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The Mediating Role of Self-Regulated Learning and Digital Wisdom in the Relationship Between Digital Stress and Academic Flourishing Among Undergraduate Students

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Abstract

The current research aims to explore the relationships between self-regulated learning, digital wisdom, digital stress, and academic flourishing among undergraduate students. It also aims to measure the level of each variable and differences between males and females in the four variables. In addition, it explores the mediating role of self-regulated learning and digital wisdom in the relationship between digital stress and academic flourishing. A descriptive-analytic design was utilized. The sample includes 360 randomly selected students at the Faculty of Education, Kafrelsheikh University. Data was collected using self-regulated learning, digital wisdom, digital stress, and academic flourishing scales, and their psychometric properties were verified using different validity and reliability methods. The results revealed that self-regulated learning is positively linked to digital wisdom ($r = .843$, $p < .01$) and academic flourishing ($r = .736$, $p < .01$), but it is negatively linked to digital stress ($r = -.791$, $p < .01$). Similarly, digital wisdom is positively related to academic flourishing ($r = .848$, $p < .01$) and negatively related to digital stress ($r = -.795$, $p < .01$). Digital stress shows a strong negative effect on academic flourishing ($r = -0.835$, $p < 0.01$). The results also showed moderate levels of self-regulated learning, digital wisdom, and academic flourishing, and moderate to high levels of digital stress among the research sample, with no differences attributed to gender or academic specialization. Lastly, self-regulated learning and digital wisdom mediate the relationship between digital stress and academic flourishing. This shows how important these factors are for success in environments that are becoming more digital. This integrated approach enhances teachers' roles as facilitators of sustainable digital learning environments, where students are encouraged to engage positively with technology, balance personal learning and digital use, and flourish in the digital age. It also suggests conducting additional studies to broaden the scope of the results to other categories.

Keywords: self-regulated learning; digital wisdom; digital stress; academic flourishing.

Introduction

Self-regulated learning is considered one of the fundamental factors in enhancing students' academic performance in the digital age. This type of learning relies on students' ability to set educational goals, organize their time, and choose appropriate strategies to achieve these goals, significantly improving their academic achievement. Zimmerman (2002) explains that self-regulated learning involves processes such as planning, self-monitoring, and continuous assessment of progress, which contribute to enhancing students' ability to succeed academically. In this context, integrating technology into learning strategies is a crucial factor, as it allows students to use digital tools that help organize their learning and improve their academic performance, such as e-learning platforms (Zimmerman & Schunk, 2011).

As technology use in education advances, the concept of digital wisdom has emerged as one of the core principles aiming to balance the benefits of technology with avoiding its potential negative effects. According to Prensky (2012) and Copeland (2015), digital wisdom consists of two components: first, the use of technology to access cognitive power beyond our innate capacity, and second, the prudent use of technology to enhance our capabilities. Digital tools such as smartphones, time management apps, and academic organization tools can significantly enhance students' academic performance, but it is crucial to use them wisely to maintain a balance between digital life and real life (Ng, 2012).

However, excessive use of technology can lead to digital stress, which is a state of psychological and physical fatigue resulting from overuse of digital devices, negatively affecting academic performance and concentration. Ayyagari, Grover & Purvis (2011) argue that digital stress can cause distractions, reduced productivity, and increased anxiety and stress in students. Students who overuse digital devices face difficulties focusing on academic tasks, which directly impacts their academic performance (Junco, 2012).

On the other hand, academic flourishing contributes to the development of skills necessary for students to cope with the challenges of the digital age. Research has shown that students with self-regulation skills and digital wisdom tend to excel academically because they can effectively manage their time, organize their learning using digital tools, and maintain a balance between their digital and real-life activities. Pintrich (2004) found that developing self-regulated learning skills and using technology wisely leads to academic flourishing, helping students achieve outstanding educational outcomes.

In conclusion, research shows that the relationship between self-regulated learning, digital wisdom, digital stress, and academic flourishing is complex and interconnected. Students who possess the ability to organize their learning using digital tools wisely, while maintaining a balance between their digital and real-

life activities, are more likely to achieve sustainable academic success (Zimmerman & Schunk, 2011).

The Research problem

In light of the rapid technological changes witnessed by education in general and higher education in particular, self-regulated learning, digital wisdom, and digital stress have become important variables that affect the academic flourishing of university students. Self-regulated learning is one of the essential skills that contribute to enhancing students' ability to set their academic goals and organize their time and learning strategies effectively (Zimmerman, 2002; Pintrich, 2004). However, many students face challenges in applying self-regulated learning strategies due to multiple factors such as study pressures and social life, which may hinder their effective interaction with digital learning environments (Boekaerts, 2016). In the same context, digital wisdom represents a crucial element in enabling students to make the most of technology tools in a way that supports their cognitive abilities without causing fatigue or other negative effects (Prensky, 2012). Digital wisdom is supposed to contribute to guiding the use of technology in a way that enhances academic performance by balancing the cognitive benefits and challenges associated with excessive reliance on digital tools. However, studies have shown that uninformed use of technology can lead to digital stress, which limits students' ability to concentrate and reduces their academic performance (Ayyagari et al., 2011; Derks, Fischer & van der Meulen, 2014)**.**

Although previous studies have examined the individual impact of self-regulated learning, digital wisdom, or digital wisdom on academic flourishing, research on how these variables interact in the university context is still limited. The relationship between these variables has not yet been comprehensively studied, given the differences in technology use among students. Most research also focuses on the impact of each variable separately, without considering how the interaction between these factors affects academic flourishing. Therefore, the research gap lies in understanding the dynamic interaction between self-regulated learning, digital wisdom, and digital stress and how this interaction affects the academic flourishing of university students, which calls for more integrated field studies to achieve a deeper insight into this complex relationship (Baker, Corbett & Wagner, 2019; Martin, Sunley, & Turner 2017).

Based on the theoretical frameworks mentioned self-regulated learning, digital wisdom, digital stress, and academic flourishing—the following questions can be formulated:

1. Are there statistically significant relationships between self-regulated learning, digital wisdom, digital stress, and academic flourishing among undergraduate students?

2. What are the levels of self-regulated learning, digital wisdom, digital stress, and academic flourishing among the research sample?
3. Are there statistically significant differences according to gender (males/females) in self-regulated learning, digital wisdom, digital stress, and academic flourishing?
4. Are there statistically significant differences according to academic specialization (humanities/scientific) departments in self-regulated learning, digital wisdom, digital stress, and academic flourishing?
5. Does self-regulated learning and digital wisdom mediate the relationship between digital stress and academic flourishing in the research sample?

The research Objectives

The current research aims to:

1. Explore the relationships between self-regulated learning, digital wisdom, digital stress, and academic flourishing among pre-service teachers.
2. Measure the levels of the four variables (self-regulated learning, digital wisdom, digital stress, and academic flourishing).
3. Examine the differences between males and females in relation to these variables.
4. Examine the differences between students in humanities and scientific departments in self-regulated learning, digital wisdom, digital stress, and academic flourishing.
5. Investigate the mediating role of self-regulated learning and digital wisdom in the relationship between digital stress and academic flourishing.

