Impact of Digital Self-Regulation on Academic Productivity: The Moderating Role of Digital Well-Being

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***Abstract*—The rapid adoption of digital technology in higher education has significantly altered the learning environment for students, resulting in increased digital distractions for them while also providing them with greater academic freedom. The purpose of this study is to explore how Academic Productivity (AP) and Digital Self-Regulation (DSL) are affected by Digital Well-Being (DWB). The study was conducted on university students using a designed questionnaire for a quantitative method of research. Three hundred and thirty-eight responses were found to be appropriate for further analysis. The Cronbach's α value for the measurement tool was found to be 0.823, which is a sign of good internal consistency. Varimax rotation, principal component analysis, and exploratory factor analysis were employed for data analysis. We applied hierarchical regression analysis to explore the direct and moderating effects.**

The findings indicate that academic production and digital self-regulation are strongly and positively related ($R2 = 0.335$, $p < 0.001$). The explanatory power of the model ($R2 = 0.400$) increased when digital well-being was introduced as the moderating variable, which indicated a diminishing moderating effect. Academic productivity and digital well-being have a positive relationship, but overabundance can hinder productive digital engagement and reduce the effectiveness of self-regulation.The paper recommends that instead of imposing harsh digital bans on students, institutions of higher learning should encourage balanced digital practices among students, with a higher emphasis on the importance of self-regulation. This approach can help protect the digital well-being of students while promoting academic productivity in digital classrooms.

I. INTRODUCTION

The rapid development of digital technology has significantly impacted the way college students perform their academic tasks. Digital storage of learning materials, mobile apps, collaboration tools, and learning management systems have become essential components of academic life because of their capacity to provide flexibility, efficiency, and personalized learning experiences. Students can now learn outside of the traditional classroom and gain the skills they need to succeed in a digital economy thanks to these technological advancements.

The problem is that there are drawbacks to always using a device. Students may suffer significant harm if they are constantly receiving notifications while they use their devices for media consumption and gaming. They thus struggle to concentrate and think clearly. They are easily sidetracked. cannot focus on one item for an extended period of time. Children who spend a lot of time on digital gadgets put off their work, squander time, feel exhausted, and do poorly in school, according to several research. For students, digital devices are consequently a double-edged sword. They could be beneficial, but they could also hinder their academic progress. Digital devices can be used by students to learn. Digital devices, however, can potentially be a big distraction for the students.

When students struggle, digital self-regulation, or DSL, is essential. The cornerstone of digital self-regulation is the capacity to keep an eye on, control, and make sure that your gadget use complements your academic work. Digitally self-reliant students may focus on their academics, stay away from distractions, and utilise computers and other gadgets sensibly rather than irresponsibly. Students are more equipped to use digital technologies to achieve their objectives when they practise digital self-regulation.

However, extended use of digital devices can negatively impact students' mental and emotional well-being, which has raised awareness of Digital Well-Being (DWB). A person's ability to use technology effectively is reflected in their digital well-being, which includes positive behavioural patterns, emotional equilibrium, and mental comfort. While thoughtful and deliberate use of technology can

improve wellness, excessive use or stringent limits on it might negatively impact academic performance. Despite the increasing importance of these ideas, there hasn't been much empirical research on the connection between academic productivity and digital well-being. In order to close this gap, this study looks at the relationship between academic productivity and digital self-regulation as well as the moderating role of digital well-being.

1.1 Background of the Study

The increasing use of digital technologies has had a significant impact on how educational institutions operate. In higher education, the shift to digital has had a significant impact on how individuals engage with one another, how teachers instruct, how students learn, and how we access information.
An increasing number of people are using resources such as smartphone applications, scholarly websites, and specialised computer programs that help professors and students in virtual classrooms.

This suggests that students can utilise technology and digital tools to learn whenever they want, at their own pace, and in a fashion that works for them. Technology is a big part of education these days. It allows us to quickly access a large amount of information. People from all across the world can work with us on school assignments. Technology also assists us in learning the skills required for job. We require specific skills in order to excel in the workplace. There is technology in this environment. It is helping us acquire the technology skills we need to be successful as professionals. Technology helps us study and collaborate with others, which is crucial for both our schooling and future careers.

While there are many benefits to digital integration in higher education, there are also significant drawbacks. Students find using smartphones, social media, and other digital devices all the time to be extremely distracting. Students thus find it difficult to concentrate on just one task at a time. Students who use gadgets excessively lose focus, squander time, put off learning, and learn less than they could. Therefore, when utilised improperly, the same digital technologies that can aid children in their studies can potentially harm their academic performance. Integration of digital technology can be beneficial. Furthermore, it could be an issue if kids use digital devices carelessly.

