consult various digital resources such as online tutorials, user manuals, educational forums, and instructional videos to find appropriate solutions. Developing these research and troubleshooting skills will help students become more independent and confident users of technology.

Third, students may be guided in selecting appropriate digital tools or systems that best address specific academic or non-technical challenges. By exploring different digital applications and platforms, students can develop the ability to evaluate which tools are most effective for particular tasks.

Finally, students may be provided with opportunities to design and develop innovative digital solutions through project-based learning activities. Such experiences can encourage creativity, critical thinking, and the application of digital technologies to solve real-world problems.

Teachers play a critical role in fostering students' digital problem-solving competencies. Therefore, teachers may integrate technology-based problem-solving activities into their teaching practices. By incorporating tasks that require students to identify and resolve digital challenges, teachers can help students develop practical digital skills. Teachers may also provide structured guidance on troubleshooting techniques, including identifying the source of a problem, testing possible solutions, and evaluating the effectiveness of those solutions. This structured approach can help students develop systematic problem-solving strategies. In addition, teachers may expose students to a wide range of digital tools and platforms to broaden their technological experience. This exposure can enable students to make informed decisions when selecting digital systems to address various academic tasks and challenges. Furthermore, teachers may encourage collaborative learning environments where students work together to solve digital problems. Collaboration allows students to share knowledge, learn from peers, and develop diverse approaches to problem-solving. Finally, teachers may participate in continuous professional development programs that focus on enhancing digital competence and innovative uses of technology in education.

Strengthening teachers' digital skills will enable them to better support students in developing advanced digital problem-solving abilities and creating innovative digital solutions.

The findings of the study revealed a significant relationship between teachers' web-based professional development efficacy and students' digital self-efficacy. This suggests that when teachers demonstrate greater confidence and competence in engaging with web-based professional development, they are more capable of integrating digital tools and strategies into their instructional practices, which in turn positively influences students' confidence in using digital technologies for learning. In light of these findings, the following recommendations are proposed for students, teachers, school principals, and district supervisors.

Students may be encouraged to actively participate in technology-enhanced learning activities to further develop their digital self-efficacy. Exposure to various digital platforms, tools, and online learning resources can help students build confidence in navigating digital environments and applying technology effectively in academic tasks. Furthermore, students may be guided to engage in collaborative digital learning experiences such as online discussions, group projects, and problem-solving activities. These experiences can strengthen their ability to communicate, collaborate, and solve problems using digital technologies. Students may also be encouraged to develop independent learning skills by exploring online resources, tutorials, and educational platforms that can enhance their digital competencies. Developing these skills will enable students to become more self-directed and confident learners in technology-supported environments.

Teachers may continuously engage in web-based professional development programs to strengthen their digital competence and instructional practices. Participation in such programs can enhance teachers' confidence in using digital technologies and improve their ability to integrate technology effectively into classroom instruction. Teachers may also design and implement learning activities that promote students' digital engagement and problem-solving skills. Incorporating digital tools such as learning management systems, multimedia presentations, and collaborative platforms can help create interactive learning environments that foster students' digital self-efficacy. In addition, teachers may serve as role models in the effective use of technology by demonstrating responsible, creative, and purposeful use of digital tools in teaching and learning processes. Providing guidance and support to students in navigating digital platforms can further enhance students' confidence and competence in using technology.

School principals may promote a supportive environment that encourages teachers to participate in web-based professional development initiatives. This can be achieved by providing access to relevant training programs, allocating time for professional learning, and recognizing teachers who actively engage in technology-related professional development. Moreover, school leaders may monitor and support the implementation of digital teaching practices by encouraging collaboration among teachers and facilitating the sharing of best practices in technology integration.

District supervisors may develop strategic initiatives that strengthen teachers' participation in web-based professional development programs. These initiatives may include organizing online training workshops, webinars, and digital learning communities that focus on enhancing teachers' technological and pedagogical skills. Supervisors may also establish policies that promote the effective integration of technology into teaching and learning processes across schools. Providing clear guidelines and support systems can help ensure the consistent implementation of digital learning strategies. Finally, district supervisors may allocate sufficient resources to support technological infrastructure, digital learning tools, and continuous professional development programs. Sustained support at the district level is essential to ensure that improvements in teachers' web-based professional development efficacy continue to positively influence students' digital self-efficacy and overall learning outcomes.

The researcher also recommends to future researchers to conduct similar study and explore some indicators that are not included in this study in another setting in order to uncover new knowledge relevant to the topics presented in this study.

REFERENCES

[1] Bragg, L. A., Walsh, C., & Heyeres, M. (2021). Successful design and delivery of online professional development for teachers: A systematic review of the literature. Computers & education, 166, 104158.

[2] Ekawati, A. D., Mulyono, H., Arrummaiza, V. S., Zulaiha, S., & Ningsih, S. K. (2021). Evaluating EFL teachers' self-efficacy and attitude towards web-based professional development practices: A Rasch analysis. TESOL International Journal, 16(6.1), 124-141.

[3] Guo, Q., & Chiang, M. T. (2025). Impact Of Digital Literacy on Teachers' Professional Development in Universities: The Mediating Role of Internet Self-Efficacy. Eurasian Journal of Educational Research (EJER), (116).

[4] Paredes-Aguirre, M., Campoverde Aguirre, R., Hernandez-Pozas, O., Ayala, Y., & Barriga Medina, H. (2024). The Digital Self-Efficacy Scale: Adaptation and Validation of Its Spanish Version. Human Behavior and Emerging Technologies, 2024(1), 3952946.

[5] Rohde, J., Marciniak, M. A., Henninger, M., Homan, S., Ries, A., Paersch, C., ... & Kleim, B. (2024). Effects of a digital self-efficacy training in stressed university students: A randomized controlled trial. Plos one, 19(10), e0305103.

[6] Saptono, B., Herwin, H., & Firmansyah, F. (2021). Web-Based Evaluation for Teacher Professional Program: Design and Development Studies. World Journal on Educational Technology: Current Issues, 13(4), 672-683.

[7] Sehar, S., & Alwi, S. K. K. (2023). Correlation between teachers' digital competency and their self-efficacy in managing online classes. Pakistan Journal of Humanities and Social Sciences, 11(2), 2135-2145.

[8] Serafica, R. B., Francisco, K. A., & Oren, Q. C. A. (2023). Making Broadband Universal: A Review of Philippine Policies and Strategies.

[9] Shaikh, I. M., Alsharief, A., Amin, H., Noordin, K., & Shaikh, J. (2023). Inspiring academic confidence in university students: perceived digital experience as a source of self-efficacy. On the Horizon: The International Journal of Learning Futures, 31(2), 110-122.

[10] Sharma, S., & Saini, J. R. (2022). On the role of teachers' acceptance, continuance intention and self-efficacy in the use of digital technologies in teaching practices. Journal of Further and Higher Education, 46(6), 721-736.

[11] Sindakis, S., & Showkat, G. (2024). The digital revolution in India: bridging the gap in rural technology adoption. Journal of Innovation and Entrepreneurship, 13(1), 29.

[12] Widowati, A., Siswanto, I., & Wakid, M. (2023). Factors affecting students' academic performance: self efficacy, digital literacy, and academic engagement effects. International Journal of Instruction, 16(4), 885-898.