Exploring the Relationship Between Self-Efficacy, Digital Competence, and AI Dependence among Senior College Students in a Private University in Cebu, Philippines

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ABSTRACT

The rapid integration of artificial intelligence (AI) in higher education has introduced new learning opportunities while raising concerns about students' potential overreliance on AI tools. Although prior studies have examined self-efficacy and digital competence independently, limited research has explored their relationship with AI dependence among senior college students in private higher education institutions in developing contexts. This study addresses this gap by investigating the relationship between self-efficacy, digital competence, and AI dependence among senior college students in a private university in Cebu, Philippines, during the academic year 2024–2025. A total of 320 students from the College of Teacher Education participated in the study by responding to adapted survey instruments measuring self-efficacy, digital competence, and AI dependence. Descriptive statistics and Pearson Product Moment Correlation Coefficient (PPMCC) were employed to analyze the data. Results revealed that the respondents demonstrated high levels of self-efficacy and digital competence, indicating strong confidence in performing academic tasks and effective utilization of digital technologies. Furthermore, a significant positive relationship was found between self-efficacy and digital competence, suggesting that students with higher confidence tend to exhibit stronger digital skills. However, no significant relationship was observed between self-efficacy and AI dependence, indicating that the use of AI tools does not necessarily reduce students' perceived academic capability. These findings contribute to the growing discourse on AI in education and inform the development of a guidance and counseling enhancement plan to promote responsible AI use.

Keywords: Guidance and Counseling, Self-efficacy, Digital competence, AI Dependence

INTRODUCTION

In today's rapidly evolving higher education landscape, senior college students are at a critical stage of completing their academic programs and transitioning into the workforce. To succeed, they must translate academic knowledge into practical skills aligned with industry demands. As they prepare for their professional careers, key competencies such as self-efficacy, digital competence, and the responsible use of artificial intelligence (AI) have become increasingly important. Self-efficacy, defined as an individual's belief in their ability to perform tasks and achieve goals, plays a crucial role in academic success and career readiness.

According to Albert Bandura (1997), individuals with high self-efficacy demonstrate greater confidence, persistence, and resilience in challenging situations. In career development, students with strong self-efficacy are more proactive in exploring opportunities, developing relevant skills, and adapting to workplace demands. Moreover, self-efficacy contributes to career adaptability, which is essential in navigating the uncertainties of the modern labor market (Savickas & Porfeli, 2012).

In addition, digital competence has become a fundamental requirement in today's workforce, particularly in the context of rapid technological advancement and globalization. Digital competence refers to the ability to use digital technologies effectively, communicate in online environments, and critically evaluate digital information. The European Commission's DigComp framework highlights digital competence as a key lifelong learning skill (Vuorikari et al., 2022). Studies also indicate that students with strong digital skills demonstrate higher engagement and improved learning outcomes (López-Meneses et al., 2020). These competencies enable learners to adapt to emerging technologies and meet evolving workplace demands. The increasing integration of artificial intelligence (AI) across sectors has further transformed the skills required of graduates. AI technologies simulate human cognitive processes and enhance efficiency in problem-solving and decision-making. In education, AI supports personalized learning and improves student engagement (Holmes et al., 2019). However, excessive reliance on AI tools may hinder the development of critical thinking and independent learning skills. Therefore, responsible and ethical use of AI is essential for students to function effectively in AI-driven environments (UNESCO, 2021).

In the Philippine context, senior college students face challenges related to self-efficacy, digital competence, and AI use. Many students struggle with maintaining motivation and confidence, which can affect academic performance and readiness for employment. Additionally, limited access to advanced digital tools and resources may hinder the development of essential digital skills, particularly in resource-constrained settings. Concerns regarding overdependence on AI tools and limited awareness of ethical considerations further affect students' preparedness for the workforce. Moreover, the limited availability of guidance and counseling services in some institutions restricts students' access to career support and skill development opportunities. Without adequate guidance, students may encounter difficulties in making informed career decisions and maximizing opportunities for professional growth.

Similarly, senior college students in a private university in Cebu, Philippines also face challenges related to self-confidence, digital skills, and AI dependence, especially amidst rapid technological advancements. Significantly, personalized and targeted guidance programs and appropriate interventions can help strengthen these areas, ensuring students are better prepared for their future careers. Consequently, this study will explore the relationship between self-efficacy, digital competence, and AI dependence among senior college students in a private university in Cebu, Philippines, during the academic year 2024–2025. The findings will help in the development of an enhanced guidance and counseling program that will help improve their overall well-being and career readiness, making them a globally competent Filipino workforce.

METHODOLOGY

Research Design

This study employed a quantitative research approach using both descriptive and correlational methods. It aimed to assess the self-efficacy, digital competence, and AI dependence of senior college students in a private university in Cebu, Philippines, during the academic year 2024-2025. As highlighted by Taguchi (2018), Bloomfield and Fisher (2019), and Remler and Ryzin (2021), descriptive research allows for a more detailed observation of facts and valuable insights into people's experiences. Furthermore, correlational research design examines the relationships between variables without changing them (Ary et al., 2018; Seeram, 2019; Coe et al., 2021).

Respondents of the Study

The respondents of this study are the senior college students in a private university in Cebu, Philippines

specifically from the College of Teacher Education during the academic year 2024 - 2025. Using the universal sampling, a total of 320 respondents answered the survey questionnaires from the different programs. Among them are 30 students from Bachelor of Secondary Education major in English, 45 students from Bachelor of Secondary Education major in Filipino, 32 students from Bachelor of Secondary Education major in Mathematics, 28 students from Bachelor of Secondary Education major in Physical Science, 26 students from Bachelor of Secondary Education major in Social Studies, 106 students from Bachelor of Elementary Education, and finally 53 students from Bachelor of Physical Education.

Research Instrument

The researchers utilized a survey questionnaire to gather the information to help achieved the study's objectives. The first part was designed to gather information on the profile of the respondents as to their age and gender, persons whom they live with, number of siblings, and birth order. The second, third, and fourth part were adopted standardized instruments namely: Student Self-Efficacy (SSE) Scale with an internal consistency of $\alpha = 0.84$, Student's Digital Competence Scale (SDiCoS) with a validity of (>0.5) and all the values of Cronbach alpha demonstrated internal consistency, and Dependence on Artificial Intelligence (DAI) Scale with internal consistency (α and ω=87). The researchers sent a transmittal letter to the dean's office of the College of Teacher Education to ask approval to conduct the study. Once approved, the researchers made an arrangement of the different class schedules with the help of the dean's secretary and coordinated the respective subject instructors prior meeting the respondents to conduct data gathering.