Students need to be skilled in digital self-regulation when encountering multiple challenges. The essence of digital self-management lies in having control over your consumption. This implies that you are able to track your online behavior, regulate it, and ensure that it has a positive effect on your academic outcomes. Students who possess good digital self-control skills are able to regulate the length of their screen time. Additionally, they are able to refrain from behaviors that might hamper their academic success, such as disabling notifications that are not required.

They are able to concentrate on using technology that benefits them in their academic endeavors, which is the main objective of digital self-regulation. By using technology appropriately, students are able to ensure that it helps them in their academic success. Students should use technology as a resource that helps them attain their objectives. Students should be in control of how they use technology. It does not affect their academic endeavors. By so doing, students are able to ensure that technology is a benefit to their academic success rather than a constant source of problems.
At present, people are stressing the importance of digital well-being in addition to managing their own technology use. Digital well-being is centered on the impact of technology on our emotional responses, behaviors, and mental states. Our frequent dependence on technology and resources for digital well-being can be detrimental to our health. Fatigue, stress, and anxiety can result as a result. We may even have problems sleeping.

On the other hand, we can truly experience a sense of balance and clarity of mind if we use Digital Well-Being technology in moderation and not to the point of overuse. Digital well-being is a crucial aspect because it involves managing technology use. If we use technology properly, our lives can improve because of digital well-being. Our use of technology is critical. The quality of our use of technology is a key element of digital well-being. It means being informed and comfortable with technology. Our habits while using technology are another element of digital well-being. This encompasses the essence of our entire digital well-being

While the importance of digital self-regulation and digital well-being cannot be overstated, the combined effect of these two factors on academic productivity has not yet been investigated. Understanding the relationship between these constructs is essential in addressing the challenges posed by digitalization in higher education.

1.2 Problem Statement

Today, academic productivity is not just about your learning methods and the quality of your teachers. Today, how well you manage everything around you is also important for your academic success. The internet provides many opportunities to gain knowledge, but there are also many distractions that might change your focus. Some individuals believe that you might succeed in school if you learn to manage your use of different resources. We are not sure about the effect of using digital devices when you feel happy and healthy on academic success. Digital well-being and academic efficiency are. It is important to understand how a student's digital well-being affects academic success.

Whether a high level of digital well-being enhances the benefits of digital self-regulation or if it only helps to counteract the negative consequences of overusing technology is still unclear. Furthermore, too much strictness in digital well-being policies, such as too much avoidance of technology or restrictions, could inadvertently hinder effective academic use of technology. This ambiguity points to a significant research gap.

Therefore, the main research question that informs this study is:

Does digital well-being moderate the relationship between digital self-regulation and academic productivity in university students?

To develop informed strategies that facilitate effective technology use while safeguarding students' academic and emotional well-being, it is essential to address this issue.

1.3 Research Objectives

The main objectives of this research are as follows:

1. To investigate the direct relationship between Digital Self-Regulation (DSL) and Academic Productivity (AP).

This objective aims to establish whether there is a positive correlation between students who have higher control over their digital behavior and those who are more academically productive in terms of efficiency, concentration, and performance.

2. To investigate the moderating effect of Digital Well-Being (DWB) on the relationship between Digital Self-Regulation and Academic Productivity.

In an effort to better comprehend the relationship between digital behavior and psychological well-being, this objective seeks to establish whether digital well-being has a moderating effect on the strength or direction of the relationship between self-regulation and productivity.

3. To provide practical insights for educational institutions and stakeholders.

This objective seeks to inform the development of educational interventions, digital literacy initiatives, and institutional policies that promote balanced digital use—maximizing academic productivity while simultaneously protecting the mental health and well-being of students.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Digital Self-Regulation and Academic Productivity

The core of digital self-regulation lies in your ability to track your usage and confirm that it aligns with your academic and personal goals. The ideas of self-regulation and self-control form the basis of this notion. Digital self-regulation is essential as it allows you to track your behaviors, set objectives, and manage your impulses while using devices.

Digital self-regulation in the classroom involves avoiding unnecessary screen time during work, refraining from repeatedly checking notifications, arranging the tasks you must finish on your computer or phone, and utilizing digital devices for educational goals instead of just playing games or viewing videos.

While studying, students skilled in controlling their behavior can manage their thoughts and remain focused. Individuals often switch between activities

while using phones and laptops without any guidelines. Engage in multiple activities at the same time. As a consequence, they have trouble concentrating and absorbing information. Students skilled in digital self-regulation can maintain concentration and steer clear of online distractions. Students with digital self-regulation skills can manage their time more effectively, engage in deeper study, and complete tasks more efficiently. Through focusing on their assignments, digital self-regulation helps students achieve their goals.

