e-Work Self-Efficacy digital competence and work engagement of teachers in public secondary schools from two provinces in the Philippines

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ABSTRACT

This descriptive-correlational research design aimed to determine the significant relationships between e-Work Self-Efficacy digital competence, and work engagement of teachers in secondary schools in the Philippines. The respondents of the study were 244 teachers from public secondary from two provinces. They were selected through Simple Random Sampling. The study was conducted via online forms. The gathered data were treated using statistical tools such as Mean, Standard Deviation, Pearson r, Hayes Process, and Multiple Linear Regression. The results of the study suggest that enhancing e-Work Self-Efficacy and digital competence may lead to increased work engagement, which could ultimately lead to better job performance and satisfaction in the context of remote work. The results of moderation analyses revealed that the respondents' profile age, length of service, and academic rank significantly moderated the relationship between e-Work Selt-Efficacy and work engagement. Hence, the hypothesis stating that the respondents' profile variables do not significantly moderate between e-Work Self-Efficacy and work engagement and also the hypothesis stating that the respondents' profile variables do not significantly moderate between digital competence and work engagement of the respondents were both partly upheld. The result of regression analysis identified that digital competence singly predicted the Work Engagement of the respondents. Moreover, the regression further revealed that digital competence and e-Work Selt-Efficacy, in combination, predict the work engagement of the respondents. Hence, the hypothesis stating that the respondents' profile, e-Work Self-Efficacy and digital competence do not significantly predict their work engagement was partly upheld.

1. Introduction

The Covid-19 outbreak caused worldwide disruptions, particularly in education, where ensuring continuous learning became a major concern. Remote teaching was widely adopted as a response to the pandemic, highlighting the need for teachers to develop digital skills to address challenges and risks, as discussed by Tramontano, Grant, and Clarke (2021).

Remote work has been on the rise over the past decade, with occasional remote work increasing from 5.4% in 2009 to 9% in 2019 in Europe (Milasi, González-Vázquez, & Fernández-Macías, 2020). However, the Covid-19 pandemic accelerated the global adoption of remote work. In the Philippines, public school teachers also embraced remote work, participating in webinars to bridge the digital divide and adapt to new technologies for online teaching.

Remote work, facilitated by the Internet, has become commonplace (Eurofound, 2020; Milasi et al., 2020). Tramontano et al. (2021) introduced e-Work Self-Efficacy assessing digital resilience. Self-efficacy is an individual's belief in their ability to achieve outcomes (Bandura, 1997). Tramontano et al. (2021) identified five dimensions for e-Work Self-Efficacy assessment in remote work: e-skills, trust-building skills, self-care skills, remote social skills, and e-coordination skills. E-skills involve managing workload and tasks with digital tools. Remote workers need self-management, organization, and prioritization skills for self-motivation and handling distractions.

Trust-building skills are vital, especially for employees transitioning to remote work, as remote working was traditionally for senior or highly skilled roles (Eurofound, 2020; Milasi et al., 2020). Trust helps in gaining flexibility and autonomy in remote work.

Self-care skills, part of Self-Care competency, involve managing work-life boundaries using digital tools. Remote work's flexibility can lead to an "always on" mindset, affecting mental health (Grant, Wallace, & Spurgeon, 2013; Grant, Wallace, Spurgeon, Tramontano, & Charalampous, 2019). Employees must effectively set boundaries to prevent excessive availability. As to remote social skills, social and relational competency refer to managing and fostering social relationships remotely. Remote work can lead to isolation and task complexity. Employees need to initiate and sustain social interactions, deciding when remote or in-person work benefits productivity, belongingness, and engagement.

The concept of digital competence, based on the European Framework for Educators' Digital Competence (DigCompEdu), includes six areas and 22 competencies (Yazon, Manaig, Tesoro, & Buama, 2019). It covers professional engagement, digital resource utilization, teaching and learning strategies, assessment methods, empowering learners, and facilitating learners' digital competence (Punie & Redecker, 2017).

The 2020 pandemic tested teachers' digital competence and education (Triviño-Cabrera, Chaves-Guerrero, & Alejo-Lozano, 2021). Studies explored teachers' stress during lockdown (Al-Maroof, Salloum, Hassanien, & Shaalan, 2020; Devitt, Colman, Bray, & Banks, 2020), impacting them (Cerveny, 2021). Evaluating teaching engagement during the pandemic is crucial. Work engagement, defined by Schaufeli, Salanova, Gonzalez-Roma, and Bakker (2002), includes vigor, dedication, and absorption. Vigor involves energy, dedication reflects the commitment, and absorption is deep concentration (Schaufeli & Bakker, 2004).

Passionate teachers enhance school success and effectiveness. Identifying with their jobs energizes employees and boosts productivity. Believing in their work's values is crucial for job engagement. Work engagement improves performance and organizational efficiency, impacting job satisfaction and organizational engagement.

The challenges faced by secondary school teachers during the education disruption caused by the pandemic, which forced them to shift to virtual classrooms, have prompted researchers to investigate the potential relationships among e-Work Self-Efficacy digital competence, and the work engagement of teachers; hence, this study.

2. Theoretical basis

This study is grounded in the Social Cognitive Theory (Bandura, 2001), emphasizing human agency in self-development, adaptation, and change. Self-efficacy beliefs, assessing one's ability to handle specific situations, play a vital role in human agency and significantly influence behavioral outcomes like performance and resilience across domains (Bandura, 1982, 1997).

The participants' digital competence aligns with the European Commission's Framework for the Digital Competence of Educators (DigCompEdu). This framework outlines 22 competencies in six areas, emphasizing the use of digital technologies for educational enhancement and innovation across various education levels (Punie & Redecker, 2017).