On the scheduled date and time, the researchers first made a self-introduction and facilitated an orientation to discuss the purpose and procedures involved in the study, emphasizing data privacy and confidentiality. Next, the survey questionnaires were distributed, along with clear instructions on how to answer them. Respondents received assistance as needed while completing the survey. They were given sufficient time to finish all sections and submit their responses once completed. Finally, the researchers then reviewed the submitted questionnaires ensuring all parts are complete. The results of the completed survey questionnaires were organized, tallied, summarized, interpreted, and analyzed. Appropriate statistical tools were used in the treatment of data. Finally, based on the findings and conclusion, a guidance and counseling enhancement plan was recommended to address the needs of the senior college students.

After data collection, the data gathered underwent different statistical treatments with the aid of the statistician. To arrive at reliable results, the following statistical tools were used: Frequency Count was used to determine the number of characteristics in which the respondents fell in the same category particularly in the profile. Percentage was utilized to describe the proportion of the respondents who belong to the same category in relation to the total number of respondents specifically on their profile. Weighted Mean was used to describe numerically the level of self-efficacy in academic learning, digital competence and AI dependence of the respondents and its interpretation based on the descriptive rating. Finally, Pearson Product-Moment Correlation Coefficient (PPMCC) was used to determine the strength of the correlation between the level of self-efficacy and level of digital competence of the respondents. It also determined the strength of the correlation between the level of self-efficacy and level of dependence on artificial intelligence of the respondents.

Research Hypotheses

This study aimed to test two null hypotheses which was tested at 0.05 level of significance. Ho1: There is no significant relationship between the level of self-efficacy and level of digital competence of the respondents. Ho2: There is no significant relationship between the level of self-efficacy and level of dependence on artificial intelligence of the respondents.

Scope and Limitations

This study explores the relationship between self-efficacy, digital competence, and AI dependence of senior college students from the College of Teacher Education in a private university in Cebu, Philippines, during the academic year 2024–2025. The scope is limited to the identified respondents and variables; hence, the findings

cannot be generalized to all students within the university or to those from other higher education institutions. The study relies on self-reported data, which may be subject to self-report bias, including social desirability and inaccurate self-assessment. Furthermore, the cross-sectional research design limits the ability to establish causal relationships, as data were collected at a single point in time. Finally, the generalizability of the findings is constrained by the study's focus on a specific group within a single private institution. Differences in context, resources, and student characteristics across institutions may limit the broader applicability of the results. Therefore, findings should be interpreted within the context of the study.

RESULTS AND DISCUSSION

Profile of the Respondents

This section provides information about the profile of the respondents in terms of their age and gender, persons whom they live with, number of siblings, and birth order.

Age and Gender

Table 1 illustrates the age and gender distribution of the respondents. It shows that majority of them fall within the 20-22 age group, accounting for 67.50% of the total respondents, of which 54.38% are females and 13.13% are males. The second-largest group is the 23-25 age range, representing 30.31% which is composed of 22.50% females and 7.81% males. Lastly, respondents aged 26 and above make up only 2.19% with females representing 1.88% and males comprising 0.31%. Overall results also show that most of the respondents are females constituting 252 or 78.75%, while males account for only 68 or 21.25% out of the 320 respondents.

Table 1: Profile of the respondents in terms of age and gender

Age (in years)	**Female**		**Male**		**Total**	
	F	**%**	**F**	**%**	**F**	**%**
26 and above	6	1.88	1	0.31	7	2.19
23-25	72	22.50	25	7.81	97	30.31
20-22	174	54.38	42	13.13	216	67.50
Total	**252**	**78.75**	**68**	**21.25**	**320**	**100.00**

The data above reveals a significant gender disparity, with female respondents making up nearly four times the number of males. This trend may reflect the broader participation patterns seen in educational or social studies, where females are often more represented, particularly in certain age brackets such as 20-22 years. Young women tend to be more actively engaged in survey-based research, especially in areas related to education and social sciences, which may explain the high female participation in this study (Mabaso et al., 2021). Moreover, the age range of 20 to 22 years old, which typically corresponds to late adolescence and early adulthood, indicates that respondents are at a developmental stage characterized by increased autonomy, confidence, and familiarity with digital technologies, which may contribute to their levels of self-efficacy and digital skills.

Persons Whom they Live With

Table 2 explicitly presented the persons whom the respondents live with. It shows that majority of them or 59.06% (189 out of 320) are living with both parents, indicating that most of them have a traditional family setup. This is followed by 11.25% or 36 who live with a single parent. A smaller percentage live with their siblings or alone, both accounting for 7.81% or 25 respondents each. Other living arrangements include living with a guardian (5.31%), living with an uncle or aunt (3.75%), living with a partner (2.81%), and living with grandparents (2.19%).

Table 2: Profile of the respondents in terms of persons whom they live with

Persons whom they live with	**F**	**%**
Living with both parents	189	59.06
Living with siblings	25	7.81
Living with guardian	17	5.31
Living with grandparents	7	2.19
Living with a partner	9	2.81
Living with Uncle/Aunt	12	3.75
Living with single parent	36	11.25
Living alone	25	7.81
Total	**320**	**100.00**

This data suggests that the respondents generally have diverse living arrangements, but the majority remain in conventional family settings. This reflects the varying household dynamics among the respondents, with a strong representation of those living with both parents. This is really true especially in a close-knit family set-up such as the Philippines where children still live with their parents even if they're having their own families. This is probably attributed with the kind of affection, belongingness and emotional support one can get from one's own kin. Family structure significantly influences an individual's emotional and social development, particularly in educational environments (Krauss et al., 2020). And that those living with both parents may experience more emotional stability, contributing to better academic performance and social interaction.

On the other hand, respondents who live with a single parent or other guardians might face unique challenges, such as additional responsibilities or emotional strain, which could affect their academic and personal lives. Hence, understanding these living conditions is vital in tailoring interventions and support systems to accommodate students' diverse needs. Furthermore, the finding that most respondents live with both parents may imply the presence of a stable support system, which can positively influence students' academic confidence and access to digital resources. Family support may also play a role in fostering responsible use of technology, thereby contributing to their level of AI dependence.

Number of Siblings

Table 3 presents the distribution of respondents according to the number of siblings they have. The data indicates that the largest proportion of respondents or 40.00% (128 out of 320), come from families with 3 to 4 siblings, which represents the most common family size. This is followed by 23.44% or 75 respondents who shared having 1 to 2 siblings. Next, 18.44% or 59 of them come from families with 5 to 6 siblings. Only 12.50% or 40 are from larger families with 7 or more siblings, and finally, 5.63% or 18 out of 320 respondents reported having no siblings at all.

Table 3: Profile of the respondents in terms of number of siblings

Number of Siblings	**F**	**%**
7 and above	40	12.50
5-6	59	18.44
3-4	128	40.00
1-2	75	23.44
None	18	5.63
Total	**320**	**100.00**

The data reveals substantial variation in the number of siblings among the respondents, with a marked prevalence of mid-sized families having 3-4 siblings while also reflecting a considerable presence of both smaller and larger

family groups. These results might be attributed to one's economic or financial status which is one of the significant factors to consider in raising one's own family in Asia, particularly in the Philippines. In a global study of household sizes spanning 1970 to 2020, countries in regions such as Asia and Latin America frequently exhibit household sizes ranging from 3 to 5 members (Esteve et al., 2024). It is also noted that socio-economic factors, including urbanization, rising living costs, and evolving family planning practices, are contributing to the rise of smaller family sizes with 1 to 2 siblings. Undoubtedly, these trends reflect the impact of economic and social developments on family composition (Bratti et al., 2020. Moreover, this may suggest fewer resource-sharing constraints, potentially allowing greater access to digital tools and learning opportunities.