Academic productivity refers to how effectively students complete their school tasks. It's about completing tasks, doing them promptly, and consistently. Students perform much better when they can concentrate, manage their time effectively, and maintain their interest in academic tasks.

Research suggests that students achieve higher academic results when they can choose how to utilize resources. They engage more in class, finish their assignments promptly, and earn grades. Students who manage their technology effectively are more likely to use it to support their learning rather than becoming distracted by it. For students, scholarly output is essential. A key aspect of it is overseeing digital conduct.

Furthermore, digital self-regulation enables students to reduce excessive digital usage while actively integrating technology into their academic practices, like utilizing digital resources for organization, teamwork, and research. This intentional and managed method of internet usage enhances productivity by reducing cognitive overload and preserving attentional resources.

Based on theoretical reasoning and existing empirical evidence, this study proposes the following hypotheses:

- H_{01} (Null Hypothesis): There is no significant relationship between digital self-regulation and academic productivity.
- H_{11} (Alternative Hypothesis): There is a significant positive relationship between digital self-regulation and academic productivity.

2.2 The Moderating Role of Digital Well-Being

Digital well-being refers to how individuals feel and behave while engaging with technology. In contrast to digital self-regulation, it is unrelated to controlling how we use technology. Maintaining a connection with technology is crucial for digital wellness. This involves being aware of our behavior and feelings when using technology. It also requires finding a balance with our offline existence. Digital well-being enables individuals to utilize digital tools without feeling stress, exhaustion, or anxiety. Digital well-being is essential as it affects our engagement with technology and how we incorporate it into our everyday lives. Essentially, digital well-being refers to the capacity to engage with technology in a manner that enhances our happiness and overall health.

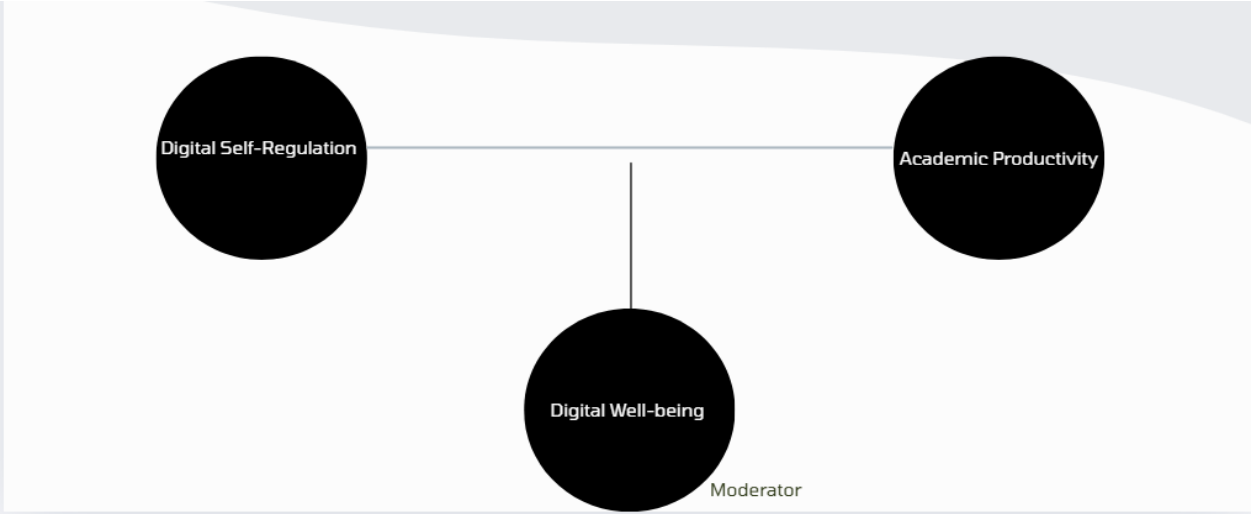
Individuals who examine existence argue that our capacity for self-regulation may be influenced by our feelings. Students who take pleasure in using technology feel less anxious and more comfortable when we are online. They can also think distinctly. This allows people to stay calm when navigating the internet without getting too upset. Well-being is essential for self-regulation as it allows students to sustain focus and make sound choices while using digital devices. Students' capacity to exercise self-control while online is associated with their overall well-being and digital well-being.

Nonetheless, the study suggests that maintaining a strong sense of digital well-being—which individuals often attain by rigorously restricting their technology use or entirely avoiding it—may lead to adverse effects. If the emphasis is placed heavily on staying away from digital components, students could be deprived of the benefits of digital tools that could help them in their education. In this scenario, the benefits of controlling digital use, such as increased productivity, may not be realized because students are not only avoiding negative digital content but also forgoing positive digital resources that could help them, such as digital well-being, online interactions, and useful digital tools.