The Importance of the Research

This research is of particular importance in preparing students as future teachers, as it provides insights into how they deal with current academic challenges and how to develop their skills in dealing with the pressures of digital life. In the face of continuous changes in education and technology, future teachers need to be able to effectively address these challenges. Therefore, studying the relationship between self-regulated learning, digital wisdom, digital stress, and academic flourishing provides a framework for understanding how it can help students flourishing in the university environment and well-being in digital learning environments and better prepare for their role as future teachers.

Additionally, the current researcher also designed three scales to measure self-regulated learning, digital wisdom, and academic flourishing. These scales are considered an essential and effective tool in measuring these variables and understanding their interaction with each other in different educational contexts.

The research contributes to the development of reliable measurement tools, which helps improve academic support strategies and digital well-being in digital education environments.

Literature Review

In this part of the research, we will discuss the theoretical background related to the main variables studied in this research: self-regulated learning, digital wisdom, digital stress, and academic flourishing. This theoretical framework aims to provide a deeper understanding of how these variables interact with each other and how they can impact students' experience in the academic environment.

Self-Regulated Learning

With the rapid changes taking place in the field of education in the modern era, it has become necessary to provide individuals with skills that enable them to control their learning path independently. With the increasing shift toward digital environments and distance education, the ability to self-regulate learning has become a basic requirement for improving academic performance and achieving educational goals. Self-regulated learning refers to the processes that individuals use to organize their thoughts, motivations, and behaviors to achieve their learning goals. This type of learning is associated with self-efficacy and effective time management, in addition to the use of multiple learning strategies such as repetition, summarization, and self-assessment (Zimmerman, 2002). Self-regulated learning requires three main components: goal setting, performance monitoring, and outcome evaluation. Therefore, self-regulated learning is not just an academic skill but rather a comprehensive system that includes planning, implementing strategies, and evaluating performance. This system allows learners to be more independent and efficient in interacting with educational content, whether in the traditional classroom or via digital platforms. With the increasing reliance on educational technology, research has shown that learners who possess self-regulation skills are better able to deal with academic challenges and balance education with their other needs (Zimmerman, 2002; Winne & Hadwin, 1998).

Studies have shown that self-regulated learning contributes to improving students' academic performance by enabling them to take responsibility for their learning and develop effective strategies for dealing with different tasks (Pintrich & De Groot, 1990).

According to Zimmerman's (2000) model, self-regulated learning consists of three main dimensions: the cognitive dimension, which includes the use of cognitive strategies such as repetition, review, and linking new information to previous knowledge; the motivational dimension, which includes intrinsic motivation, personal goals, and self-efficacy that drive the learner to continue working toward achieving goals; and the behavioral dimension, which relates to

actual actions such as planning academic tasks, managing time, and avoiding distractions.

emphasized in several recent studies. A study conducted by Seligman, Ernst, Gillham, & Reivich (2017) showed that students who develop self-regulation skills can significantly improve their academic performance by dedicating more time to self-learning and effectively setting their academic goals. Similarly, an academic study by Chris, Collins & Wood (2021) found that self-regulation enhances students' academic well-being by improving their ability to manage stress and adapt to the challenges of digital education. On the other hand, a recent study by Diller, Wang & Rosenfeld (2020) confirmed that university students who employ self-regulation techniques such as goal setting and self-assessment exhibit higher levels of motivation and academic achievement. Another study, by Karpinski, McDonald & Jackson (2022), examined self-regulated learning strategies and showed that students who practice effective self-regulated learning strategies in online learning environments report higher levels of academic success.

de la Fuente, Sander, Kauffman & Yilmaz Soylu (2020) conducted an analytical study to examine the relationship between self-regulated learning and academic flourishing among university students. The results indicated that self-regulated learning skills positively contribute to enhancing students' academic flourishing and mental health while reducing levels of academic procrastination. The study emphasized that self-regulated learning is not only a fundamental factor for achieving academic success but also a key indicator of overall well-being. Anthonysamy et al. (2020) discussed self-regulated learning strategies in higher education and how to enhance digital skills to support lifelong learning. The researchers introduced self-regulated learning strategies that assist students in higher education in enhancing their digital skills. The findings demonstrated that these strategies not only enhance academic performance but also foster the development of essential skills like critical thinking, adaptability to educational challenges, and sustainable academic success.

In light of the shift towards digital education, self-regulated learning has become increasingly important. Research indicates that students who possess strong self-regulation skills are better able to navigate online learning environments, manage their time efficiently, and effectively handle digital materials, all of which contribute to higher academic achievement and personal well-being (Zimmerman, 2002; Pintrich, 2004). Furthermore, effective self-regulation helps students manage the stress associated with digital learning by allowing them to set goals, monitor their progress, and adjust strategies as needed (Schunk, 2005). The integration of self-regulation strategies is crucial for digital learners to flourish in an environment that requires constant interaction with technology (Sharma, Nguyen & Hong, 2024).

Digital Wisdom

In the age of advanced digital technology, the pursuit of digital wisdom is a critical task for humanity in the 21st century (Prinsky, 2012). It has become imperative for students to have advanced digital skills that allow them to use technology efficiently and safely in the educational process. Digital awareness and digital wisdom are among the most important skills that students need to keep pace with this technological change, as these skills contribute to improving the quality of education and increasing the effectiveness of communication (Livingstone & Helsper, 2007)**.**

Digital wisdom encompasses both the use of digital technology and its prudent use, requiring excellent judgment and moral skills, similar to practical wisdom, which involves technical or artistic decision-making (Prensky, 2012). Digital wisdom is defined as a set of abilities that facilitate the conscious, critical, and responsible use of digital technology, thereby enhancing the educational experience for students. This wisdom includes the ability to choose appropriate digital tools and guide students to use them in a way that helps achieve educational goals without negatively affecting their psychological or social health (Carretero, Vuorikari, & Punie, 2017). Furthermore, digital wisdom has a positive impact on students' academic achievement. Punie (2013) asserts that intentional use of technology can enhance learning outcomes, particularly when it fosters multiple learning styles and boosts students' critical thinking and problem-solving skills. Digital wisdom positively affects students' academic performance, as it represents an individual's ability to deal with digital information efficiently and transform it into useful knowledge that contributes to solving problems and making decisions (Prensky, 2012).

Recent studies indicate that digital wisdom plays an important role in enhancing students' critical and creative thinking skills. According to Prensky (2012), digital wisdom means using technology not only to access knowledge but also to stimulate critical thinking and increase problem-solving ability. A study by McNeil, McMahon, and Sanders (2019) showed that using digital learning technologies can help students organize their thoughts and analyze information more effectively. Tuxtayevich et al. (2024) in their study on promoting critical thinking in digital education confirmed that various applications of technology can support critical thinking. Radio, McGee, and Beaudry (2021) confirmed that students with high digital wisdom skills are able to use technological tools more effectively to support their learning.

Digital wisdom enables students to choose digital educational tools that support and enhance their learning experience. Studies suggest that the use of digital tools in education should aim to improve student engagement and increase opportunities for interactive learning (Selwyn, 2016). Ethical awareness is also an essential dimension of digital wisdom, as teachers should guide students to use the Internet in a safe and responsible manner. This includes how to deal with

issues such as digital privacy, cybersecurity, and mutual respect in the digital space (Livingstone & Helsper, 2007). Research suggests if students do not use technology in moderation, it can negatively impact their time management (Kuss & Griffiths, 2017). Therefore, digital wisdom is an essential factor that must be developed in students to achieve their academic goals and deal with **challenges** in digital learning environments.