Birth Order

The data in Table 4 demonstrates the distribution of respondents based on birth order. It reveals that majority of them consist of those who are the youngest child, accounting for 28.75%, or 92 out of 320. This is followed by the eldest children with 26.25% or 84, middle children with 23.44% or 75, and second-born children with 15.94% or 51. Lastly, the smallest group is made up of only children, representing 5.63% or 18 out of 320 respondents.

Table 4: Profile of the respondents in terms of birth order

Birth Order	**F**	**%**
Only Child	18	5.63
Eldest	84	26.25
Second	51	15.94
Middle	75	23.44
Youngest	92	28.75
Total	**320**	**100.00**

The findings show that the youngest and eldest children are more represented, while only children are the least common. These results could be attributed to the varying age of the respondents as reflected in Table 1, where most of them might be the youngest or the eldest children in their family. Moreover, this varied distribution of birth orders reflects diverse family backgrounds which could offer insights into how family dynamics may influence the respondents' social, psychological, and developmental factors. Youngest or last-born children often exhibited distinct psychological and emotional qualities, reflecting the highest score in terms of resilience and prosocial behaviors, strong problem-solving, and self-regulation skills (Fukuya et al., 2021). These traits position them above eldest or firstborns, middle-borns, and only children. This elevated social competence likely contributes to the high participation rate of the youngest children among the respondents.

In contrast, eldest children tend to demonstrate greater responsibility and a drive for achievement, traits that correlate also with their relatively high representation in this study. On the other hand, middle children, who typically assume adaptable roles within the family, develop unique social characteristics, while only children, though fewest in number, often show different developmental patterns likely due to the absence of sibling interaction. Moreover, these findings suggest that birth order shapes personality, educational, and health outcomes noting that eldest or firstborns often benefit from increased parental attention, whereas youngest children may experience more relaxed parenting, which can further shape one's development (Havari & Savegnago, 2022).

Moreover, the presence of respondents who are either eldest or youngest may have implications for their learning behaviors and technology use. Eldest children are often associated with higher responsibility and leadership tendencies, which may contribute to their self-efficacy and independent learning skills. On the other hand, youngest children may benefit from guidance and exposure to technology through older siblings, which can

enhance their digital competence. These dynamics may also influence their reliance on artificial intelligence, as students draw from both independent skills and external support systems.

Level of Self-Efficacy of the Respondents

Table 5 illustrates the varying levels of the respondent's self-efficacy in academic learning. It shows that the highest level, categorized as very high, is evident in a statement like "I am convinced that, as time goes by, I will continue to become more and more capable of learning the content of the course" with a weighted mean (WM) of 4.41. On the other hand, the statement "I am confident in my ability to learn, even if I am having a bad day" got the lowest level with a WM of 3.73 but still falls within the high category. Overall, the aggregate weighted mean of 4.11 and aggregate standard deviation of 0.68 indicates a strong belief in their capabilities.

Table 5: Level of Self-Efficacy of the Respondents in Academic Learning

S/N	WM	SD	Verbal Description
I am convinced that I am able to successfully learn all relevant subject content even if it is difficult.	3.91	0.67	High
I know that I can maintain a positive attitude toward this course even when tensions arise.	4.11	0.67	High
When I try really hard, I am able to learn even the most difficult content.	4.18	0.71	High
I am convinced that, as time goes by, I will continue to become more and more capable of learning the content of this course.	4.41	0.60	Very High
Even if I get distracted in class, I am confident that I can continue to learn well.	3.82	0.75	High
I am confident in my ability to learn, even if I am having a bad day.	3.73	0.78	High
If I try hard enough, I can obtain the academic goals I desire.	4.28	0.68	Very High
I am convinced that I can develop creative ways to cope with the stress that may occur while taking this course.	4.10	0.66	High
I know that I can stay motivated to participate in the course.	4.15	0.67	High
I know that I can finish the assigned projects and earn the grade I want, even when others think I can't.	4.37	0.63	Very High
Aggregate Weighted Mean	**4.11**		**High**
Aggregate Standard Deviation		**0.68**	
Legend: 4.21-5.00-Very High; 3.41-4.20-High; 2.61-3.40-Moderate; 1.81-2.60-Low; 1.00-1.80-Very Low			

This finding indicates that majority of the respondents believe in their capacity to adapt, grow, and become more proficient in mastering course content. Hence, they believe that they are capable of lifelong learning and they have a positive outlook on their ability to improve over time. This optimism plays a significant role in fostering continuous motivation, persistence, and a growth-oriented mindset which are crucial for long-term academic and professional achievement. Growth mindset emphasizes that individuals who believe in their capacity for improvement are more likely to face academic challenges head-on and persevere through difficulties (Limeri et al., 2020). On the other hand, the results also reveal that some learners may experience low level of self-confidence during challenging times, such as after a bad day. Others can generally maintain a hopeful perspective, illustrating the balance between academic pressure and self-efficacy. Additionally, those with stronger self-efficacy are better able to manage stress and continue progressing in life (Kristensen et al., 2023).

Level of Digital Competence of the Respondents

Search, Find, Access

Table 6 shows the level of digital competence of the respondents in terms of search, find, and access. The results display that majority of the respondents got a very high level of digital competence, particularly in watching,

reading, listening and viewing content across multiple formats on various smart devices, with a WM of 4.49. Also, they are proficient in searching, and finding information across various search engines and databases with a WM of 4.43. In contrast, their ability to navigate in the real world using advanced navigator tools, though still high, is slightly lower with a WM of 4.07. Nevertheless, the overall aggregate weighted mean of 4.28 and aggregate standard deviation of 0.69 suggest consistent and very high digital competence among the respondents with minimal variability in their abilities.