From a moderation viewpoint, digital well-being is anticipated to affect both the intensity and trajectory of the connection between digital self-regulation and academic productivity. At moderate levels, digital wellness can boost the beneficial impacts of self-regulation by promoting emotional stability and mental clarity. At extremely high levels, though, it could diminish this connection by limiting the use of productive technology.

Accordingly, this study conceptualizes digital well-being as a moderating variable and proposes the following hypotheses:

- H_{02} (Null Hypothesis): Digital well-being does not significantly moderate the relationship between digital self-regulation and academic productivity.
- H_{12} (Alternative Hypothesis): Digital well-being significantly moderates the relationship between digital self-regulation and academic productivity.



III. CONCEPTUAL FRAMEWORK

The basis of this study is an idea that explains the connection among academic productivity, digital wellness, and digital self-control. We developed this idea after examining insights from others regarding self-control and the operation of digital well-being in today's society. When individuals utilize learning tools, we aim to see how they manage their emotions and behavior. Digital self-regulation and digital well-being are essential due to their influence on academic productivity. Consequently, we need to understand the connection among Digital Self-Regulation, Academic Productivity, and Digital Well-Being.

This approach centers on digital self-regulation. The capacity of students to oversee their digital self-regulation and confirm that they are utilizing resources in a manner that aids their academic efforts is the core of digital self-regulation. This suggests that they refrain from utilizing devices for purposes unrelated to school, disable unneeded notifications, establish a schedule, study using the computer, and ensure they complete their school assignments before engaging in online gaming. Digital self-regulation is necessary because it enables students to regulate their usage, which helps them achieve their educational objectives.

We are attempting to quantify academic productivity. It is linked to how students complete their tasks. If students are able to concentrate for a period of time, complete their tasks on time, participate in class, allocate their study time effectively, and feel positive about their success, they are said to be academically productive. Academic productivity is a crucial aspect because it represents the capability, achievement, and effectiveness of students in completing their academic tasks.

The usage of phones and computers by students impacts their digital wellness. It highlights the emotions and thoughts of students while they are using the internet for Digital Well-Being. The usage of technology by students impacts their digital wellness. It alters the level of association between students' digital learning and their academic achievement. The emotions and perspectives of students on life are influenced by their digital wellness.

The conceptual framework shows a strong link between academic achievement and digital self-regulation, suggesting that better academic achievement is associated with higher levels of self-regulation. At the same time, this link is moderated by Digital Well-Being, suggesting that the quality of digital well-being of students has an impact on the efficacy of self-regulation. This view of moderation

recognizes that while well-being can be a positive factor in productive engagement, being too strict about digital wellness can be counterproductive to self-regulation.

IV. METHODOLOGY

4.1 Research Design

For the purpose of experimentally investigating the interrelations between digital self-regulation, digital well-being, and academic productivity, the current study adopted a quantitative approach with a cross-sectional design. The quantitative approach is appropriate for the current study because it is able to statistically test hypotheses of correlations and moderation between variables based on a relatively large sample. A momentary glimpse into students' online activities and educational performance in a digitally immersive learning setting was enabled by the cross-sectional design, permitting data to be gathered at one specific moment

4.2 Target Audience and Sampling

This study focuses on undergraduate and graduate university students. This team continually utilizes mobile technologies and educational tools. They also utilize academic resources. Digitalization notably affects college students in this manner. They could gain a lot from it, but they might also face several challenges. Therefore, we think that if we want to understand how people navigate their digital lives and the effect on their wellbeing, we should turn to them. We are focusing on college students and digital transformation. We prioritize the digital self-regulation and wellbeing of university students.

We only used people who were easily accessible for data collection. This was because it was easy to complete, and we could collect the data quickly. Initially, we got 338 responses. After analyzing the data and eliminating the responses that were not completed and made no sense, we were left with 250 responses. This was sufficient to conduct the study we wanted to conduct, which included factor analysis and model building. We had enough power to produce positive results.

The adjusted response rate (approximately 37%) is still within acceptable ranges for survey-based behavioral research, while the net response rate of close to 74% indicates high levels of participant engagement.