The study's framework for work engagement is based on Bakker and Demerouti's (2007) Job Demands-Resources (JD-R) Model, which is a predictive model for employee burnout, work engagement, and organizational performance. The JD-R Model proposes that the factors contributing to employee well-being can be grouped into two main categories, job demands, and job resources, making it a universal model that can be applied to various occupational settings, regardless of their specific needs and resources.

2.1. Conceptual framework

The study focused on three main variables: e-Work Self-Efficacy digital competence, and work engagement, along with a moderating variable of the respondents' profile. The Independent Variables (IV) were e-Work Self-Efficacy which included e-skills, trust-building skills, self-care skills, and remote social skills, and digital competence, which included professional engagement, digital resources, teaching and learning, assessment of learning, empowering learners, and facilitating learners' digital competence. The dependent variable was the work engagement of the respondents, which included vigor, dedication, and absorption. Additionally, the moderating variable was the profile of the respondents, which included age, sex, educational attainment, length of service, and academic rank.

2.2. Statement of the problem

This research aimed to establish relationships between e-Work Self-Efficacy digital competence, and work engagement among secondary school teachers in the Philippines. It examined respondents' profiles, e-Work Self-Efficacy digital competence, and work engagement. It also explored the relationships between e-Work Self-Efficacy and work engagement, as well as between digital competence and work engagement. Additionally, the study investigated whether respondents' profiles moderated these relationships and whether these factors could predict work engagement.

2.3. Hypotheses

The study tested the following hypotheses: that there is no significant relationship between e-Work Self-Efficacy and work engagement among the respondents. Similarly, the analysis reveals no significant relationship between digital competence and work engagement among the participants.

Furthermore, the study demonstrates that the respondents' profile variables do not significantly moderate the relationship between e-Work Self-Efficacy and work engagement. Likewise, there is no significant moderation observed between digital competence and work engagement concerning the respondents' profile variables.

Additionally, the results reveal that the respondents' profile, e-Work Self-Efficacy and digital competence, whether considered individually or in combination, do not significantly predict their work engagement. These findings suggest that factors other than e-Work Self-Efficacy digital competence, and the respondents' profile variables may influence their level of work engagement.

2.4. Scope and limitation of the study

This research was conducted among public secondary school teachers from Negros Occidental and Laguna Provinces, and its scope was limited to assessing their perceived levels of e-Work Self-Efficacy digital competence, and work engagement during the pandemic-induced remote working period. The survey items were appropriately modified and adopted to ensure their relevance to the research objectives. The questionnaires were distributed using Google Forms to the target respondents. The study focused on evaluating the respondents' profiles in terms of age, sex, educational attainment, length of service, and academic rank, which served as the moderating variable in the study.

3. Methodology

3.1. Research design

The most suitable research design for this study is a descriptive-correlational research design. This design allows for the examination of relationships between variables without manipulating them. It is ideal for exploring the connections between e-Work Self-Efficacy digital competence, and work engagement, as it measures these variables as they naturally occur and determines if there are significant associations or patterns between them. Correlational studies, as explained by Yazon, Callo, and Buenvinida (2019), are used to explore relationships between variables.

3.2. Respondents of the study

The respondents of the study were 244 teachers (see Table 1) from public secondary (Junior and Senior High) Schools from the Negros Occidental and Laguna provinces.

3.3. Sampling technique

The study utilized Simple Random Sampling to identify the respondents. This sampling method involves the selection of individuals entirely by chance, giving each member of the population an equal chance of being included in the sample (Yazon, Callo, et al., 2019). Since the study was conducted online, the retrieved responses from the Google Forms were sent to the target respondents to determine the population of the study.

Table 1

The profile of the respondents in terms of age, length of service, educational attainment, and academic rank

Category		Frequency	Percent
Over All Category		244	100
a) Age	50 - 63	39	16.0
	37 - 49	108	44.3
	24 - 36	97	39.8

Category		Frequency	Percent
b) Length of Service	25 - 38	37	15.2
	12 - 24	61	25.0
	0 - 11	146	59.8
c) Educational Attainment	BS Degree	74	30.3
	BS with MA Units	89	36.5
	MA Degree	64	26.2
	MA with PhEd/D Units	9	3.7
	PhEd/D	8	3.3
d) Academic Rank	Teacher 1	101	41.4
	Teacher 2	75	30.7
	Teacher 3	39	16.0
	Master Teacher 1	25	10.2
	Master Teacher 2	4	1.6

Table 1 shows that the majority of respondents were middle-aged (44.30%), and the least were late-middle-aged (16%). This suggests a dominance of experienced faculty (Shah & Udgaonkar, 2018). In terms of service length, most (59.80%) served 0 - 11 years, while few (15.2%) taught 25 - 38 years, indicating new teachers were prominent (Kini & Podolsky, 2016).

Regarding educational attainment, most had a Master's degree (26.2%), and few held Doctorate degrees (3.3%), meeting 21st-century learning demands and emphasizing advanced education's importance (Balanquit, Ladia, & Nool, 2023).

In academic rank, Teacher 1 had the highest frequency (41.4%), and Master Teacher II had the lowest (1.6%). This reflects novices despite a decade of service, showing the importance of professional rank (Yuyou & Zeng, 2018).

3.4. Research instruments

The study utilized three research instruments tailored for the target respondents. These instruments underwent reliability analysis (see Table 2). The e-Work Self-Efficacy Scale (Tramontano et al., 2021), consisting of 15 items, assessed e-skills, trust-building, self-care, and remote social skills.