Table 6: Level of digital competence of the respondents in terms of search, find, access

S/N	WM	SD	Verbal Description
I can search and find a specific object or similar objects using various search engines (e.g., Google, Yahoo, Bing) and databases, using appropriate keywords and advanced criteria and filters.	4.43	0.63	Very High
I can search and find a specific person on various social networks using various techniques and filters (e.g., various formats of name, photo, email address, school, company, etc.).	4.18	0.74	High
I can search and find groups on a specific topic (e.g., hobby, profession, artist, science, historical event, travel destination) on various social media.	4.21	0.71	Very High
I can navigate in the real-world using the advanced features of a navigator.	4.07	0.75	High
I can watch (read, listen, view) content in various formats on various smart devices.	4.49	0.60	Very High
Aggregate Weighted Mean	**4.28**		**Very High**
Aggregate Standard Deviation		**0.69**	
Legend: 4.21-5.00-Very High; 3.41-4.20-High; 2.61-3.40-Moderate; 1.81-2.60-Low; 1.00-1.80-Very Low			

The results of this study reveal that majority of the respondents are well-versed when it comes to using smart devices and accessing online information using various search engines, although they still need to explore more in using advanced navigator tools. These skills and competencies are crucial in today's digital and fast-paced world, where almost all information is accessible online. Communication channels are made faster and real-time and most of the school and work deliverables can easily be done with the aid of technologies. Indeed, there is an increasing reliance on using digital tools to access information, especially as users become more skilled in using various devices for content consumption (Vuorikari et al., 2022). Smart devices, particularly smartphones, have become essential worldwide, serving as the primary platform for interaction and Internet of Things (IoT) management, which enhances quality of life (Rock et al., 2024).

However, the respondents' navigational skills are comparatively lower, highlighting that university students' digital competencies may range from high in some areas to moderate in others, as these can be influenced by factors such as grade level and academic performance (Koyuncuoglu, 2022). Additionally, limited access to technology, scarcity of support networks, and a lack of experience cause significant barriers to the development of digital skills (Tzafilkou et al., 2022). These challenges lower the perceived value of the internet for young people and decrease digital competence in some areas such as using advanced navigator tools as reflected in the above results.

Develop, Apply, Modify

Table 7 reflects the level of digital competence of the respondents in terms of develop, apply, and modify. The results reveal that most of the respondents exhibited very high levels of competence in two key areas: creating

events and setting notifications using digital calendars with a WM of 4.28 and producing documents with text, diagrams, tables, reports, and advanced formatting with a WM of 4.24. Conversely, the area with the lowest level of competence, although still rated high, is the application of Creative Commons licenses to self-created content or software with a WM of 3.44. Overall, the respondents exhibited a high level of digital competence, as reflected by an aggregate weighted mean of 3.90 and aggregate standard deviation of 0.85. This entails a significant strength in some areas while highlighting opportunities for improvement in others.

Table 7: Level of digital competence of the respondents in terms of develop, apply, modify

S/N	WM	SD	Verbal Description
I can create an event and set notifications using a digital calendar (e.g., Google Calendar, Apple Calendar, Microsoft Outlook Calendar).	4.28	0.78	Very High
I can creatively design and/or develop a website using various digital tools (e.g., Wix, Wordpress)	3.78	0.97	High
I can create a document with text, diagrams, tables, reports, and advanced formatting.	4.24	0.73	Very High
I can apply Creative Commons licenses to content or software that I have created.	3.44	0.88	High
I can apply statistical techniques using appropriate software (e.g., SPSS, R, MS Excel, Google Sheets) to make forecasting or predictions	3.70	0.90	High
I can convert content from one format to another format	3.99	0.85	High
Aggregate Weighted Mean	**3.90**		**High**
Aggregate Standard Deviation		**0.85**	

These findings suggest a strong proficiency in managing digital calendars and handling complex document creation. Evidently, these tools are widely used nowadays not only at work but also in schools in doing reports and scheduling upcoming activities or appointments. No wonder majority of the respondents are highly competent in this area even though they are not quite familiar or skilled in creating commons licenses. Although they might have some understanding of this skill, it is less developed compared to their abilities in other digital tasks. Furthermore, these results stated that digital calendars are essential for organizing and scheduling because they display availability and reduce the time spent in coordination (Busboom & Boulus-Rødje, 2023).

Likewise, reminder systems like those on virtual assistants such as Apple, Google and Amazon help users track tasks and deadlines, often replacing to-do lists, of which the respondents found highly effective for task management (Morrison et al., 2024). This enables them to stay on top of tasks in a fast-paced digital world. On the other hand, many universities often overlook security and content creation in digital skills training (Saltos-Rivas et al., 2022). Undeniably, students often lack training in copyright literacy, which includes how to apply Creative Commons (CC) licenses correctly (Blomgren, 2023). This gap in digital competence likely explains and supports the findings on why respondents scored lower on skills related to copyright, particularly with applying CC licenses to self-created content or software.

Communicate, Collaborate, Share

Table 8 highlights the respondents' digital competence in terms of communication, collaboration, and sharing. It displays that majority of the respondents demonstrate a strong ability to collaborate using various smart devices, platforms, and digital tools with a WM of 4.49, reflecting a very high level of proficiency. However, when it comes to sharing self-developed software or apps on social media, their competence is slightly lower with a WM of 3.80. Overall, respondents assess their digital abilities positively with an aggregate weighted mean of 4.08 and aggregate standard deviation of 0.83, which indicates a high level of digital competence, especially in collaboration, though there is still room for growth in content sharing.

Table 8: Level of digital competence of the respondents in terms of communicate, collaborate, share

S/N	WM	SD	Verbal Description
I can collaborate with people using various smart devices, platforms, and digital tools.	4.49	0.62	Very High
I can teach an e-course or an e-seminar, give a lecture or make a presentation using various digital tools.	3.97	0.86	High
I can upload and share software or app that I have developed on various social media.	3.80	1.02	High
Aggregate Weighted Mean	**4.08**		**High**
Aggregate Standard Deviation		**0.83**	

The results reveal the respondent's comfort and adaptability in using modern technologies such as smartphones and other digital platforms which clearly play an increasingly critical role in today's educational settings and widely use as medium of communication. On the contrary, some of the respondents shared having a high level of competence when it comes to uploading and sharing personally developed software on social media of which undeniably, only a few knows how to create or develop a software or online apps.

These findings emphasize the importance of digital skills like communication, collaboration, and sharing in today's education (Tzafilkou et al., 2022). Their research showed that both university students and faculty are highly proficient in these areas, reflecting how digital tools are becoming essential in learning and teaching. While educators and students are comfortable using basic digital tools, they often face challenges with more advanced tasks, such as sharing self-created content on social media, which requires specialized skills (Moreira-Choez et al., 2024). Overall, the results indicate that although respondents are well-prepared to use various digital tasks, improving their abilities in content creation and sharing could further enhance their digital competence. Furthermore, this will effectively equip them for the evolving demands of education and the modern workforce.

Store, Manage, Delete

The findings in Table 9 suggest that most of the respondents have a very high level of digital competence in terms of storing, managing, and deleting digital content. It reveals that majority of them can easily copy and save the screenshot from various smart devices with a WM of 4.57. Also, they are both proficient in taking photos or videos and saving them in different formats, like mp4, etc., using various smart devices and digital recording tools, and downloading and saving content in appropriate folders with a WM of 4.48, respectively. Additionally, they are skilled in managing their connections on social media platforms, such as removing unnecessary contacts with a WM of 4.40. Finally, they also demonstrate good organizational skills when it comes to organizing files in the computer with a WM of 4.24. Furthermore, the overall aggregate weighted mean of 4.43 with an aggregate standard deviation of 0.69 confirms that indeed the respondents have a very high level of digital competence across these tasks.