The data for this study was gathered through a set of unique questions that students completed on their own. This set of questions included 26 questions that tried to determine the thoughts and actions of students regarding the management of their digital activities while being happy and healthy, engaging with digital content, and earning good grades. Every question had a response through a rating scale that allowed students to express strong disagreement, disagreement, uncertainty, agreement, or strong agreement. We employed self-regulation, digital well-being, and academic productivity to reveal the genuine feelings of students about these matters. The Likert scale format was selected due to its frequent use in social science studies. Individuals prefer the Likert scale as it effectively gauges their thoughts and emotions. The Likert scale effectively reveals people's behaviors and their opinions on various subjects. It simplifies the process of comparing the outcomes. The Likert scale serves as a method to gauge individuals' attitudes and opinions in a manner that is straightforward to analyze. The Likert scale structure is beneficial for Likert scale studies.

The survey was developed using theoretical ideas and knowledge obtained from studies on individuals' self-regulation, online behavior, and educational achievement. To address all facets of the topic and achieve accurate answers, we ensured that each section of the questionnaire contained questions. To ensure the questions are relevant and address suitable subjects, we adjusted them to align with the daily activities of students using tools in their learning. We aimed to verify that the questionnaire genuinely focused on behavior, self-regulation, and academic output.

The survey was created to be easy to understand. It was meant to be clear and direct. Terms or expressions that might be unclear to individuals completing the questionnaire were omitted. This guarantees that all individuals are informed about the inquiries throughout the journey.

All the questions in the questionnaire were phrased in a specific way. This facilitates respondents in giving uniform responses to the survey. It also reduces the

chance that they will just consent to everything because they are tired of answering questions.

The survey was maintained short. Consequently, individuals are more inclined to answer all of the questions. Moreover, it maintains the respondents' engagement with the survey.

This is crucial as it ensures that the data we obtain from the questionnaire is precise and trustworthy.

Prior to the extensive data collection, the instrument underwent initial screening and modifications to ensure logical consistency and alignment with constructs. The final version of the questionnaire was capable of measuring behavioral control in terms of digital use (Digital Self-Regulation), psychological and emotional outcomes obtained from digital engagement (Digital Well-Being), and perceived efficiency and effectiveness in terms of academic performance (Academic Productivity).

4.4 Statistical Tools and Analytical Strategy

To ensure the rigor of the methodology, validity of the findings, and robustness of the results, a multi-phased approach to the statistical analysis was adopted. Consistent with best practices in quantitative research, the approach to analysis was designed to confirm the measurement model prior to testing the hypothesized correlations

Analysis of Reliability

In the first stage, Cronbach's alpha analysis of reliability was employed to establish the internal consistency of the measurement scales. The reliability analysis was performed to ensure that the dimensions of each construct were measuring the same essential concept. The reliability was considered acceptable if the Cronbach's alpha was above 0.70. This was an important step that ensured the data was ready for further multivariate analysis.

Analysis of Correlation

The strength and nature of the correlations between the variables in the research were established through Pearson correlation analysis after the reliability of the data was established. Correlation analysis was also employed as a diagnostic test to identify any multicollinearity issues. Correlation coefficients exceeding 0.70 were believed to signify multicollinearity problems. Before conducting regression analysis, it was essential to verify the independence of constructs by confirming acceptable levels of correlation.

Exploratory Factor Analysis (EFA)

We used a technique known as exploratory factor analysis to determine whether the measurement items are truly measuring what they are intended to measure. To do this, we employed Principal Component Analysis in conjunction with a technique known as Varimax rotation.

We utilized the Kaiser-Meyer-Olkin measure to determine whether the sample was sufficient in order to ensure that the data was suitable for this type of study. Bartlett's Test of Sphericity was also utilized.

The factors with eigenvalues larger than one were retained for the study. Only the elements with factor loadings greater than 0.50 were retained. As for the Exploratory Factor Analysis of the measurement items, this was our cutoff point. This step confirmed the purity of the dimensions and ensured that the objects loaded properly into their respective structures.

Hierarchical Regression Analysis

The final part of the study used a form of analysis to establish the accuracy of our theories. Our aim was to establish the effect of Digital Self-Regulation on Academic Productivity. To establish how Digital Self-Regulation affects Academic Productivity, we used an analysis. Later, we used another form of analysis where we added Digital Well-Being to establish how it affected the relationship between Academic Productivity and Digital Self-Regulation. To establish whether the addition of Digital Well-Being actually affected the relationship between Digital Self-Regulation and Academic Productivity, we assessed the extent to which the results changed.

Before proceeding to hypothesis testing, this progressive form of analysis ensured that the measurement model was valid and reliable. The study had a high level of methodological rigor and enhanced the validity of the empirical results by systematically progressing from tests of validity and reliability to regression analysis.