To measure digital competence, the Self-Assessment Tool of the European Digital Competence Framework for Educators (DigComEdu) was used. It comprised 21 items evaluating professional engagement, digital resources, teaching and learning, assessment, empowering learners, and facilitating digital competence. This tool aids educators in advancing their digital teaching skills.

For evaluating work engagement (vigor, dedication, and absorption), a shortened version of the Utrecht Work Engagement Scale (Schaufeli & Bakker, 2004) by Utrecht University, The Netherlands, was employed. This scale includes 17 statements reflecting an individual's work-related feelings.

Table 2

Instruments' reliability analysis

Items	**N of Items**	**Cronbach's Alpha**	**Internal Consistency**
e-Work Self-Efficacy	15	0.953	Excellent
Digital Competence	21	0.973	Excellent
Work Engagement	17	0.956	Excellent
Overall	53	0.975	Excellent
Legend: .70 (Acceptable); .80 (Good); .90 (Excellent)			

The result of the Reliability Analysis presented in Table 1 revealed the Cronbach's Alpha values for e-Work Self-Efficacy (α = 0.953, N = 15), Digital Competence (α = 0.973, N = 21), Work Engagement (α = 0.956, N = 17), and the Overall (α = 0.975, N = 53) all obtained the Internal Consistency interpretation of "Excellent."

3.5. Statistical treatment of data

The study assessed variable relationships using both descriptive and inferential statistics. Descriptive statistics included mean and standard deviation calculations. Inferential statistics, such as the Pearson correlation coefficient (r), measured the strength and direction of linear relationships between variables.

Additionally, the Hayes Process was applied to investigate whether respondents' profile variables moderated the connections between e-Work Self-Efficacy and work engagement, as well as digital competence and work engagement. Multiple Linear Regression analysis, using the Stepwise Method, predicted work engagement while controlling for respondents' profile variables, based on e-Work Self-Efficacy and digital competence. These statistical methods were chosen to address the study's research questions and hypotheses effectively.

4. Results and discussion

Table 3

e-Work Self-Efficacy of the teachers in terms of e-Skills self-efficacy

e-skills Self-Efficacy	**Mean**	**SD**
When I work remotely, I … 1. manage my time effectively, even if I have to juggle personal and professional commitments.	4.13	0.71
2. organize my activities despite any distractions in my surroundings.	4.10	0.71
3. plan my activities effectively despite disruptions I might have.	4.07	0.75
Composite Mean	**4.10**	**0.677**

Table 3 indicates that teachers have high e-Work Self-Efficacy especially in e-Skills self-efficacy. The highest mean score of 4.13 (SD = 0.71) reflects effective time management despite personal and professional commitments. Conversely, the lowest mean score of 4.07 (SD = 0.75) suggests effective activity planning even with disruptions. The composite mean score for teachers' e-Work Self-Efficacy in e-skills self-efficacy is 4.10 (SD = 0.677). These findings show that, on average, teachers feel confident in time management, task organization, and activity planning while working remotely.

These results align with Huang, Liang, and Su's (2020) findings, indicating a positive correlation between e-learning self-efficacy and student learning performance. This suggests that students excelling in online learning environments may share similar self-efficacy with the teachers in this study. Furthermore, Bandura (1997) argued that self-efficacy beliefs are dynamic influenced by factors like past experiences, feedback, and social persuasion. This implies that individuals' self-efficacy levels can vary based on their unique experiences and contexts.

Table 4

e-Work Self-Efficacy of the teachers in terms of trust-building self-efficacy

Trust Building Self-Efficacy	**Mean**	**SD**
When I work remotely, I … 4. complete my tasks, even with minimal supervision.	4.28	0.71
5. self-manage my time ensuring to complete my tasks on time and to a high standard.	4.18	0.74
6. constantly abide by organizational rules and policies, even when a shortcut could help me to complete my tasks more quickly.	4.15	0.70
Composite Mean	**4.20**	**0.641**

Table 4 shows that teachers possess strong e-Work Self-Efficacy particularly in trust-building self-efficacy. The highest mean score, 4.28 (SD = 0.71), reflects their effective task completion when working remotely with minimal supervision. Conversely, the lowest mean score, 4.15 (SD = 0.70), suggests their consistent adherence to organizational rules and policies even when shortcuts could expedite task completion. The composite mean score for trust-building self-efficacy is 4.20 (SD = 0.61), indicating high trust-building self-efficacy among teachers when working remotely.

These findings align with Chen, Gully, and Eden's (2001) research, which found a positive correlation between self-efficacy and job performance. High self-efficacy individuals, according to Chen, Liang, Li, Gao, and Xu (2020), tend to engage in proactive behaviors like setting challenging goals and persisting through obstacles. This suggests that teachers with strong e-Work Self-Efficacy especially in trust-building, are likely to excel in their work and efficiently manage tasks while working remotely.

Table 5

e-Work Self-Efficacy of the teachers in terms of self-care self-efficacy

Self-care Self-Efficacy	**Mean**	**SD**
When I work remotely, I … 7. understand when technology usage is impacting my well-being, even if I am very focused on some work tasks.	4.16	0.67
8. take action if I realize that being "always on" is becoming too much.	3.98	0.72
9. use different coping strategies to deal effectively with periods of high workload.	4.16	0.71
Composite Mean	**4.10**	**0.601**

Table 5 indicates strong e-Work Self-Efficacy among teachers in terms of self-care. Statements 7 and 8 received the highest mean scores of 4.28 (SD = 0.67) and 4.28 (SD = 0.71), respectively. This suggests that teachers recognize technology's impact on their well-being when working remotely and employ coping strategies during high workload periods. Conversely, the lowest mean score, 3.98 (SD = 0.72), reveals that respondents take action less often when they feel overwhelmed by being "always on." The high composite mean score of 4.10 and the relatively low standard deviation of 0.60 indicate strong self-efficacy in self-care among teachers while working remotely.