Digital Stress

In the modern era, digital technology has become an integral part of daily life, especially in college education settings. Digital tools such as smartphones, laptops, and the Internet have become an essential part of the learning process, providing students with ample opportunities to access information and interact with educational content (Selwyn, 2016). However, the increasing use of this technology also comes with physical and psychological challenges, including digital stress. Studies have shown that students often experience digital stress due to the pressure of constant connectivity and the overload of information (Van Der Meulen et al., 2021).

Digital stress refers to the stress experienced by individuals as a result of constant interaction with digital technology, such as computers, smartphones, and social media. For undergraduate Students, digital stress includes the challenges resulting from a combination of academic pressures and digital technology, which can have negative effects on their psychological and physical health. This type of stress is an important issue due to the significant increase in reliance on digital tools in college education (Rosen, Lim, Carrier, & Cheever, 2011).

The large number of academic tasks that undergraduate Students must complete using digital devices is a major contributing factor to digital stress. In the current era, students use digital technologies to conduct research, communicate with professors and peers, and submit assignments. Students are under pressure to keep up with new technologies in rapidly changing learning environments due to this increased reliance on technology (Junco & Cotten, 2012). This increased reliance on technology places an additional burden on students, as they must manage digital tasks while maintaining academic performance.

On the other hand, research indicates that constant interaction with social media can exacerbate digital stress. Students spend a lot of time on these platforms, exposing them to negative social comparisons and harmful content, which can increase their anxiety and stress levels (Anthonysamy et al., 2020). Constant interaction with these media can distract them while studying and reduce their focus, which increases their overall stress levels. Furthermore, digital stress can have negative effects on students' mental and physical health. Research indicates that prolonged use of digital devices can trigger sleep issues like insomnia, a condition closely associated with elevated stress levels (Lepp et al.,

2015). Disrupted sleep patterns from excessive screen interaction affect students' ability to relax and effectively manage daily stress. It is worth noting that digital stress management strategies may be effective in reducing these negative effects. These strategies include techniques such as setting specific times for technology use, engaging in physical activity, and relaxation techniques such as meditation (Rosen et al., 2011). Research suggests that students who practice these strategies report lower levels of digital stress and greater ability to manage academic stress. Therefore, understanding digital stress in the university environment is of paramount importance. Educators should consider the effects of technology on students' psychological and physical well-being and provide appropriate support to help them cope with these challenges.

Previous studies show significant negative effects of digital stress on students' academic achievement. In a study by Zayed (2024), it was confirmed that digital stress negatively affects the academic well-being of university students, increasing levels of anxiety and stress that hinder academic performance. Also, a study by Cabral et al. (2022) showed that the use of digital technology led to lower academic achievement and productivity. A study by Alvarez-Risco et al. (2021) also indicates that technological stress significantly affected students' academic performance.

Academic Flourishing

Academic flourishing is a comprehensive concept that refers to the state of positive achievement that individuals experience within the educational context. It includes several interconnected dimensions, including academic achievement, psychological well-being, personality development, and positive social interaction. Academic achievement focuses on achieving excellence in academic achievement, while the psychological aspect focuses on feeling meaningful and satisfied in the educational process. Positive interaction also includes building sustainable relationships with colleagues and teachers, which is vital to enhancing the sense of belonging and success in the academic environment (Kristjánsson & VanderWeele, 2024; Waters & Loton, 2019).

In the contemporary era, there has been a surge in interest in academic flourishing as a novel method of evaluating the quality of education. The assessment encompasses not only academic performance but also personal meaning, positive relationship building, and moral value development. Academic flourishing reflects the ability of the university environment to provide opportunities that support these different aspects, which contributes to building the student's personality in an integrated manner (Kristjánsson & VanderWeele, 2024). With the transition to digital education, academic flourishing requires additional skills such as the ability to manage time effectively, adapt to digital tools, and enhance learner independence.

Research indicates that if students receive sufficient support, including self-regulation strategies and motivation to reach their academic objectives, the shift to e-learning could positively influence certain aspects of academic flourishing (VanderWeele et al., 2024; Waters, 2022). Studies show that there are a set of factors that contribute to enhancing academic flourishing. Among these factors, such as motivational teaching, using educational strategies that encourage critical thinking and problem-solving increases levels of academic flourishing. Additionally, providing psychological support services and fostering a collaborative learning environment contributes to achieving academic well-being (Waters et al., 2021). In addition to fostering personal skills and emphasizing the development of emotional resilience and adaptability to academic challenges, this approach enhances students' sense of meaning and success. In addition, there is a positive relationship between students' academic flourishing and the development of their leadership, problem-solving, and critical thinking skills, demonstrating the profound impact of excellent education on students' future quality of life (VanderWeele, 2022).

Academic flourishing enhances the ability of university students to cope with academic challenges through the support of positive orientation and a constructive outlook, which can help students deal with challenges effectively (Schreiner, 2018). The study by Schreiner (2018) also discovered a positive correlation between academic success and academic flourishing, noting that 50% of students with high academic performance and 64% of students with low academic performance experience academic flourishing. Furthermore, 46% of students who experience academic flourishing are more likely to graduate.

Previous studies also suggests that the relationship between academic flourishing and overall well-being is reciprocal, with academic flourishing enhancing psychological and social well-being, which in turn leads to improved academic achievement and work-life balance (Diener et al., 2020; Kristjánsson, 2022). Research also confirms the importance of educational practices that focus on promoting academic flourishing by providing a comprehensive learning environment that addresses students' psychological and social needs in addition to their academic needs. This includes supporting mental health, encouraging positive relationships between students and faculty, and promoting constructive conflict resolution skills (Human Flourishing Program, 2017).

In conclusion, the current theoretical framework highlights the importance of linking self-regulated learning, digital wisdom, digital stress, and academic flourishing as interconnected factors that significantly impact the university student experience in the digital age. Self-regulated learning reflects students' ability to set goals, manage their time, and apply academic strategies, thereby enhancing their academic performance and adaptability to the challenges of digital education (Zimmerman, 2002). Similarly, digital wisdom plays a crucial role in enabling students to use technology consciously and critically, contributing

to reduced digital stress and improved critical and creative thinking skills (Prensky, 2012). However, digital stress poses a challenge that hampers academic performance by affecting mental health and time management (Rosen et al., 2013). Therefore, integrating these variables is essential for achieving academic flourishing, which manifests in students' academic and psychological well-being (Seligman, 2011). This perspective underscores the need for further studies to explore the dynamic relationships among these variables to support educational policies and practices in digital environments.

Research hypotheses:

H1: There are statistically significant relationships between self-regulated learning, digital wisdom, digital stress and academic flourishing among undergraduate students.

H 2: There are high levels of self-regulated learning, digital wisdom, digital stress and academic flourishing among the research sample.

H3: There are no statistically significant differences according to gender (males/females) in self-regulated learning, digital wisdom, digital stress, and academic flourishing.