Table 9: Level of digital competence of the respondents in terms of store, manage, delete

S/N	WM	SD	Verbal Description
I can take a photo or video and save it in various formats (mp4, wmv, avi, qt, jpg, etc.) using various smart devices and digital recording tools.	4.48	0.71	Very High
I can download content and save it directly to the relevant folder.	4.48	0.62	Very High
I can copy and save the screenshot from various smart devices.	4.57	0.58	Very High
I can delete some of my connections/friends in various social networks.	4.40	0.74	Very High
I can organize the files on my computer into a hierarchical folder structure.	4.24	0.80	Very High
Aggregate Weighted Mean	**4.43**		**Very High**
Aggregate Standard Deviation		**0.69**	

General results suggest that the respondents are well-equipped to handle various digital tasks, especially when it comes to storing, managing, and deleting content on various smart devices. These findings are consistent with the widespread use of digital technologies particularly smart devices and computers in areas of communication, educational landscape and work settings. Conversely, these results support that the use of smart digital technologies in education has rapidly increased, opening new ways to improve teaching and learning (Mhlongo et al., 2023). Although these technologies started out in advanced private and public schools, they have recently reached even the most under-resourced schools globally. Many of these schools and educators now rely on smart technology to support students' learning. As a result, students need to be prepared to use smart devices to enhance their understanding, focus, literacy, and overall learning experience.

Evaluate

Table 10 shows that majority of the respondents demonstrate high digital skills in terms of evaluating online content and devices. Results reveal that majority of them are confident in assessing the quality and usefulness of devices or tools with a WM of 4.04 and comfortable in providing critiques or reviews on social media such as Trip Advisor, YouTube, and Amazon with a WM of 4.03. It also entails that they are skilled at spotting fraudulent or suspicious emails with a WM of 4.00 and can check if websites are secure and trusted with a WM of 3.97. Moreover, they can evaluate fake, scam or misleading information with a WM of 3.92 and can identify intellectual property rights of content found online with a WM of 3.82. Overall, they consistently perform well in these areas, with an aggregate weighted mean of 3.96 and aggregate standard deviation of 0.81 suggesting a high level of digital competence in terms of evaluating online content.

Table 10: Level of digital competence of the respondents in terms of evaluate

S/N	WM	SD	Verbal Description
I can evaluate an object and/or a smart device using appropriate quality criteria (e.g., authenticity, utility, easy to use, appearance, functionality, enjoyment).	4.04	0.74	High
I can critique an object and/or smart device on relevant social media (e.g., TripAdvisor, YouTube, Amazon).	4.03	0.74	High
I can evaluate whether some information is hoax, fake, scam, or fraud.	3.92	0.82	High
I can evaluate whether a website is secure and trusted.	3.97	0.84	High
I can identify the intellectual property rights (IPRs) of content that I have found on Internet.	3.82	0.81	High
I can evaluate whether an email is spam, adware, phishing, or fraud.	4.00	0.88	High
Aggregate Weighted Mean	**3.96**		**High**
Aggregate Standard Deviation		**0.81**	

Findings entail that the respondents are well-equipped to navigate and assess the utility of an object, digital content, or smart devices, which is an essential skill for academic, career and recreation. Indeed, digital tools specifically smart devices play a significant role in everyone's daily living. It is evident that due to its enormous utilization, people made sure to evaluate the authenticity and security of the website, emails and information access online. Evidently, access to technology, particularly through smartphone and laptop use, increased significantly during the COVID-19 pandemic. Students were able to identify misinformation and prevent its spread by critically evaluating news related to the virus. Furthermore, they recognized online news outlets, media platforms, and social networks as the most frequently accessed and trusted sources of reliable information (Tejedor et al., 2020).

Protect

Table 11 describes how well the respondents protect themselves online. It reveals that most of them have a very high level of digital competence across all areas. It shows that majority are very competent at regularly changing

their passwords and adjusting settings on their smart devices and internet accounts, with a WM of 4.47. They also demonstrate a very strong ability in using and changing different passwords for various smart devices and e-accounts with a WM of 4.33. Moreover, in terms of protecting themselves from online threats like identity theft, harassment, and bullying or slander, they got a WM of 4.28. Overall results suggest the respondent's very high level of digital competence in protecting themselves online with an aggregate weighted mean of 4.36 and aggregate standard deviation of 0.71.

Table 11: Level of digital competence of the respondents in terms of protect

S/N	WM	SD	Verbal Description
I can regularly change my passwords and settings of my smart devices and Internet accounts.	4.47	0.66	Very High
I can protect various smart devices and e-accounts using different passwords and frequently changing them.	4.33	0.75	Very High
I can protect myself and others against identity theft, harassment, bullying, or slander	4.28	0.73	Very High
Aggregate Weighted Mean	**4.36**		**Very High**
Aggregate Standard Deviation		**0.71**	

General findings reflect an individual's attitude of being cautious when it comes to personal stuffs such as smart devices and protecting one's account especially that hackers and identity theft are prevalent online. The emerging issues on fraudulent acts and the capacity of artificial intelligence to emulate a persons' identity explains the respondents very high level of digital competence in protecting themselves online. Likewise, it indicates that they are well-prepared and equipped to handle online security issues. In a similar study on university students' perspectives on digital competence, findings revealed that most students felt confident in their understanding of online risks and reported being capable of safeguarding their devices and digital content (Zhao et al., 2021). Additionally, a large portion of students rated themselves positively in terms of protecting their personal data and privacy. Furthermore, when it comes to health and well-being, majority of them believe that they are knowledgeable about potential online risks and threats. This allows them to make informed decisions to protect themselves while using the internet and related technologies.

Summary on the Level of Digital Competence

Table 12 provides a summary of the respondents' level of digital competence. It reveals that majority of them achieved a very high level in the area of storing, managing, and deleting digital content with a WM of 4.43, reflecting their excellent skills in organizing and handling files. Similarly, a substantial number of respondents scored very high in protecting digital information with a WM of 4.36, indicating strong competence in ensuring digital security. Additionally, many of them excelled in searching, finding, and accessing information which shows a high proficiency in this area with a WM of 4.28.

However, some received a high classification in terms of communicating, collaborating, and sharing with a WM of 4.08; evaluating with a WM of 3.96; and a WM of 3.90 in terms of developing, applying, and modifying digital content. These high classifications demonstrate good competence in these tasks, though not as strong as in the other areas mentioned. Overall results show that the respondents' digital competence in the six areas identified are generally high, with a grand mean of 4.17 and a grand standard deviation of 0.76.