This study emphasizes that individuals with high self-efficacy are more likely to recognize technology's negative effects on their well-being and take preventive measures against burnout. Consequently, those with high e-Work Self-Efficacy in self-care are more inclined to engage in behaviors promoting their well-being while working remotely.

Table 6

e-Work Self-Efficacy of the teachers in terms of remote social self-efficacy

Remote Social Self-Efficacy	**Mean**	**SD**
When I work remotely, I … 10. use a range of different digital communication tools to quickly build rapport with others.	4.10	0.70
11. utilize a range of social networking tools to maximize my work relationships.	4.10	0.72
12. build networks (including virtually) with diverse groups of people.	4.00	0.72
Composite Mean	**4.07**	**0.645**

Table 6 reveals teachers' high e-Work Self-Efficacy in remote social skills, with mean scores above 4.0 for all three statements, showcasing their positive attitude toward building networks while working remotely. Specifically, statement 10 scored 4.10, indicating comfort in using digital tools for quick rapport, while statement 11 also scored 4.10, showing proficiency in using social networking tools for work relationships. Statement 12, with a mean score of 4.00, suggests the ability to create diverse networks in remote settings. The high composite mean score

of 4.07 and a relatively low standard deviation of 0.645 underscore teachers' strong self-efficacy in remote social connections.

These findings align with Wang and Chu's (2023) study, demonstrating teachers' high self-efficacy in using digital technology for teaching and learning, as well as their capacity to establish and sustain social connections through various digital communication tools. These results affirm the importance of teachers' positive attitudes toward building remote relationships and networks for their professional growth and well-being.

Table 7

e-Work Self-Efficacy of the teachers in terms of remote emotional self-efficacy

Remote Emotional Self-Efficacy	**Mean**	**SD**
13. When I work remotely, I … 14. avoid feeling anxious if I receive work notifications outside working hours.	3.88	0.82
15. manage my working hours as I prefer, without feeling guilty for not being online when my other colleagues are.	3.90	0.80
16. do not worry that my colleagues will doubt If I am actually working.	4.02	0.82
Composite Mean	**3.93**	**0.676**

The data suggests that teachers have moderate e-Work Self-Efficacy for remote emotional skills, indicating a generally positive attitude toward handling emotions while working remotely. However, there are concerns about work notifications outside of working hours and managing schedules, as indicated by slightly lower mean scores for certain statements. The composite mean score of 3.93 and a standard deviation of 0.68 indicate room for improvement in managing work-related stress and maintaining work-life balance.

These findings align with previous research, highlighting teachers' positive outlook on emotional self-efficacy while working remotely but also underlining the need for additional support and training to enhance their ability to handle work-related stress and balance work and personal life effectively.

Table 8

Mean and Standard Deviation on the level of e-Work Self-Efficacy of the respondents in terms of e-skills, trust-building skills, self-care skills, remote social skills, and remote emotional skill

Category	**n**	**Mean**	**SD**
e-Wok Self-Efficacy (SE)	**244**	**4.08**	**.570**
a) e-Skills SE		4.10	.677
b) Trust-building SE		4.20	.641
c) Self-care SE		4.10	.601
d) Remote social SE		4.07	.645
e) Remote emotional SE		3.93	.676

Table 8 shows that respondents generally have a moderate level of e-Work Self-Efficacy. Trust-Building Self-Efficacy scored highest at a mean of 4.20 (SD = .641), while Remote Emotional Self-Efficacy scored lowest at a mean of 3.93 (SD = .676). Subcategories averaged

around 4, indicating a moderate level of self-efficacy. The standard deviation values are less than 1, indicating relatively consistent scores. The overall mean of 4.08 (SD = .570) suggests respondents have moderate e-Work Self-Efficacy. This represents the average self-efficacy level among respondents, with higher scores indicating higher self-efficacy. The standard deviation of 0.570 implies scores were relatively close to the mean, indicating consistency.

In summary, respondents displayed moderate e-Work Self-Efficacy overall, though individual variations may exist, with some scoring above or below the mean.

Table 9

Digital competence of educators in terms of professional engagement

Professional Engagement	**Mean**	**SD**
As a teacher … 1. I systematically use different digital channels to enhance communication with students, parents, and colleagues: e.g., emails, blogs, the school's website, and Apps.	3.99	0.80
2. I use digital technologies to work together with colleagues inside and outside my educational organization.	4.14	0.74
3. I actively develop my digital teaching skills.	4.07	0.77
4. I participate in online training opportunities, e.g., online courses, MOOCs, and webinars.	4.02	0.77
Composite Mean	**4.05**	**0.670**

In Table 9, teachers exhibit strong digital competence in professional engagement, as indicated by mean scores above 3.99 (SD = 0.80) for all relevant statements. The highest score, 4.14 (SD = 0.74), suggests a high level of comfort with digital collaboration. Overall, the composite mean score of 4.05 (SD = 0.670) reflects teachers' strong digital competence. While there is some variability in responses, teachers generally express enthusiasm for enhancing their digital teaching skills and engaging in online training.

These findings emphasize the importance of continuous support and training to sustain and improve educators' digital competence. Educational institutions should recognize teachers' eagerness to enhance their digital skills and provide the necessary resources and opportunities to empower them in the digital era of education.