H4: There are no statistically significant differences according to academic specialization (humanities/scientific) in self-regulated learning, digital wisdom, digital stress, and academic flourishing.

H5: Self-regulated learning and digital wisdom mediate the relationship between digital stress and academic flourishing in the research sample.

Methodology

Participants

The research sample consists of 360 students at the College of Education, Kafrelsheikh University, with 180 males and 180 females, 220 from humanities departments and 140 from scientific departments. These students were randomly selected, with an average age of 21.52 years and a standard deviation of 9.26 during the academic year 2024-2025. Stratified random sampling was used to ensure representation of the study variables, such as gender (male and female), academic specialization, and academic level.

Measurements

Self-Regulated Learning Scale: The current author designed the presented scale to measure self-regulated learning based on Zimmerman's model (Zimmerman, 2002), which included three main dimensions: planning, monitoring, and evaluation. The scale consists of 18 items, representing different behaviors in organizing and directing self-learning. A five-point Likert scale,

ranging from "I completely disagree" to "I completely agree," evaluates each item, enabling individuals to express their level of agreement with each self-regulated learning behavior. Thus, the score of each participant ranges from 18 to 90**.**

An exploratory factor analysis was conducted to validate the construct of the self-regulated learning scale. The results of the factor analysis showed that the three dimensions of the scale (planning, monitoring, and evaluation) align with the expected structural model. The factor loadings for the items of the three dimensions were high, ranging from 0.60 to 0.85, which supports the construct validity of the scale and confirms that each dimension is strongly associated with a distinct set of self-regulated learning behaviors. Additionally, the results indicated that the overall distribution of the scale items accurately reflects the correlations between the different dimensions, with the correlation coefficients between the dimensions ranging from 0.75 to 0.90, indicating a strong interrelationship between the subdimensions of the scale. This means that the scale can accurately measure how well people can control their own learning. The reliability of the scale was also calculated using Cronbach's alpha coefficient, and the analysis revealed a high alpha coefficient of 0.88, indicating a high degree of internal consistency in the scale. Internal consistency was confirmed, and the alpha value ranged between 0.75 and 0.90, providing a strong indication of the scale's internal consistency.

Digital Wisdom Scale: A digital wisdom scale was developed in this study to measure five key dimensions, including the ability to use technology effectively, ethical awareness in using digital tools, critical evaluation of digital content, digital time management, and the ability to train others to use technology wisely. The scale is based on a five-point Likert scale (from 1: strongly disagree to 5: strongly agree), with higher scores indicating a higher level of digital wisdom. The validity of the scale was confirmed through expert evaluation, along with concurrent validity by comparing it with the Zayed Digital Resilience Scale (2024), which showed a correlation coefficient of 0.78, indicating a high degree of agreement between the two scales.

Additionally, the Cronbach's alpha coefficient for the scale was calculated and found to be 0.82, indicating a high level of internal consistency, reflecting the strength of the relationship between the different dimensions of the scale. Test-retest reliability was also assessed on the same sample after two weeks, yielding a correlation coefficient of 0.85, suggesting stability of the scale over time. The internal consistency calculations between the sub-dimensions of the scale ranged from 0.79 to 0.86, further reinforcing the scale's overall reliability. These results make the scale a reliable and valid tool for measuring digital wisdom across the identified dimensions.

Digital Stress Scale: Hall et al. (2021) developed the Digital Stress Scale to measure the tension and pressures associated with using modern technology in daily life. The scale aims to identify the different dimensions of digital stress

individuals experience, including stress resulting from digital work, such as pressures related to using email and online meetings; social stress arising from interacting with others on social media; as well as cognitive and technological stress related to learning and using new digital tools. The scale consists of 24 items. The participants provide their answers using a five-point rating system, which ranges from never = 1 to always = 5. Zayed (2024) translated the scale into Arabic and ensured the psychometric properties in the Egyptian environment. The reliability using Cronbach's alpha was measured, with values ranging between 0.80 and 0.92.

Academic Flourishing Scale: Based on established theoretical frameworks and well-known scales like the Flourishing Scale (Diener et al., 2010) and the Well-Being Assessment (Weziak-Bialowolska et al., 2021), the Academic Flourishing Scale was specifically designed for this research to reflect the essential dimensions that support a successful student academic experience. The scale aims to measure three main dimensions: academic competence, positive relationships in the academic environment, and general academic well-being. The scale consists of 15 statements evenly distributed across the three dimensions, with each dimension reflecting five statements covering the psychological, social, and educational aspects that contribute to achieving academic flourishing. Previous studies on the concept of academic flourishing formulated the statements, ensuring the comprehensiveness of the scale and its relevance to modern theoretical frameworks. We adopted a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) to assess individuals' responses, thereby facilitating data analysis and interpretation.

The validity of the scale was confirmed by calculating the correlation coefficient between it and the Zayed' Quality of Academic Life Scale (2024), which yielded a correlation coefficient of 0.81. Internal consistency was calculated using Cronbach's alpha coefficient for each dimension and the scale overall and found that the values exceeded 0.85, indicating a high level of internal consistency. The reliability of the scale was also calculated using the test-retest method, yielding a correlation coefficient of 0.87. Based on the above, it is clear that the scale has a high level of reliability for measuring academic flourishing.

Results and Discussion

The data was analyzed using descriptive statistics such as means, standard deviations, Pearson correlation coefficients, and T tests to identify the levels and differences in the studied variables. Regression analysis was utilized to examine the linear relationships between digital wisdom, digital stress, and digital flourishing, which aids in estimating the effect size (coefficient) and determining its statistical significance. Direct and indirect effect analysis was also used using Process Macro v 4.2 by Andrew Hayes, and the mediation analysis model was applied to determine the role of digital wisdom as a mediating variable in the

relationship between digital stress and digital flourishing. The Process Macro tool was used to estimate the direct and indirect effects, relying on the bootstrapping technique to obtain confidence intervals.

H1: There are no statistically significant relationships between self-regulated learning, digital wisdom, digital stress and academic flourishing among undergraduate students.

Pearson correlation coefficient was utilized to examine the hypothesis The results are shown in Table 1.

Table 1. Correlation coefficients between digital wisdom, digital stress, and digital flourishing

Variable	Self-regulated learning	Digital wisdom	Digital stress	Academic flourishing
Self-regulated learning	1	.843	-.791	.736
Digital wisdom	.843	1	-.795	.848
Digital stress	-.791	-.795	1	-.835
Academic flourishing	.736	.848	-.835	1

****All the values are significant at the level of 0.01.***

The results in Table 1 show the correlations between the four variables: self-regulated learning, digital wisdom, digital stress, and academic flourishing.