Table 12: Summary on the level of digital competence of the respondents

Components	WM	SD	Verbal Description
Search, find, Access	4.28	0.69	Very High
Develop, Apply, Modify	3.90	0.85	High
Communicate, Collaborate, Share	4.08	0.83	High

Store, Manage, Delete	4.43	0.69	Very High
Evaluate	3.96	0.81	High
Protect	4.36	0.71	Very High
Grand Mean	**4.17**		**High**
Grand Standard Deviation		**0.76**	

General findings suggest that students today have strong capabilities in managing digital files and securing sensitive information, particularly in tasks like storing, managing, and deleting files, along with ensuring data protection. This implies that they are well-prepared and highly competent in managing digital tasks in both their academic and professional lives, while still having areas for improvement. Findings from a similar study showed that postgraduate students in Digital Marketing achieved the highest scores across all digital competence components. Additionally, the results indicate a strong proficiency, particularly in managing and securing digital data, as well as in locating and accessing information, which are essential aspects of digital competence (Tzafilkou et al., 2022).

Level of Dependence on Artificial Intelligence of the Respondents

Table 13 demonstrates the respondents' level of dependence on artificial intelligence (AI). The findings suggest that majority of them have a moderate concern about AI potentially replacing their skills or abilities with a WM of 3.39. On the other hand, a portion of them moderately feel unprotected when they do not have access to AI with a WM of 2.85. Ultimately, general results reveal that most of the respondents exhibit a moderate reliance on AI in both their academic and professional growth, with an aggregate weighted mean of 3.12 and aggregate standard deviation of 1.13.

Table 13: Level of dependence on artificial intelligence of the respondents

S/N	**WM**	**SD**	**Verbal Description**
I feel unprotected when I do not have access to AI.	2.85	1.06	Moderate
I'm concerned about the idea of being left behind in my tasks or projects if I do not use AI.	3.06	1.13	Moderate
I do everything possible to stay updated with AI to impress or remain relevant in my field.	3.17	1.07	Moderate
I constantly need validation or feedback from AI systems to feel confident in my decisions.	3.14	1.12	Moderate
I fear that AI might replace my current skills or abilities.	3.39	1.27	Moderate
Aggregate Weighted Mean	**3.12**		**Moderate**
Aggregate Standard Deviation		**1.13**	
Legend: 4.21-5.00-Very High; 3.41-4.20-High; 2.61-3.40-Moderate; 1.81-2.60-Low; 1.00-1.80-Very Low			

The results above reveal that the respondents have moderate sense of fear and caution about the potential impact of AI in their current skills or abilities and on their future careers, despite recognizing its usefulness. The concern that overreliance on AI can hamper or limit one's critical thinking, analysis and problem-solving skills are one of the reasons why others are hesitant to use or depend on it especially when it comes to their academic or work deliverables. However, it is also undeniable that others feel the need to rely on AI and believe that their academic or work outputs are better when using it. This explains the respondent's moderate level of dependence on artificial intelligence.

These findings align with the McKinsey Global Institute's projection that AI may replace 400 to 800 million jobs by 2030, sparking widespread "AI anxiety." Key concerns include "job replacement anxiety," with fears of AI taking over roles like driving and healthcare (Li & Huang, 2020). Overreliance on AI might also erode critical skills like decision-making and analytical thinking (Dergaa et al., 2023; George & Wooden, 2023). Students, for

instance, worry that AI could replace teachers and overly rely on automated assessments (Hopcan et al., 2024). Nevertheless, many individuals continue to trust AI, feel safer when using it and feel unprotected when they do not have access to it, seeing it as accurate, fair, and beneficial. Moreover, a significant portion of people are confident in AI's fairness, even preferring it over human judgment. Many attribute positive life changes to AI and trust it to guide their decisions (Kapania et al., 2022).

Relationship Between Self-Efficacy and Digital Competence of the Respondents

Table 14 demonstrates the relationship between self-efficacy and digital competence of the respondents. It reveals that there is a weak positive correlation between self-efficacy and digital competence. The significance of the relationship was tested using Pearson r at 0.05 level of significance applying the two-tailed test which shows an r-value of 0.444* and p-value of 0.000. Therefore, the decision is to reject the null hypothesis (Ho), which further elaborates that there is a significant relationship between self-efficacy and digital competence of the respondents.

Table 14: Test of relationship between self-efficacy and digital competence of the respondents

Variables	r-value	Strength of Correlation	p - value	Decision	Remarks
Self-efficacy and Digital Competence	0.444*	Weak Positive	0.000	Reject Ho	Significant
*significant at p<0.05 (two-tailed)					

The data suggests that the students' self-efficacy or confidence in learning and succeeding is closely associated with their digital competence or how well they believe they can use digital tools and technology. In relation to the senior college education students, those who have higher levels of self-efficacy are more likely to develop stronger digital skills and integrate technology effectively into their teaching practice. Hence, understanding this link is crucial, as both self-efficacy and digital competence are key for effective teaching and student engagement in today's technology-driven classrooms, addressing diverse learning needs, and improving overall outcomes. Moreover, the relationship also emphasizes the importance of continuous professional development, maintaining confidence in their abilities, and staying current with digital advancements that will help them become more adaptable and effective future educators.

Align with this finding, various researches demonstrate a strong relationship between self-efficacy and digital competence. Digital self-efficacy (DSE) significantly predicts future use of digital systems, shaping individuals' willingness and ability to engage with information and communication technology (ICT) (Ulfert-Blank & Schmidt, 2022). DSE serves as a foundational "building block" for developing digital skills, with confidence in one's abilities directly influencing competence growth. Indeed, self-efficacy plays a significant role in shaping how people engage with digital systems (Peiffer et al., 2020). Similarly, beliefs about competence, including computer self-efficacy, affect ICT acceptance and new skill development. Furthermore, teachers' self-efficacy or confidence in their ability to differentiate instruction and empower students correlates positively with effective technology use to enhance learning outcomes (Runge et al., 2023).

Relationship Between Self-Efficacy and Dependence on Artificial Intelligence of the Respondents

Table 15 displays the test of relationship between self-efficacy and dependence on artificial intelligence of the respondents. It shows that there is a negligible negative correlation between self-efficacy and dependence on artificial intelligence. The significance of the relationship was tested using Pearson r at 0.05 level of significance applying the two-tailed test which shows an r-value of -0.005 and p-value of 0.926. Therefore, the decision is not to reject the null hypothesis (Ho), which further explains that there is no significant relationship between the respondent's self-efficacy and their dependence on artificial intelligence (AI).

Table 15: Test of relationship between self-efficacy and dependence on artificial intelligence of the respondents

Variables	r-value	Strength of Correlation	p – value	Decision	Remarks
Self-efficacy and Dependence on Artificial Intelligence	-0.005	Negligible Negative	0.926	Do not reject Ho	Not Significant
*significant at p<0.05 (two-tailed)					

The data suggest that students' self-efficacy, or their belief in their ability to complete tasks or learn new skills, is not associated with their level of AI use or reliance. This indicates that their confidence doesn't influence their use of AI and that they can perform tasks efficiently and independently with or without utilizing it. Likewise, results suggest that for the respondents, which are the senior college education students, AI is more like an optional tool they can use if they want, but they don't depend on it. It doesn't change how they feel or believe in their abilities, and they see it as something that helps, not something they need for success. In general, results reveal that AI is not a key factor in shaping the respondents' self-efficacy.