Table 10

Digital competence of educators in terms of digital resources

Digital Resources	**Mean**	**SD**
As a teacher … 1. I use different internet sites and search strategies to find and select a range of different digital resources.	4.11	0.82
2. I create my own digital resources and modify existing ones to adapt them to my needs.	3.70	0.91
3. I effectively protect sensitive content, e.g., exams, students' grades, and personal data.	4.37	0.72
Composite Mean	**4.06**	**0.690**

In Table 10, teachers demonstrate strong digital competence in finding and safeguarding digital resources, with mean scores above 4, indicating a high level of proficiency. However, their ability to create and modify digital resources is slightly lower, at 3.70, suggesting a moderate level of competence. Additional training or support may be beneficial in this area. The composite mean score of 4.06 reflects good overall digital competence in terms of digital resources, with a consistent proficiency level (SD = 0.69) across the assessed aspects.

These findings align with previous research by Göktaş, Yıldırım, and Yıldırım (2016), highlighting teachers' positive attitudes toward digital technologies in their professional practices. Teachers actively engage in online courses and collaborate to enhance their digital competencies, emphasizing the importance of digital skills for professional development and their willingness to invest in skill improvement.

Table 11

Digital competence of educators in terms of teaching and learning

Teaching and Learning	**Mean**	**SD**
As a teacher … 4. I carefully consider how, when, and why to use digital technologies in class to ensure that they are used with added value.	4.17	0.80
5. I monitor my students' activities and interactions in the collaborative online environments we use.	4.09	0.78
6. When my students work in groups or teams, they use digital technologies to acquire and document evidence.	4.10	0.78
7. I use digital technologies to allow students to plan, document, and monitor their learning themselves, e.g., quizzes for self-assessment, e-Portfolios for documentation and showcasing, and online diaries/blogs for reflection.	3.88	0.85
Composite Mean	**4.06**	**0.692**

Table 11 shows respondents' strong digital competence in using technology for teaching and learning, with mean scores above 4 across all assessed aspects. The highest mean score of 4.17 (SD = 0.80) indicates careful consideration of technology's purpose in the classroom, monitoring student activities, and supporting group work. However, using technology to facilitate students' self-directed learning scores slightly lower at 3.88 (SD = 0.85), suggesting a moderate proficiency. Additional training or support may be beneficial in this area. The composite mean score of 4.06 (SD = 0.692) reflects good overall digital competence in teaching and learning with technology, with consistent proficiency levels across assessed aspects.

These findings align with Jansen and Schuwer's (2015) research, confirming that teachers are proficient in using digital technologies for teaching and learning purposes. They excel in communication, resource creation, and collaborative learning support. However, further assistance or training may be needed to enhance self-directed learning promotion and the effective use of learning analytics in teaching practices.

Table 12

Digital competence of educators in terms of assessment of learning

Assessment of Learning	**Mean**	**SD**
As a teacher … 8. I use digital assessment formats to monitor student progress.	3.93	0.87
9. I analyze all data available to me to timely identify students who need additional support. *Data includes: students' engagement, performance, grades, attendance; activities; and social interactions in (online) environments; "Students who need additional support" are students who are at risk of dropping out or underperforming; students who have learning disorders or specific learning needs, students who lack transversal skills, e.g., social, verbal or study skills.*	4.02	0.78
Composite Mean	**3.98**	**0.759**

Table 12 highlights the respondents' strong digital competence in assessing student learning through digital technologies. Both aspects scored above 3.9, indicating high proficiency. The highest mean score of 4.02 (SD = 0.78) showcases their ability to analyze comprehensive data, while the lowest mean score of 3.93 (SD = 0.87) signifies their proficiency in using digital assessment formats. The composite mean score of 3.98 confirms their overall good digital competence in this area, with consistent proficiency (SD = 0.76).

These findings emphasize the importance of the respondents' digital competence in effective student assessment within the digital landscape. It emphasizes their capacity to utilize digital tools for data gathering, analysis, progress monitoring, and promoting student engagement and interaction.

Table 13

Digital competence of educators in terms of empowering learners

Empowering Learners	**Mean**	**SD**
As a teacher … 10. When I create digital assignments for students, I consider and address potential digital problems, e.g., equal access to digital devices and resources, interoperability and conversion problems, and lack of digital skills.	3.77	0.83
11. I use digital technologies to offer students personalized learning opportunities, e.g., *I give different students different digital tasks to address individual learning needs, preferences, and interests.*	3.75	0.87
12. I use digital technologies for students to actively participate in class.	3.89	0.83
Composite Mean	**3.80**	**0.794**

Table 13 indicates respondents' moderate digital competence in empowering learners with technology, with mean scores above 3.75 for all aspects. The highest mean score, 3.89 (SD = 0.83),

demonstrates active student participation using digital tools, while the lowest, 3.75 (SD = 0.87), suggests room for improvement in personalized learning opportunities. The composite mean score of 3.80 suggests a moderate overall digital competence in empowering learners, with some proficiency variation (SD = 0.79) across aspects. Additional training or support may enhance competence in this area.

In summary, teachers effectively promote active student participation with digital technologies, but further development is needed to offer more personalized learning opportunities.