Self-regulated learning appears to be positively and strongly correlated with digital wisdom ($r = .843$, $p < .01$) and with academic flourishing ($r = .736$, $p < .01$), indicating that individuals with higher levels of self-regulated learning tend to acquire greater digital wisdom and achieve higher levels of academic flourishing. These results are similar to the findings by de la Fuente et al. (2020), which indicated that self-regulated learning skills positively contribute to enhancing students' academic flourishing. And aligns also with the results by Muthupoltotage and Gardner (2018), which found that students with strong self-regulation skills show greater ability to use digital tools effectively, which enhances their digital competence. Although studies directly examining the relationship between self-regulated learning and digital wisdom are scarce, the literature suggests a connection between self-regulated learning and the effective use of technology, a core component of digital wisdom. A study by Dabbagh and Kitsantas (2012) highlighted that Web 2.0 tools enhance self-regulated learning skills by providing students with tools to effectively plan and track their academic goals. Similarly, Zimmerman (2002) emphasized that self-regulated learning requires the ability to independently use digital resources to boost academic performance. Panadero (2017) also stressed how important it is to use digital tools to help with things like planning, monitoring, and self-evaluation. This shows that

self-regulated learning skills and the principles of digital wisdom, especially when it comes to critical thinking and the responsible use of technology, are very similar. The study by Yot-Domínguez and Marcelo (2017) highlighted the importance of students using digital technologies to support self-regulated learning, and the results indicated that digital technologies enhance students' ability to set goals and motivate themselves, contributing to improved academic efficiency and better adaptation to educational challenges. The study emphasized the need to raise students' awareness of how to use technology to further support independent learning. Additionally, the study of Anthonysamy et al. (2020) explored how digital technologies, such as time management applications and interactive learning tools, can support the development of self-regulated learning skills. The study indicated that these technologies improve students' ability to set clear goals, monitor their progress, and adapt to various learning demands, thus linking self-regulated learning with digital wisdom in effectively employing technology to achieve educational objectives.

In contrast, self-regulated learning is negatively and strongly correlated with digital stress ($r = -0.791$, $p < .01$). These results are consistent with the results of Wang et al. (2022), which showed that students who applied self-regulation strategies were better able to regulate their attention, reduce time spent on digital distractions, and increase their academic engagement and performance. Self-regulated learning strategies helped students develop more effective study habits and reduce procrastination. Students reported increased awareness of their digital distractions and became more active in managing them. Using self-regulated learning strategies also helped enhance students' self-efficacy in learning and improve their academic outcomes.

Digital wisdom, on the other hand, shows a significant positive correlation with academic flourishing ($r = .848$, $p < .01$), reflecting the pivotal role of digital wisdom in achieving academic flourishing. This result is similar to those by Tülübaş et al. (2023), which emphasizes the importance of promoting healthy digital habits and emotional well-being of students to improve academic flourishing. Furthermore, these results corroborated the findings of Prensky (2012), who observed that digital wisdom encompasses the capacity for critical thought and the ability to weigh the advantages and disadvantages of digital technology, all of which contribute to an individual's flourishing in the digital realm.

Meanwhile, digital wisdom is strongly negatively correlated with digital stress ($r = -0.795$, $p < 0.01$), suggesting that digital stress may impair individuals' digital wisdom. This result supports those by Yang et al. (2023), which stressed the need to promote healthy digital behaviors to reduce digital stress.

Digital stress, in turn, is strongly negatively correlated with academic flourishing ($r = -0.835$, $p < 0.01$), reflecting the direct negative impact of stress on individuals' ability to flourish in digital environments. This result aligns with

the study by Hinds et al. (2022), which found that increased digital screen time is associated with increased stress levels and reduced academic flourishing. Also, self-regulation strategies help mitigate the negative effects. These strategies enable students to manage digital distractions and improve their mental well-being and academic performance, especially in online learning environments. These results are similar to those by Zayed (2024), which found that undergraduate students who experience higher digital stress have lower levels of academic well-being.

Overall, the table shows strong, statistically significant relationships between the variables, highlighting the role of self-regulated learning and digital wisdom as positive factors that influence academic flourishing and mitigate the effects of digital stress. It is important to note that all relationships were significant at the $p < .01$ level, which enhances the reliability of the results and their importance in understanding how these variables influence each other.

The results related to the negative relationship between digital stress and digital wisdom are similar to the results by Chen et al. (2021), which indicated that digital stress limits individuals' ability to focus and think purposefully, which negatively impacts digital wisdom.

Students who are able to regulate their learning have better control over their time, goals, and strategies, which leads to better academic performance and higher personal well-being, highlighting the positive relationship between self-regulated learning and academic flourishing. This ability to self-regulate learning contributes to increased motivation and emotional engagement, which are essential components of academic flourishing (Schunk & Zimmerman, 2012). Students with greater digital wisdom can effectively use technology to support their learning, leading to enhanced academic success and psychological well-being, both aspects of academic flourishing. Self-regulated learning and digital wisdom intertwine because they both necessitate high levels of metacognition and self-reflection.

The relationship between digital wisdom and academic flourishing can be explained by the fact that digital wisdom, which includes the ability to use technology effectively while thinking critically and being ethically aware, plays a vital role in students' academic flourishing. It contributes to enhancing their ability to adapt to educational challenges and develop effective self-learning strategies. According to Yot-Domínguez and Marcelo (2017), using digital technologies in sustainable ways supports students' self-regulation academically, which positively impacts their academic performance. On the other hand, Sari and Nayır (2020) showed that digital wisdom is associated with improved critical thinking and problem-solving skills, which are essential for academic success in digital learning environments. The results also showed that cultural factors, such as educational values and social attitudes toward technology, influence how digital wisdom is employed in ways that support sustainable learning.

Furthermore, another study indicated that contextual support, such as the availability of adapted digital learning environments and support from peers and teachers, enhances students' ability to use digital literacy to achieve their academic goals (Broadbent & Poon, 2015). Thus, the relationship between digital literacy and academic flourishing is not simply a direct one but is influenced by cultural and contextual factors that create the optimal environment for fostering this relationship.

Students who practice self-regulated learning are better able to use digital tools thoughtfully, which enhances digital wisdom. Technology, when used wisely, supports learning strategies and helps improve academic performance (Cunningham, 2017). Digital stress is a result of the constant presence of digital technology, which leads to feelings of anxiety and fatigue (Soni & Panigrahi, 2019). The negative relationship between digital stress and other variables makes sense because digital stress leads to distraction and mental fatigue, which hinders organized learning and digital wisdom and negatively impacts academic success. Students who have the ability to organize their learning and possess greater digital wisdom are better able to manage digital challenges and mitigate the effects of digital stress.

Based on the previous results, the hypothesis should be rejected and accept the alternative hypothesis.

H2: There are high levels of self-regulated learning, digital wisdom, digital stress, and academic flourishing among the research sample.

To address this hypothesis, descriptive statistics (mean, standard deviation) were analyzed, and the actual mean was compared to the hypothetical mean. The results are in Table 2.

Table2: Mean, standard deviation, hypothetical mean, and T-value for self-regulated learning, digital wisdom, digital stress, and academic flourishing.

Variable	Actual Mean	Standard Deviation	Hypothetical Mean	T-value	Sig. level	Variable level
Self- regulated learning	52.07	9.79	54.50	5.43	0.01	Moderate
Digital wisdom	50.25	15.16	55.50	7.81	0.01	Moderate
Digital stress	58.71	15.42	56.50	2.73	0.01	Moderate to high
Academic flourishing	46.85	9.06	48.50	15.19	0.01	Moderate

The results in Table 2 reveal that the actual mean score for self-regulated learning among the study sample is 52.0722, which is noticeably lower than the hypothetical mean of 56.50. This suggests that the overall level of self-regulated

learning is moderate but tends toward the lower range. The T-test results, with a value of 5.43 and a highly significant p-value (< 0.001), confirm that this difference is statistically significant and not due to random variation. Additionally, the standard deviation of 9.79627 indicates moderate variability among participants, suggesting notable individual differences in self-regulated learning levels. These findings highlight the need for focused strategies to enhance self-regulated learning skills, ensuring students can better meet expected academic standards.