V. DATA ANALYSIS AND RESULTS

This section introduces the statistical analyses that were performed to validate the reliability, validity, and hypotheses of relationships among Digital Self-Regulation (DSL), Digital Well-Being (DWB), and Academic Productivity (AP). A systematic approach was adopted to validate the measurement before hypothesis testing.

5.1 Reliability Analysis

We conducted a reliability analysis to determine the reliability of the measurement tool. We sought to confirm that the items in each group were measuring the same thing. Because Cronbach's alpha is a widely used measure in behavioral and social sciences research, it was employed for the reliability test. Cronbach's alpha is used to determine the reliability of the measurement tool.

According to the standards set, a Cronbach's alpha score of 0.70 or higher is reliable. It has high internal consistency when the Cronbach's alpha score is 0.80 or higher. The Cronbach's alpha score in this study was 0.823. In truth, the Cronbach's alpha score in this study is beyond the standard level. An indicator shows that the Cronbach's alpha score is 0.823. It highlights the internal consistency and reliability of the Cronbach's alpha score.

The high level of reliability indicated by the Cronbach's alpha score shows that the questionnaire is effective in its coherence and consistency in determining academic productivity, digital well-being, and digital self-regulation. In addition, it indicates that the participants understood the items in a uniform and reliable manner, supporting the appropriateness of the instrument for further multivariate analysis.

5.2 Correlation Analysis

Before engaging in the regression analysis, we performed a Pearson correlation analysis to determine the nature of the correlations between the research variables and to determine whether there were any multicollinearity issues. A method to determine that the variables are interrelated but not too highly correlated is correlation analysis. We employ Pearson correlation analysis to determine the nature of the correlations between the research variables. Before engaging in the regression analysis, we determined whether there were any issues with the research variables.

The results revealed that the Digital Self-Regulation variables are interrelated and relate to the concepts we were researching. It is comforting to know that none of these relationships were too strong. We would not be concerned about Digital Self-Regulation and the key concepts being too similar, as all the values we gathered were below 0.70. This is critical for digital self-regulation.

These results show that although there are strong relationships between Digital Self-Regulation, Digital Well-Being, and Academic Productivity, they are still separate concepts. This is what regression and moderation analysis are based on, as it helps to ensure that each variable contributes something different to the regression model rather than being too similar.

5.3 Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis was employed to determine construct validity and confirm whether the items in the assessment were properly matched to their corresponding constructs. A clear factor structure was obtained using Principal Component Analysis with Varimax rotation

Digital Self-Regulation (DSL)

To determine whether our data was sufficient for factor analysis, we proceeded to examine the Kaiser-Meyer-Olkin measure for Digital Self-Regulation. The value was 0.869, which is outstanding. This indicates that factor analysis is appropriate for our data. We also performed Bartlett's Test of Sphericity to determine whether our correlation matrix is suitable for factor extraction. The test showed that it was statistically significant with a probability of less than 0.001. This indicates that our correlation matrix is suitable for extracting the Digital Self-Regulation factor.

The two factors that were retained explained 62.593% of the variance because of the eigenvalues being greater than one. The DSL scale was an effective measure of digital self-regulation behaviors because of the high and evenly spread factor loadings on the items.

Digital Well-Being (DWB)

The KMO index for the construct of Digital Well-Being was 0.760, which was found to be satisfactory. Factorability was established through the significant

Bartlett's Test of Sphericity ($p < 0.001$). One large general factor was determined to account for 54.334% of the total variance, with very high factor loadings. This indicates the high construct validity and one-dimensionality of the digital well-being scale.

Academic Productivity (AP)
We were able to get a KMO of 0.846 for Academic Productivity. This is excellent as it indicates that we have a sample.
About 59% of the variation in academic productivity can be explained by the primary finding.

This refers to the academic accomplishment of students, which covers their ability to focus, complete tasks, and manage their time effectively.
Scholarly productivity is a critical construct as it encompasses elements such as focusing, completing tasks, and managing time effectively.
All constructs have fulfilled the recognized validity requirements, as shown by the overall EFA results. The measurement model is supported, and the use of these constructs in regression analysis is justified by the high KMO values, significant Bartlett tests, eigenvalues greater than one, and factor loadings above 0.50.

5.4 Regression Analysis
To assess the validity of our theories, we conducted a form of analysis referred to as hierarchical regression. This method allows us to analyze every predictor variable individually and assess its impact on the results. We aimed to find out if the predictor variables influenced other variables or if they changed their impacts. Hierarchical regression analysis is valuable for this as it demonstrates the extent to which we can explain the data at each stage. Regression analysis was conducted to investigate the direct and moderating effects of the predictor variables and to evaluate the hypotheses of our study

Model 1: Direct Effect of Digital Self-Regulation on Academic Productivity
We examined Digital Self-Regulation in the model to determine its independent impact on Academic Productivity.
The outcome showed that around 33.5% of the factors influencing academic productivity may be explained by digital self-regulation.
From a perspective, this model was equally significant.
Because the outcome was so important, the Digital Self-Regulation had an effect.
According to the data, students perform better academically when they have more control over their digital lives. The concept that students who manage their lives well get superior academic outcomes is strongly supported by this study. Productivity and digital self-regulation are directly related, and kids who are adept at controlling their digital activity perform better academically.