Table 14

Digital competence of educators in terms of facilitating learner's digital competence

Facilitating Learner's Digital Competence	**Mean**	**SD**
As a teacher … 13. I teach students how to assess the reliability of information and to identify misinformation and bias.	3.93	0.82
14. I set up assignments which require students to use digital means to communicate and collaborate with each other or with an outside audience.	3.79	0.84
15. I set up assignments that require students to create digital content, e.g., videos, audio, photos, digital presentations, blogs, and wikis.	3.80	0.88
16. I teach students how to behave safely and responsibly online.	4.23	0.81
17. I encourage students to use digital technologies creatively to solve concrete problems, e.*g., to overcome obstacles or challenges emerging in the learning process.*	3.95	0.87
Composite Mean	**3.94**	**0.738**

Table 14 shows high digital competence among respondents in fostering learners' digital skills. The highest mean score (4.23, SD = 0.81) indicates effective teaching of online safety. However, the lowest mean score (3.79, SD = 0.84) suggests a need for improvement in assignments promoting digital communication and collaboration. The composite mean score of 3.94 (SD = 0.738) reflects effective facilitation of learners' digital competence. It's important to note that this data relies on self-reporting by teachers and may not fully represent classroom practices. Unmeasured aspects of digital competence may exist.

These findings highlight the importance of ongoing professional development and assessment strategies to address areas like digital collaboration. Additionally, verifying self-reported data through classroom observations can provide a more accurate understanding of teaching practices.

Table 15

Mean and Standard Deviation on the level of digital competence of the respondents in terms of professional engagement, digital resources, teaching and learning, assessment of learning, empowering learners, and facilitating learners' digital competence

Category	n	Mean	Std. Deviation
Digital Competence	244	3.99	.658
a) Professional Engagement		4.05	.670
b) Digital Resources		4.06	.690
c) Teaching and Learning		4.06	.692
d) Assessment of Learning		3.98	.760
e) Empowering Learning		3.80	.794
f) Facilitating Learners' Digital Competence		3.94	.738

As shown in Table 15 revealed that the digital competence of the respondents obtained the two highest mean scores of 4.06 (SD = .690) in Digital Resources and 4.06 (SD = .692) in Teaching and Learning, while the lowest mean score of 3.80 (SD = .794) in Empowering Learning. The means of the subcategories are around 4, which suggests that the respondents have a moderate level of digital competence. The standard deviation values are less than 1, which implies that the scores are relatively consistent or close to the mean.

The findings shed light on the current state of digital competence among respondents, indicating both strengths and areas for improvement. These insights can guide educational institutions, policymakers, and educators in making informed decisions to enhance digital competence and integrate technology effectively in educational settings.

Table 16

Work engagement of the teachers in terms of vigor

Vigor	**Mean**	**SD**
As a faculty member …		
1. At my work, I feel bursting with energy.	4.40	1.13
2. At my job, I feel strong and vigorous.	4.75	0.96
3. When I get up in the morning, I feel like going to work.	4.77	1.07
4. I can continue working for very long periods of time.	4.61	1.05
5. At my job, I am very resilient mentally.	4.85	0.99
6. At my work, I always persevere, even when things do not go well.	4.83	0.97
Composite Mean	**4.70**	**0.857**

Table 16 shows that surveyed faculty members are highly engaged at work. They report feeling energized (Mean = 4.40, SD = 1.13), strong (Mean = 4.75, SD = 0.96), motivated (Mean = 4.77, SD = 1.07), capable of extended work (Mean = 4.61, SD = 1.05), mentally resilient (Mean = 4.85, SD = 0.99), and persistent (Mean = 4.83, SD = 0.97). The composite mean of 4.70 suggests

high work engagement in terms of vigor. These findings indicate teachers' strong work engagement with high levels of energy, motivation, and perseverance. Research suggests that such high work engagement is linked to improved job performance, job satisfaction, and overall well-being.

A study by Bakker and Demerouti (2008) supports these findings, highlighting that work engagement, characterized by vigor, positively relates to job satisfaction, organizational commitment, and task performance. It also suggests that enhancing work engagement can be achieved through job resources like autonomy, social support, and feedback.

Table 17

Work engagement of the teachers in terms of dedication

Dedication	**Mean**	**SD**
As a faculty member … 7. I find the work that I do full of meaning and purpose.	5.02	0.98
8. I am enthusiastic about my job.	5.10	0.96
9. My job inspires me.	5.02	1.04
10. I am proud of the work that I do.	5.23	0.96
11. To me, my job is challenging.	5.20	0.99
Composite Mean	**5.12**	**0.885**

In Table 17, faculty members consistently report high levels of work engagement. They find their work meaningful (Mean = 5.02, SD = 0.98), are enthusiastic (Mean = 5.10, SD = 0.96), inspired (Mean = 5.02, SD = 1.04), proud (Mean = 5.23, SD = 0.96), and consider their job challenging (Mean = 5.20, SD = 0.99). The composite mean for dedication is 5.12, with a standard deviation of 0.88, signifying high work engagement.

These results indicate that teachers are deeply dedicated and passionate about their work, finding it meaningful and fulfilling. This is a positive finding, as research suggests that high dedication levels correlate with improved job satisfaction, stronger commitment, and reduced turnover.

Table 18

Work engagement of the teachers in terms of dedication

Absorption	**Mean**	**SD**
As a faculty member … 12. Time flies when I'm working.	5.02	1.05
13. When I am working, I forget everything else around me.	4.47	1.28
14. I feel happy when I am working intensely.	4.83	1.04
15. I am immersed in my work.	4.78	0.97
16. I get carried away when I'm working.	4.54	1.12
17. It is difficult to detach myself from my job.	4.50	1.15
Composite Mean	**4.69**	**0.916**

Table 18 shows that, on average, faculty members experience intense work engagement. They feel time flies when working, find happiness in intense work, become immersed in their tasks, and sometimes get carried away. They also find it challenging to detach from their job. The composite mean for absorption is 4.69, indicating moderate work engagement in this aspect. However, for item 13, "When I am working, I forget everything else around me," the mean score is 4.47, with a relatively high standard deviation, suggesting some variability in responses. This indicates that while teachers are moderately engaged in absorption, there is some variability in how detached they feel from their jobs.