The results also show that the average level of "digital wisdom" among the students was 50.25, which is close to the expected mean of 55.50, with a standard deviation of 15.16. This suggests that students have a moderate level of digital wisdom. The t-value of 7.81 and the significance level of 0.01 indicate a statistically significant difference between the actual mean and the hypothetical mean. These results imply that while students possess a moderate understanding of digital wisdom, there is room for improvement in their skills and awareness regarding how to manage and evaluate digital information and technology effectively.

Additionally, reveal that the actual mean for digital stress is 58.71, which is higher than the hypothetical mean of 56.50, indicating a moderate to high level of stress among the sample. The T-value of 2.73 and the significance level (p-value) suggest that this difference is statistically significant. This means the level of stress is significantly higher than the hypothesized average level. This result aligns with the findings of Zayed (2024), which revealed a moderate level of digital stress among university students.

Furthermore, the results indicate that the actual mean of the level of “academic flourishing” among the research sample was 46.85, with a standard deviation of 9.06, which is lower than the assumed hypothetical mean of 48.50. The results of the T-test showed a value of 15.19 at a statistical significance level of 0.01, indicating that there is a statistically significant difference between the actual mean and the hypothetical mean. These results classify the sample's level of academic flourishing as average. This level reflects the importance of working to improve the factors associated with academic flourishing to support students in better achieving their academic potential.

Several factors, including environmental and educational influences, explain the average level of self-regulated learning, digital wisdom, digital stress, and academic flourishing among students. Modern educational environments expose many students to educational and cultural factors that may impact their self-regulated learning skills and digital wisdom. The level of teacher support or educational infrastructure may be good, contributing to an average level of academic success, but this may not be enough to achieve high levels (Schreiner, 2018). Moreover, the existence of unavoidable digital obstacles, like the weight of study assignments and continuous digital interactions, poses a significant

challenge. Simultaneously, students can receive adequate technological resources and support, thereby enhancing their levels of academic flourishing. This leads to a balanced level, where students are neither high nor low in academic and digital stress at the same time (Tomasik et al., 2019). In addition to modern educational trends, the development of digital education and self-learning has equipped students with skills and resources to manage these variables, although they may not have fully mastered them yet. This implies a gradual improvement, leading to average scores in these areas. Educational trends emphasize the promotion of self-learning and thoughtful use of new technologies, yet the effective implementation of these skills across all students poses challenges (Schreiner, 2015). Factors such as psychological support and social relationships may affect the level of digital wisdom and academic success. If these factors are available but not fully or equally sufficient for all students, this may lead to average results. Research in the field of psychological well-being shows that there is variation in how individuals deal with digital pressures and opportunities (Duckworth et al., 2007).

Based on the previous results, the hypothesis should be rejected.

H3: There are no statistically significant differences according to gender (males/females) in self-regulated learning, digital wisdom, digital stress, and academic flourishing.

An independent samples T-test was used to compare the differences between males and females in self-regulated learning, digital wisdom, digital stress, and academic flourishing. Table 3 shows the results of the T-test.

Table 3: Means and standard deviations of self-regulated learning, digital wisdom, digital stress, and academic flourishing according to gender

Variable	Males N= 180		Females N= 280		Sig. level	t	Sig.
	Mean	Std	Mean	Std			
Self-regulated learning	52.21	9.84	51.93	9.77	0.960	.269	Not Significant
Digital wisdom	50.30	15.32	52.21	15.63	0.726	.564	Not Significant
Digital stress	58.16	15.23	59.27	15.03	0.658	.686	Not Significant
Academic flourishing	46.92	9.27	47.78	8.87	0.724	.256	Not Significant

The results in Table 3 indicate that there are no statistically significant differences between males and females in self-regulated learning, digital wisdom, digital stress, and academic flourishing. For all variables, the p-value

was greater than 0.05, indicating that there is no significant difference between males and females in these areas. Additionally, the Levene's Test confirmed that the variances between the groups were equal, meaning that the hypothesis is correct and accepted.

The above data clearly shows that the gender variable has no statistically significant effects on self-regulated learning, digital wisdom, digital stress, or academic flourishing. Based on these results, the researcher proposes a model for studying this issue, which applies to all members of the study sample, regardless of gender.

Results showed no differences between males and females in self-regulated learning are consistent with the results by Liu et al. (2021), which showed no significant differences in self-regulated learning between males and females.

The current results related to gender differences in digital wisdom are similar to those by Ramdas & Umar (2024) found no significant effect of gender on digital wisdom practice.

Furthermore, the results of digital stress are consistent with the results by Zayed (2024), which showed no significant differences in digital stress between males and females.

Lastly, the results of academic flourishing align with those of Abd El-Hady (2022), who found no gender differences, and Zayed (2024), who also found no gender differences in academic well-being. However, they differ from Amoadu et al. (2024), who found that males had higher levels of academic well-being due to the social focus on success and achievement.

The lack of statistically significant differences between males and females in variables such as self-regulated learning, digital wisdom, digital stress, and academic flourishing may be due to several factors. Similarity in socio-cultural factors: In some contexts, males and females may have similar educational or cultural environments, leading to convergence in the level of these variables between the sexes. For instance, both genders might have equal access to modern technologies that facilitate self-regulated learning, or they might experience the same external factors that contribute to digital stress.

Similar learning and coping styles: Some studies suggest that males and females may use similar coping styles to cope with academic challenges, leading to convergence in the levels of academic stress or academic flourishing between the sexes. Some studies have shown that gender differences in learning styles may diminish in certain contexts, reducing the effects of gender on these variables (Duckworth et al., 2007; González-Pienda et al., 2002).

Modern educational trends: This may also reflect the influence of modern educational trends that focus on reducing gender gaps, such as integrated academic support programs, which provide flexible learning techniques that suit the needs of both sexes. Social and psychological changes: In some contexts, gender gaps in these areas may have narrowed as a result of social and psychological changes, such as increased female empowerment in education and equality of opportunity.

Based on the previous results, the hypothesis should be accepted

H4: There are no statistically significant differences between students in humanities and scientific departments in self-regulated learning, digital wisdom, digital stress, and academic flourishing.

An independent samples T-test was used to compare the academic specialization differences in self-regulated learning, digital wisdom, digital stress, and academic flourishing. Table 3 shows the results of the T-test.