Similarly, a study conducted by Sabordino et al. (2024) found a slight negative correlation between the respondents' self-efficacy and their reliance on AI. It shows that while students felt confident in their ability to use AI effectively, their overall self-efficacy was lower, showing no significant link between the two variables. Additionally, while academic stress and performance expectations influence AI dependency, there is no direct relationship between students' confidence in their abilities and their use of AI (Zhang et al., 2024). Thus, students who feel capable still manage tasks independently, regardless of whether they rely on AI. Furthermore, this reinforces the notion that AI is an optional and helpful tool rather than a necessity or something one depends on to achieve success.

CONCLUSIONS AND RECOMMENDATIONS

Based on key findings, the senior college students in the College of Teacher Education demonstrate strong self-efficacy and digital competence, enabling them to effectively navigate technology-driven learning environments. Their moderate dependence on artificial intelligence (AI) reflects a balanced approach, where AI is used as a supportive tool rather than a substitute for independent thinking. The significant relationship between self-efficacy and digital competence highlights that confident learners tend to be more digitally proficient. However, the absence of a relationship between self-efficacy and AI dependence suggests that confidence alone does not determine reliance on AI.

These findings underscore the importance of reinforcing students' strengths while addressing emerging needs. Guidance counselors play a vital role in this process by designing interventions that enhance learning strategies, career readiness, and informed decision-making. Counseling programs, along with seminars and training sessions, should promote the ethical and responsible use of AI while strengthening students' critical thinking and independent problem-solving skills. Moreover, the results emphasize the need to go beyond self-confidence by fostering deeper digital literacy and analytical abilities. Integrating workshops, resources, and targeted interventions can help students adapt to evolving technological demands and navigate complex digital environments effectively.

To support these goals, a comprehensive guidance and counseling enhancement plan is recommended. This initiative should focus on sustaining self-efficacy, advancing digital competence, and promoting responsible AI use to prepare students for workforce demands and global competitiveness. Additionally, encouraging adaptability in technology-rich environments will enable future educators to integrate digital tools effectively and respond to diverse learning needs. Finally, further research is encouraged to expand understanding of AI's role in student development. Longitudinal and qualitative studies can provide deeper insights into students' experiences and outcomes. Moreover, institutions should integrate AI literacy and ethical considerations into teacher education curricula while strengthening faculty training in AI integration. These efforts will contribute

to developing competent, ethical, and future-ready educators in an increasingly innovation-driven educational landscape.

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Ethical Approval

The study was approved by the dean of the College of Teacher Education with the coordination of the respective instructors before it was conducted. All the respondents were informed about data privacy and gathered data is handled with utmost care and confidentiality.

Conflict of Interest

The researchers disclose and confirm that there is no occurrence of conflict of interest in the conduct of this study.

REFERENCES

1. Ary, D., Jacobs, L. C., Irvine, C. K. S., & Walker, D. (2018). Introduction to research in education (10th ed.). Cengage Learning.
2. Bandura, A. (1997). Self-efficacy: The exercise of control. W. H. Freeman.
3. Blomgren, C. (2023). Copyright literacy and open license attribution as scholarly practice. Digital Culture & Education, 14(4), 129-148. https://www.digitalcultureandeducation.com/volume-14-4
4. Bloomfield, J., & Fisher, M. J. (2019). Quantitative research design. Journal of the Australasian Rehabilitation Nurses Association, 22(2), 27-30.
5. Bratti, M., Fiore, S. & Mendola, M. (2020). The impact of family size and sibling structure on the great Mexico–USA migration. Journal of Population Economics 33, 483–529. https://doi.org/10.1007/s00148-019-00754-5
6. Busboom, J. B., & Boulus-Rødje, N. (2023). Planning for hybrid cooperation: A design-driven exploration. Proceedings of the 21st European Conference on Computer-Supported Cooperative Work (ECSCW 2023 Exploratory Papers and Notes). European Society for Socially Embedded Technologies (EUSSET). https://doi.org/10.48340/ecscw2023_ep02
7. Coe, R., Waring, M., Hedges, L. V., & Ashley, L. D. (Eds.). (2021). Research methods and methodologies in education. Sage.
8. Dergaa, I., Chamari, K., Zmijewski, P., & Saad, H. B. (2023). From human writing to artificial intelligence generated text: Examining the prospects and potential threats of chatgpt in academic writing. Biology of Sport, 40(2), 615–622. https://doi.org/10.5114/biolsport.2023.125623
9. Esteve, A., Pohl, M., Becca, F., Fang, H., Galeano, J., Garcia-Roman, J., Reher, D., Trias-Prats, R. & Turu, A. (2024). A global perspective on household size and composition, 1970–2020. Genus 80(2). https://doi.org/10.1186/s41118-024-00211-6
10. Fukuya, Y., Fujiwara, T., Isumi, A., Doi, S., & Ochi, M. (2021). Association of birth order with mental health problems, self-esteem, resilience, and happiness among children: Results from A-CHILD study. Frontiers in Psychiatry, 12:638088. https://doi.org/10.3389/fpsyt.2021.638088
11. George, B., & Wooden, O. (2023). Managing the strategic transformation of higher education through artificial intelligence. Administrative Sciences, 13(9), 196, 1-20. https://doi.org/10.3390/admsci13090196
12. Havari, E., & Savegnago, M. (2022). The intergenerational effects of birth order on education. Journal of Population Economics, 35, 349–377. https://doi.org/10.1007/s00148-020-00810-5