These findings align with Chen et al.'s (2020) research, indicating that teachers with higher levels of passion tend to experience job absorption, as seen in statements like time flies when I'm working" and "I get carried away when I'm working." This absorption is positively linked to job satisfaction, commitment to the profession, and job performance, emphasizing the importance of fostering passion and job absorption among teachers.

Table 19

Mean and Standard Deviation on the level of work engagement of the respondents in terms of vigor, dedication, and absorption

Category	**n**	**Mean**	**SD**
Work Engagement	244	4.82	.802
a) Vigor		4.70	.857
b) Dedication		5.12	.885
c) Absorption		4.69	.916

Table 19 shows respondents' work engagement, with the highest mean score in Dedication (Mean = 5.12, SD = .885) and the lowest in Absorption (Mean = 4.69, SD = .916). This suggests high dedication and moderate vigor and absorption. The standard deviation values are less than 1, indicating consistent scores.

The study also reveals that personal resources like resilience, self-efficacy, and optimism positively influence work engagement, while factors like workload and support from colleagues and administrators negatively impact it. These results emphasize the significance of the findings on teachers' work engagement and the role of personal and contextual factors in shaping their engagement levels.

Table 20

Test of the significant relationship between e-Work Self-Efficacy and work engagement of the respondents

e-Work Self-Efficacy	**Work Engagement**		
	a) Vigor	b) Dedication	c) Absorption
	r-value	r-value	r-value
a) e-Skills	.531**	.428**	.340**
b) Trust-building skills	.438**	.417**	.313**
c) Self-care skills	.457**	.433**	.346**
d) Remote social skills	.395**	.377**	.336**
e) Remote emotional skill	.435**	.336**	.344**

Note: **Significant at p-value < 0.01

Table 20 shows the correlation coefficient (r-value) and p-value for each combination of e-Work Self-Efficacy and work engagement. The r-value ranges from .313 to .531, and the p-value is less than .01 for all the combinations of e-Work Self-Efficacy and work engagement which indicates a strong positive correlation between e-Work Self-Efficacy and work engagement. The p-value less than .01 also suggests that the correlation between e-Work Self-Efficacy and work engagement is statistically significant; hence, the hypothesis is ***rejected***.

Kim and Kankanhalli's (2019) study investigated e-leadership, e-self-efficacy, and virtual team communication's impact on virtual team performance. Their results highlighted a significant positive correlation between self-efficacy and work engagement. Furthermore, e-self-efficacy positively influenced work engagement, which, in turn, improved virtual team performance. These findings underscore the importance of e-self-efficacy and work engagement in enhancing virtual team performance.

Table 21

Test of the significant relationship between digital competence and work engagement of the respondents

Digital Competence	**Work Engagement**		
	a) Vigor	b) Dedication	c) Absorption
	r-value	r-value	r-value
a) Professional Engagement	.442**	.479**	.388**
b) Digital Resources	.469**	.467**	.340**
c) Teaching and Learning	.484**	.487**	.439**
d) Assessment of Learning	.454**	.422**	.397**
e) Empowering Learning	.424**	.384**	.418**
f) Facilitating Learners' Digital Competence	.452**	.404**	.440**

Note: **Significant at p-value < 0.01

As shown in Table 21, the correlation coefficient (r-value) and p-value for each combination of digital competence and work engagement indicated that the r-value ranges from .340 to .484, and the p-value is less than .01 for all the combinations of digital competence and work engagement which indicates a strong positive correlation between digital competence and work engagement. The p-value less than .01 also suggests that the correlation between digital competence and work engagement is statistically significant; hence, the hypothesis is ***rejected***.

The findings affirm Rokenes and Krumsvik's (2014) study, which revealed a significant and positive correlation between digital competence and job satisfaction among teachers. Higher digital competence is associated with higher job satisfaction. While the study didn't directly measure work engagement, it suggests that digital competence plays a crucial role in enhancing job satisfaction, potentially leading to increased work engagement.

Table 22

Moderation Analysis of Profile on the relationship between e-Work Self-Efficacy and work engagement of the respondents

Profile	**B**	**t**
Age	-0.216	-0.288 *
Length of Service	-0.239	-2.803 **
Educational Attainment	-0.005	-0.067
Academic Rank	0.207	3.833 **

Note: **Significant at p-value < 0.01. *Significant at p-value < 0.05

Presented in Table 22 is the result of the Hayes Process conducted to assess the moderating role of profile on the relationship between e-Work Self-Efficacy and work engagement of the respondents. The results revealed a negative and significant moderating impact of Age (B = -0.216, t = -0.288, p-value < 0.05) and Length of Service (B = -0.239, t = -2.803, p-value < 0.01) and positive significant moderating impact of Academic Rank (B = 0.207, t = 3.833, p-value < 0.01).

The moderating role of profile Age, Length of Service, and Academic Rank significantly moderate the relationship between e-Work Self-Efficacy and work engagement of the respondents. Since educational attainment does not significantly moderate, the hypothesis was partly upheld.

Zhang, Li, and Wang (2021) indicate that job demand moderates the relationship between work engagement and self-efficacy. This relationship is stronger when job demands are higher, suggesting that teachers may develop greater self-efficacy to handle job demands, ultimately leading to increased work engagement. These findings align with prior research emphasizing the role of demographic factors in moderating the self-efficacy-work engagement relationship, highlighting their importance in future investigations.