Table 4: Means and standard deviations of self-regulated learning, digital wisdom, digital stress, and academic flourishing according to academic specialization

Variable	Humanities N= 220		scientific N= 140		Sig. level	t	Sig.
	Mean	Std	Mean	Std			
Self-regulated learning	52.18	9.86	50.89	9.71	.902	.227	Not Significant
Digital wisdom	49.89	15.34	50.41	14.92	.543	.252	Not Significant
Digital stress	55.00	14.63	54.44	15.13	.529	-.42 2	Not Significant
Academic flourishing	46.95	9.24	47.70	8.80c	.555	.248.	Not Significant

The results in Table 4 show that there were no statistically significant differences between students majoring in the humanities and those majoring in science in any of the four variables: self-regulated learning, digital wisdom, digital stress, and academic flourishing. This is because the Sig. values for all four variables were higher than 0.05. As for the means of self-regulated learning, the mean of humanities students was (52.18) compared to (50.89) for science majors, with no significant difference (Sig. = .902). As for digital wisdom, it recorded close means (49.89 for humanities and 50.41 for science), and the differences were not significant (Sig. = .543). As for digital stress, the means of humanities (55.00) and science (54.44) were also close without statistical significance (Sig. = .529). Finally, the levels of academic flourishing showed an average of 46.95 for the humanities and 47.70 for science without a significant difference (Sig. =

.555). The results show that students with different academic specializations had similar responses to the variables that were studied. This could mean that the level of these variables in an academic setting is not significantly affected by the type of academic specialization.

The studies addressing the differences between scientific and humanities disciplines in self-regulated learning are not numerous. However, research suggests that each discipline's unique educational environment, with its distinct focus on required skills and strategies, influences self-regulated learning. For example, students in scientific fields may focus more on data analysis and problem-solving strategies, while humanities students tend to emphasize critical thinking and interpretation skills. Thus, research suggests that both disciplines require customized self-regulated learning strategies, but there is no strong evidence indicating significant differences in SRL levels between these two types of disciplines.

Regarding the results showing no differences due to academic specialization in digital stress, these results are completely consistent with the findings of Zayed (2024). Regarding the results showing no differences due to academic specialization in digital wisdom and academic flourishing, as far as the researcher has reviewed, no study was found to confirm or refute these results, and further research is required to investigate this matter.

There aren't many differences between humanities and scientific disciplines when it comes to self-regulated learning, digital wisdom, digital stress, and academic flourishing (Kahu, 2013). This is because students in both fields have to deal with similar study requirements, digital learning tools, and academic challenges. In addition to the convergence of digital interests, in the current era, students of different disciplines have begun to use technology in similar ways in their academic and personal lives. This enhances the similarity of levels of digital wisdom and digital stress across different disciplines (Ng, 2012). It may also be due to the influence of personal characteristics: self-regulated learning and academic flourishing may depend more on personal factors, such as self-motivation and the strategies followed by the student, than on the type of academic specialization (Zimmerman, 2002). In addition to the holistic impact of academic stress, students in humanities and scientific specializations may encounter similar challenges and pressures, leading to comparable levels of digital stress and academic flourishing (Beiter et al., 2015).

Based on the previous results, the hypothesis should be accepted

H5: Self-regulated learning and digital wisdom mediate the relationship between digital stress and academic flourishing in the research sample.

The researcher built a model by drawing the relationships between the variables as shown in Figure 1. The researcher then attempted to align the data with Andrew Hayes' proposed model, model 4, using process macro 4.2. The

researcher assumed that the digital stress variable is an independent variable, academic flourishing is a dependent variable, and self-regulated learning and digital wisdom are mediating variables as shown in Figure 1. The results are displayed in Tables 5 and 6.

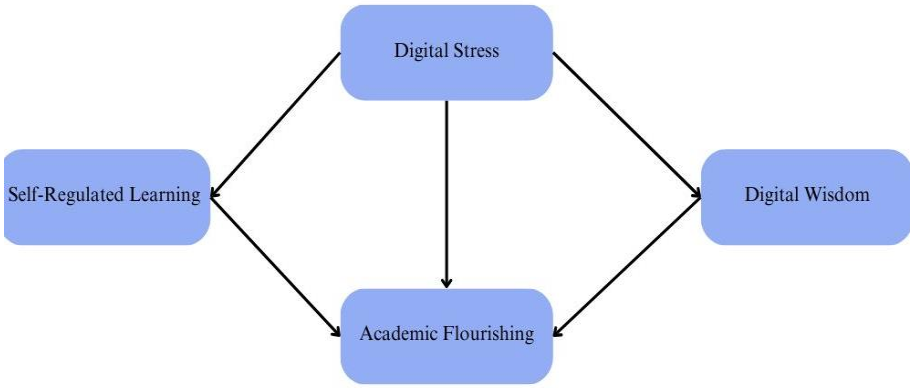

Figure (1) The model expressing the causal relationships between variables

Table 5: The Direct Effect of Digital Stress on Academic Flourishing

Variables	Effect	*SE*	*t-value*	*p-value*	95% Confidence Interval	
					LLCI	ULCI
Consistent	52.1330	3.1724	16.4335	.000	45.8941	58.3719
Digital stress	-0.3806	0.0251	11.1643	.000	-0.3301	-0.2312

The results in Table 5 show that digital stress has a significant negative effect on academic flourishing (B = -0.3806), with a p-value less than 0.01, indicating that digital stress has a significant and influential effect on academic flourishing. Studies suggest that digital stress can negatively impact students' ability to flourish academically, as the stress caused by excessive technology use increases students' stress levels and impacts their academic performance (Rosen, Lim, Carrier, & Cheever, 2011).

According to Salanova et al. (2016), digital stress leads to a decline in the ability to focus and pay attention, which in turn leads to lower academic performance and increased rates of frustration and anxiety among students. McMillan (2017) also observed that students experiencing high levels of

digital stress exhibit a decline in their sense of academic achievement, thereby negatively impacting their academic flourishing. Also, a study by Cabral et al. (2022) showed that the use of digital technology led to lower academic achievement and productivity. In addition, Jiang et al. (2020) found a strong association between digital stress and a decrease in academic self-confidence, as students who experience technological stress tend to feel unable to excel in their academic tasks, which hinders their academic progress and affects their level of academic flourishing.

Therefore, the negative impact of digital stress on academic flourishing necessitates educational institutions to explore strategies for mitigating the negative effects of excessive technology on their students, thereby enhancing their academic and psychological well-being.

Table 6: The Indirect Effect of Digital Stress via Self-Regulated Learning and Digital Wisdom on Academic Flourishing.

Variables	Effect	*SE*	*t*	*P*	Lower Limit (LLCI)	Upper Limit (ULCI)
Total Effect	0.4463	0.0384	6.4169	.000	0.1704	0.3222
Self-Regulated Learning	0.3584	0.0174	14.8563	.000	0.2252	0.2918
Digital Wisdom	0.2684	0.0234	11.4644	.000	0.2220	0.3148

The results reveal the complex effects of digital stress on academic flourishing, monitoring both direct and indirect effects through the mediating variables of self-regulated learning and digital wisdom. The direct effect of digital stress indicates a negative relationship between the two variables; the results showed that increasing digital stress leads to a decrease in academic flourishing. The value of the direct effect was 0.3806 with a standard error of 0.0251, and the t-value was 11.1643 and p = 0.000, indicating that digital stress directly affects academic flourishing significantly.