13. Holmes, W., Bialik, M., & Fadel, C. (2019). Artificial intelligence in education: Promises and implications for teaching and learning. Center for Curriculum Redesign.
14. Hopcan, S., Türkmen, G., & Polat, E. (2024). Exploring the Artificial Intelligence Anxiety and Machine Learning Attitudes of Teacher Candidates. Education and Information Technologies, 29(6), 7281-7301, https://doi.org/10.1007/s10639-023-12086-9https://doi.org/10.3390/computers12050100
15. Kapania, S., Siy, O., Clapper, G., SP, A. M., & Sambasivan, N. (2022). "Because AI is 100% right and safe": User attitudes and sources of AI authority in India. In CHI Conference on Human Factors in Computing Systems (CHI '22), April 29-May 5, 2022, New Orleans, LA, USA. ACM. https://dl.acm.org/doi/pdf/10.1145/3491102.3517533
16. Koyuncuoglu, D. (2022). Analysis of digital and technological competencies of university students. International Journal of Education in Mathematics, Science, and Technology (IJEMST), 10(4), 971-988. https://doi.org/10.46328/ijemst.2583
17. Krauss, S., Orth, U., & Robins, R. W. (2020). Family environment and self-esteem development: A longitudinal study from age 10 to 16. Journal of personality and social psychology, 119(2), 457. https://psycnet.apa.org/manuscript/2019-55801-001.pdf
18. Kristensen, S.M., Larsen, T.M.B., Urke, H.B. & Danielsen, A.G. (2023). Academic Stress, Academic Self-efficacy, and Psychological Distress: A Moderated Mediation of Within-person Effects. Journal of Youth and Adolescence, 52, 1512–1529. https://doi.org/10.1007/s10964-023-01770-1
19. Li, J., & Huang, J.-S. (2020). Dimensions of artificial intelligence anxiety based on the integrated fear acquisition theory. Technology in Society, 63(101410), 1-10. https://doi.org/10.1016/j.techsoc.2020.101410
20. Limeri, L.B., Carter, N.T., Choe, J., Harper, H.G., Martin, H.R., Benton, A., & Dolan, E.L. (2020). Growing a growth mindset: characterizing how and why undergraduate students' mindsets change. International Journal of STEM Education, 7(35). https://doi.org/10.1186/s40594-020-00227-2
21. López-Meneses, E., Sirignano, F. M., Vázquez-Cano, E., & Ramírez-Hurtado, J. M. (2020). University students' digital competence in three areas: Digital content creation, communication, and information literacy. Education Sciences, 10(9), 232. https://doi.org/10.3390/educsci10090232
22. Mabaso, M., Mlangeni, L., Makola, L., Oladimeji, O., Naidoo, I., Naidoo, Y., & Simbayi, L. (2021). Factors associated with age-disparate sexual partnerships among males and females in South Africa: a multinomial analysis of the 2012 national population-based household survey data. Emerging themes in epidemiology, 18, 1-13. https://link.springer.com/article/10.1186/s12982-021-00093-5
23. Mhlongo, S., Mbatha, K., Ramatsetse, B., & Dlamini, R. (2023). Challenges, opportunities, and prospects of adopting and using smart digital technologies in learning environments: An iterative review. Heliyon, 9(6),1-20. https://doi.org/10.1016/j.heliyon.2023.e16348
24. Moreira-Choez J.S., Gomez Barzola, K.E., Lamus de Rodríguez, T.M., Sabando-García, A.R., Cruz Mendoza, J.C., & Cedeño Barcia, L.A. (2024). Assessment of digital competencies in higher education faculty: a multimodal approach within the framework of artificial intelligence. Frontiers in Education, 9, 1-11. https://doi.org/10.3389/feduc.2024.1425487
25. Morrison, K., Iqbal, S. T., & Horvitz, E. (2024). AI-powered reminders for collaborative tasks: experiences and futures. ACM Journals, Proceedings of the ACM on Human-Computer Interaction, 8(210), 1-20. https://doi.org/10.1145/3653701
26. Peiffer, H., Schmidt, I., Ellwart, T., & Ulfert, A.-S. (2020). Digital Competences in the Workplace: Theory, Terminology, and Training. In E. Wuttke, J. Seifried, & H. Niegemann (Eds.), Vocational Education and Training in the Age of Digitization: Challenges and Opportunities, 157-181. Verlag Barbara Budrich. https://doi.org/10.2307/j.ctv18dvv1c.11
27. Remler, D. K., & Van Ryzin, G. G. (2021). Research methods in practice: Strategies for description and causation. Sage Publications
28. Rock, L.Y., Tajudeen, F.P. & Chung, Y.W. (2024). Usage and impact of the internet-of-things-based smart home technology: a quality-of-life perspective. Universal Access in the Information Society, 23, 345–364. https://doi.org/10.1007/s10209-022-00937-0
29. Runge, I., Lazarides, R., Rubach, C., Richter, D., & Scheiter, K. (2023). Teacher-reported instructional quality in the context of technology-enhanced teaching: The role of teachers' digital competence-related

beliefs in empowering learners. Computers and Education, 198, 1-13. https://doi.org/10.1016/j.compedu.2023.104761

30. Sabordino, E.B., Ardina, G.T., Empedrado, I.R.A., & Baguio, A.J.P. (2024). Assessing Future Teachers' Readiness in an AI-Driven Classroom. International Journal of Current Research, 16(5), 28129 – 28133. https://doi.org/10.24941/ijcr.47119.05.2024
31. Saltos-Rivas, R., Novoa-Hernández, P., & Serrano Rodríguez, R. (2022). How reliable and valid are the evaluations of digital competence in higher education: A systematic mapping study. SAGE Journals. 1-14. https://journals.sagepub.com/doi/pdf/10.1177/21582440211068492
32. Savickas, M. L., & Porfeli, E. J. (2012). Career adapt-abilities scale: Construction, reliability, and measurement equivalence across 13 countries. Journal of Vocational Behavior, 80(3), 661–673. https://doi.org/10.1016/j.jvb.2012.01.011
33. Seeram, E. (2019). An overview of correlational research. Radiologic technology, 91(2), 176-179.
34. Taguchi, N. (2018). Description and explanation of pragmatic development: Quantitative, qualitative, and mixed methods research. System, 75, 23-32.
35. Tejedor, S., Cervi, L., Pérez-Escoda, A., & Tusa, F. (2020). Smartphone usage among students during COVID-19 pandemic in Spain, Italy, and Ecuador. In F. J. García-Peñalvo & A. García-Holgado (Eds.), TEEM'20: Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality. New York: Association for Computing Machinery (ACM), 571-576. https://doi.org/10.1145/3434780.3436587
36. Tzafilkou, K., Perifanou, M., & Economides, A. A. (2022). Development and validation of students' digital competence scale (SDiCoS). International Journal of Educational Technology in Higher Education, 19(30). https://doi.org/10.1186/s41239-022-00330-0
37. Ulfert-Blank, A.-S., and Schmidt, I. (2022). Assessing digital self-efficacy: Review and scale development. Computers and Education, 191, 2-23. https://doi.org/10.1016/j.compedu.2022.104626
38. UNESCO. (2021). Recommendation on the ethics of artificial intelligence. UNESCO Publishing. https://unesdoc.unesco.org/ark:/48223/pf0000381137
39. Vuorikari, R., Kluzer, S. and Punie, Y. (2022). DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes, EUR 31006 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-48883-5, doi:10.2760/490274, JRC128415.https://publications.jrc.ec.europa.eu/repository/bitstream/JRC128415/JRC128415_01.pdf
40. Zhang, S., Zhao, X., Zhou, T., & Kim, J. H. (2024). Do you have AI dependency? The roles of academic self-efficacy, academic stress, and performance expectations on problematic AI usage behavior. International Journal of Educational Technology in Higher Education, 21(34), 1-14. https://doi.org/10.1186/s41239-024-00467-0
41. Zhao, Y., Sánchez Gómez, M.C., Pinto Llorente, A.M., & Zhao, L. (2021). Digital competence in higher education: Students' perception and personal factors. Sustainability, 13(12184), 1-17. https://doi.org/10.3390/ su132112184