Model 2: Moderation Effect of Digital Well-Being
To examine the impact of Digital Well-Being, Digital Self-Regulation was incorporated into the model together with Digital Well-Being. The inclusion of Digital Well-Being enhanced the model's explanation by as much as 40%. This is a positive development because Digital Well-Being clarified an extra 6.5 percent of the situation, providing a notable improvement.

Regarding academic productivity, digital self-regulation and digital well-being are essential. Both Digital Self-Regulation and Digital Well-Being seem to influence our academic success. The data indicates that incorporating Digital Well-Being leads to a reduction in the Digital Self-Regulation coefficient. This indicates that Digital Well-Being is altering the impact of Digital Self-Regulation on Academic Productivity, which aligns with our expectations regarding Digital Well-Being and Digital Self-Regulation.

These findings indicate that although digital self-regulation is a significant predictor of academic productivity, its effectiveness differs according to students' level of digital well-being.

VI. DISCUSSION

6.1 Interpretation of Findings
The research shows that digital self-regulation is vital for academic productivity when students utilize computers and other digital tools for their studies. Students who excel in self-discipline, like steering clear of distractions, restricting their screen usage, and ensuring they complete their assignments, can focus

more effectively. Furthermore, they are better skilled in managing their time. They invest considerable effort into their studies. Digital self-regulation is vital for academic performance as it supports students in these aspects. These results align with the self-regulation theory. As per self-regulation theory, individuals can effectively carry out their tasks when they manage their behavior.

These results align with the concept of self-regulation. Self-regulation theory suggests that individuals can carry out their responsibilities effectively when they manage their behavior. This is due to their ability to maintain focus on their responsibilities and prevent distractions. Self-regulation theory suggests that individuals can achieve their objectives by engaging in effective behaviors and steering clear of ineffective ones. The main idea of self-regulation theory is that individuals can enhance their performance by managing their actions and focusing on what is important.

The research results highlight the importance of regulating your online behavior to achieve academic success. One factor contributing to your academic output is your capacity for practicing digital self-control. This suggests that managing the time you use digital devices is not a trivial matter; instead, it plays a significant role in your academic success.

Managing your technology use is vital for academic success when you're constantly surrounded by distractions, similar to other study methods people have traditionally used. Academic productivity encompasses digital self-management.
The main conclusion of this study is that it uncovered information related to digital well-being. Your digital well-being influences your academic performance. Learning is supported by utilizing resources in a beneficial manner. The research also found that an overly elevated sense of digital well-being can reduce the effectiveness of digital self-regulation in task completion. This suggests that the integration of digital self-regulation and digital well-being may not consistently improve your productivity. Digital well-being remains advantageous for you. Your degree of digital well-being influences how you regulate your digital activities.

This research indicates that students who stop using digital tools excessively—such as by taking a lengthy break or avoiding them completely—might inadvertently hinder their access to valuable digital resources that could support their academic efforts. Consequently, limiting their usage might improve individuals' well-being or decrease fatigue, but it could also hinder their ability to access the internet and other digital resources for studying and collaborating with peers. Digital wellness practices can be beneficial. Students following digital wellness practices may not get the benefits of digital tools, which may help them in their studies.

This finding challenges the common perception that increased digital restrictions always lead to improved academic performance. Rather than focusing on minimizing screen time, the results make it clear that the quality, purpose, and intention of digital engagement matter more in determining productivity. Therefore, technology use needs to be managed with utmost care, which is more important than minimizing technology use for academic success.

6.2 Theoretical Implications

The significance of this research is that it sheds light on the behavior of individuals when they use different devices. The research delves into how individuals deal with their interaction with objects and how this impacts their feelings and thoughts. In essence, the research indicates that there are two aspects that need to be taken into account: how individuals regulate their online behavior and feelings.
Before this study, participants thought that their good or bad experiences with technology were only linked to their usage or to events that occurred prior to their use. This research shows that individuals' capacity to manage their online behavior can be affected by their emotional condition.