Moreover, it was discovered that the indirect effect of digital stress on academic flourishing is mediated by self-regulated learning and digital wisdom. The results showed that self-regulated learning weakens digital stress and thus affects academic flourishing. The effect through self-regulated learning was 0.3584 with a standard error of 0.0174, a t-value of 14.8563, and p = 0.000, indicating that self-regulated learning is a significant mediating variable in this relationship. Furthermore, the indirect effect of digital stress demonstrated a similar role for digital wisdom, as it mitigated the negative effects of digital stress

on academic flourishing. The effect through digital wisdom was 0.2684 with a standard error of 0.0234, a t-value of 11.4644, and p = 0.000, indicating strong statistical significance.

Overall, both self-regulated learning and digital wisdom indirectly influence the overall effect of digital stress on academic flourishing. The overall effect value was 0.4463 with a standard error of 0.0384, a t-value of 6.4169, and p = 0.000, indicating that mediating variables play a role in moderating this effect, either by improving self-regulated learning or enhancing digital wisdom.

These results indicate the importance of self-regulated learning and digital wisdom as mediating variables that help moderate the relationship between digital stress and academic flourishing. While digital stress remains a negative overall impact, promoting digital wisdom and improving learning can mitigate this negative impact, highlighting the importance of developing individuals' skills to support their academic flourishing under increasing digital stress. Digital wisdom mitigates the detrimental effects of digital stress on academic flourishing by enhancing individuals' skills and abilities to effectively manage digital stress.

These findings are aligned with the results by Hall et al. (2021), which indicated that digital wisdom can be a psychological and social tool that helps improve digital balance.

The current results support Sanders and Morrison (2021), which confirmed that digital wisdom is not only necessary to reduce digital stress but also to promote the effective use of technology to achieve positive goals such as self-regulated learning, career improvement, and healthy social relationships in the digital environment. This conscious use of technology enhances individuals' ability to interact positively with it and participate in the digital community. Based on the above, self-regulated learning and digital wisdom are essential factors that enhance academic flourishing and reduce the impact of digital stress. While digital stress can be an obstacle to academic success, having skills in self-regulated learning and digital wisdom can contribute significantly to overcoming these challenges.

Self-regulated learning and digital wisdom play a mediating role in the relationship between digital stress and academic flourishing, as shown by a theoretical framework. These factors influence the interplay between digital stress and academic outcomes. Digital stress often leads to distractions and reduces the ability to manage academic tasks effectively. However, students with strong self-regulated learning skills can mitigate the negative effects of digital stress by employing strategies like planning, self-monitoring, and emotion regulation. These skills help transform digital stress into manageable challenges, ultimately supporting higher levels of academic flourishing (Zimmerman & Schunk, 2012). For instance, students who effectively organize their time can offset the disruptive effects of excessive digital distractions.

Additionally, digital wisdom encompasses the ability to use technology consciously and ethically, which helps in minimizing the impact of digital stress. Students with digital wisdom can discern between beneficial and harmful digital activities, reducing time wasted on unproductive digital behavior and enhancing the constructive use of technology for learning and well-being. This wise use of technology can weaken the negative relationship between digital stress and academic flourishing, sometimes even turning it into a positive one (Leon & Barbosa, 2021). For example, understanding how to utilize digital tools effectively can alleviate stress associated with digital learning environments.

Furthermore, self-regulated learning and digital wisdom work synergistically to strengthen students' ability to cope with digital stress. Digital wisdom provides strategies to reduce stress, while self-regulated learning enables the effective implementation of these strategies. This interaction empowers students to achieve academic flourishing even amidst digital pressures.

While digital stress may lower academic motivation, self-regulated learning and digital wisdom can counteract this effect by enabling students to manage tasks effectively and achieve their academic goals, thereby enhancing their well-being and academic performance. In summary, self-regulated learning and digital wisdom act as psychological and cognitive buffers, reducing the negative impact of digital stress on academic flourishing and emphasizing their essential roles as mediators in this relationship.

Based on the research findings, this research directly contributes to the Sustainable Development Goals (SDGs) of the United Nations (2015), particularly Goal 4 (Quality Education), by highlighting the significance of self-regulated learning and digital wisdom in enhancing students' academic flourishing. This, in turn, contributes to the achievement of high-quality education, thereby enhancing their ability to learn sustainably and independently. The research highlights how digital technologies enhance learning skills, thereby positively influencing students' development. The research also contributes to the achievement of Goal 3 of the Sustainable Development Goals (Good Health and Well-Being) by addressing the effects of digital stress on students' psychological and academic health, thereby demonstrating a commitment to enhancing their well-being in modern educational environments. By focusing on techniques for dealing with digital stress, the research provides solutions to alleviate the stress associated with technology use, which enhances students’ general well-being and positively impacts their psychological and physical health in digital learning environments.

Conclusion

This study focuses on examining the relationships between self-regulated learning, digital wisdom, digital stress, and academic flourishing. It also sought to determine the sample's level of these variables and potential gender and

academic specialization differences. The study also confirmed the role of self-regulated learning and digital wisdom in promoting academic flourishing and mitigating the effects of digital stress in contemporary educational settings. The results showed a strong positive relationship between self-regulated learning and academic flourishing and an inverse relationship between digital wisdom and digital stress. Self-regulated learning and digital wisdom also played a mediating role in the relationship between digital stress and academic flourishing, indicating their importance as basic skills for teachers and students in the digital environment. We detected moderate levels in the four variables, revealing no gender and academic specialization differences. The study recommends enhancing self-regulated learning and digital wisdom skills through comprehensive training programs for students, ensuring their ability to deal with digital tools efficiently. It also calls for implementing innovative strategies to improve the use of technology in a sustainable manner that supports education and reduces the impact of digital stress. These results open the way for more future studies to understand the dynamics of the relationship between these variables in diverse educational and cultural contexts.

Recommendations

In light of the research findings, the following recommendations can be presented.

1. Conducting training programs for students and that focus on developing self-regulated learning skills, by enhancing their ability to plan, self-monitor, and effectively evaluate their academic and interactive performance in digital environments.
2. Designing educational units based on digital interactive models, including technological tools that contribute to motivating students to practice self-regulated learning, such as electronic planning applications and applications that provide immediate feedback on performance progress.
3. Incorporate digital wisdom concepts into our curricula and instruct students on the responsible and conscious use of technology.
4. Providing workshops that focus on developing digital awareness, as well as developing critical thinking skills when using digital tools.
5. Guidance and training students to manage digital time effectively can reduce the effects of digital stress.
6. Review and design curricula to reduce over-reliance on digital tools and associated tasks. Curricula should balance digital and traditional learning to mitigate the stresses of heavy technology use.
7. Create a learning environment that supports positive student-faculty interactions while minimizing digital performance demands that can cause stress. Academic policies should include practices that reduce digital

stress, such as flexibility in assignment submission and the use of user-friendly learning platforms.

8. Conduct long-term studies to investigate how self-regulated learning can reduce digital stress and promote academic flourishing across age and cultural groups.

limitations of the work

Despite the significant contributions of this study, there are areas that can be improved in the future. These include expanding the sample size to be more representative and conducting multi-site studies to reduce the impact of geographic bias. Additionally, future studies could enhance the findings by using advanced analytical tools and longitudinal studies to understand long-term changes. Such efforts could provide a deeper and more comprehensive understanding of the subject.

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