Table 23

Moderation analysis of profile on digital competence and work engagement of the respondents

Profile	**B**	**t**
Age	-0.238	-2.159 *
Length of Service	-0.269	-3.143 **
Educational Attainment	-0.037	-0.558
Academic Rank	0.214	3.849 **

Note: **Significant at p < 0.01. *Significant at p < 0.05

As shown in Table 23 is the result of the Hayes Process conducted to assess the moderating role of profile on the relationship between digital competence and work engagement of the respondents. The results revealed a negative and significant moderating impact of Age (B = -0.238, t = -2.159, p-value < 0.05) and Length of Service (B = -0.269, t = -3.143, p-value < 0.01) and positive significant moderating impact of Academic Rank (B = 0.214, t = 3.849, p-value < 0.01).

The moderating role of profile Age, Length of Service, and Academic Rank significantly moderate the relationship between digital competence and work engagement of the respondents. Since the educational attainment does not significantly moderate, the hypothesis was partly upheld.

The findings align with Xie, Ke, and Chen's (2019) research, showing that age and job tenure significantly moderate the link between technology acceptance and job performance. This suggests that older employees and those with longer job tenure tend to have a stronger positive relationship between technology acceptance and job performance. These results highlight how demographic factors can shape the relationship between technology acceptance and job performance, which may apply to how profile factors moderate the relationship between digital competence and work engagement.

Table 24

Multiple linear regression analysis

Model	Predictor	B	Adjusted R Square	F	df
1	(Constant)	2.266	0.272	91.855 **	1, 242
	Digital Competence	0.640			
2	(Constant)	1.729	0.315	56.889 **	2, 241
	Digital Competence	0.457			
	e-Work Self-Efficacy	0.309			
**Significant at p-value < 0.01. Dependent Variable: Work Engagement					

Presented in Table 24 is the result of Multiple Linear Regression (MLR) analysis conducted to determine which among the respondents' profiles, e-Work Self-Efficacy and digital competence significantly predict their work engagement. The result of MLR using the Step-wise method produced two (2) models where the first model identified the respondents' Digital Competence singly to predict their work engagement, while the second model identified the respondents' Digital Competence and e-Work Self-Efficacy in combination to predict their work engagement.

The first model found a significant regression equation [F (1. 242) = 91.855, p-value < 0.01], with an Adjusted R Square of 0.272. This model predicted the respondents' Work Engagement is equal to 2.266 + 0.640 (Digital Competence) where Digital Competence is coded or measured as "Very Low" to "Very High" level. Object of measurement increases 2.266 Work Engagement level for each 0.640 Digital Competence. Hence, Digital Competence was significant predictor of Work Engagement.

The second model found a significant regression equation [F (2.241) = 56.889, p-value < 0.01], with an Adjusted R Square of 0.315. This model predicted the respondents' Work Engagement is equal to 1.729 + 0.457 (Digital Competence) + 0.309 (e-Work Self-Efficacy), where Digital Competence and e-Work Self-Efficacy are coded or measured as "Very Low" to "Very High" level. Object of measurement increases 1.729 Work Engagement level for each 0.457 (Digital Competence) and for each 0.309 (e-Work Self-Efficacy). Hence, both Digital Competence and e-Work Self-Efficacy were significant predictors of Work Engagement.

The study implies that digital skills are a stronger predictor of job satisfaction and income than organizational commitment. The researchers suggested that this could be due to the fact that digital skills are more closely associated with task performance and output, which in turn contribute to job satisfaction and income. Conversely, organizational commitment may be influenced by other factors, such as job security and social support. These findings underscore the significance of digital skills and highlight the role of digital competence in predicting work-related outcomes such as job satisfaction and engagement.

5. Conclusions & recommendations

5.1. Conclusion

The study results indicate moderate to high levels of e-Work Self-Efficacy digital competence, and work engagement among respondents. The highest levels were observed in Trust-Building Self-Efficacy, Digital Resources, and Dedication, while the lowest levels were found in Remote Emotional Self-Efficacy, Professional Engagement, and Absorption. Standard deviation values below 1 suggest consistent or close-to-average scores.

The results of the correlation analyses showed that there is a strong positive correlation between e-Work Self-Efficacy and work engagement, as well as between digital competence and work engagement. These correlations were statistically significant, with p-values less than .01, indicating that the hypothesis was rejected.

Overall, the findings suggest that enhancing e-Work Self-Efficacy and digital competence may lead to increased work engagement, which could ultimately lead to better job performance and satisfaction in the context of remote work.

The results of moderation analyses revealed that the respondents' profile age, length of service, and academic rank significantly moderated the relationship between e-Work Self-Efficacy and work engagement. Hence, the hypothesis stating that the respondents' profile variables do not significantly moderate between e-Work Self-Efficacy and work engagement and also the hypothesis stating that the respondents' profile variables do not significantly moderate between digital competence and work engagement of the respondents were both partly upheld.

The result of regression analysis identified that digital competence singly predicted the work engagement of the respondents. Moreover, the regression further revealed that digital competence and e-Work Self-Efficacy in combination predict the Work Engagement of the respondents. Hence, the hypothesis stating that the respondents' profile, e-Work Self-Efficacy and digital competence do not significantly predict their work engagement was partly upheld.

5.2. Recommendations

In light of the findings and conclusions of the study, the recommendations are as follows:

1. The school administrators may conduct capacity-building programs to capacitate the teaching force to be adept in utilizing computer technology and information systems in teaching as well as to enhance their digital competence.

2. The school administrators may craft wellness programs that will enhance the work engagement of the teaching force.

3. Similar studies may be conducted in a larger population.

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