This research shows that an individual's emotional condition can affect how they manage their behavior online. The study of behavior and educational psychology highlights several critical concerns.
Digital self-regulation pertains to how people control their technology usage. The phrase "digital well-being" describes individuals' emotions while using different devices. Studying behavior and educational psychology enables comprehension of how

individuals can use digital devices healthily. Educational psychology and digital behavior are related because both are concerned with learning and behavior as people use tools.

Secondly, we recognize that the achievement of balance is necessary for completing our assignments. This implies that too many regulations about the use of digital technology could be detrimental to people. The findings show that the emphasis on well-being and happiness sometimes conflicts with our academic obligations, particularly since we are required to regularly use computers and other digital technology. Academic structures include digital technology, and we must use the technology in a way that suits us.

The study improves the comprehension of online behavior within academic settings by combining self-regulation theory with knowledge of digital welfare. The study proposes that optimal digital engagement lies at the point where control and adaptability meet, rather than at the extremes of uncontrolled use or complete abstention.

6.3 Practical Implications (Expanded and Strengthened)

Implications for Students

Students ought to be motivated to embrace purposeful and structured digital engagement methods instead of complete digital withdrawal. Beneficial methods consist of organized study plans, regulated notification preferences, and intentional utilization of educational digital resources. The focus must be on managing distractions while maintaining access to tools that boost productivity, thus optimizing learning effectiveness without sacrificing well-being.

Consequences for Educators

Teachers also have a very important role to play in influencing the online behavior of students. The need to incorporate digital self-regulation training into the curriculum is imperative since it teaches students how to control their attention, organize online learning tasks, and use technology effectively. Digital literacy programs, importantly, need to go beyond stories that emphasize fear and caution.

Consequences for Institutions and Policy Makers

Instead of strictly enforcing digital detox guidelines, institutional digital well-being programs should focus on promoting a sustainable and balanced approach. Improving digital engagement to enhance academic achievement while avoiding burnout should be emphasized in workshops, counseling programs, and institutional policies. In an advanced learning environment, policies solely focusing on minimizing screen usage might be counterproductive.

VII. CONCLUSION, LIMITATIONS, AND FUTURE SCOPE

7.1 Conclusion

The study clearly shows the importance of digital self-regulation in academic productivity in the classroom. Students who control their use of resources are better placed to focus, time-manage, and attain better grades. Students need to strike a balance regarding digital devices such as computers and phones, according to the survey, which also showed that Digital Well-Being is a factor in this. Digital well-being and self-regulation are critical for academic achievement.

The study makes it clear that the importance of thoughtful and intentional digital engagement, where technology is controlled to support learning without undermining psychological well-being, is paramount rather than advocating for extreme digital control.

These findings are especially important in today's world where digital technology is deeply ingrained in the academic process.

7.2 Limitations

The study has many limitations despite its contributions. First, the use of self-reported data may lead to response bias, as the participants' perceptions of their own productivity and digital behavior may not accurately represent their actual behavior. Second, because digital behavior and well-being can change from time to time, the cross-sectional study design makes it difficult to make causal inferences. Third, the study did not take into account the possibility that digital behavior may differ during academic times, such as exam periods or project deadlines

7.3 Future Scope

It is important to investigate how people regulate their digital lives and their level of satisfaction with them over time. This will enable us to see how these factors influence, at times, children's academic achievement. We must also consider the issues people experience in their digital lives, such as anxiety from too much

screen time, fatigue from device use, or concern about missing important information when they are not online. This enables us to see which factor, digital self-regulation or digital well-being, impacts students' academic achievement, as mentioned in our research. In addition, experimental or mixed-method approaches may provide better insights into the mechanisms and context of digital behavior in the school setting.

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Correlations

		DSL1	DSL2	DSL3	DSL4	DSL5	DSL6	DSL7	DSL8
DSL1	Pearson Correlation	1							
DSL2	Pearson Correlation	.475**	1						
DSL3	Pearson Correlation	.435**	.386**	1					
DSL4	Pearson Correlation	.439**	.425**	.467**	1				
DSL5	Pearson Correlation	.443**	.381**	.395**	.428**	1			
DSL6	Pearson Correlation	.486**	.445**	.405**	.464**	.332**	1		
DSL7	Pearson Correlation	.488**	.469**	.523**	.431**	.436**	.522**	1	
DSL8	Pearson Correlation	.381**	.362**	.400**	.425**	.399**	.382**	.455**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Digital Self-Regulation (DSL)

KMO and		
Kaiser-Meyer-Olkin		0.869
Bartlett's Test of Sphericity	Approx. Chi-Square	345
	df	15.000
	Sig.	0

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.083	51.378	51.378	3.083	51.378	51.378	1.437	23.951	23.951
2	0.673	11.215	62.593	0.673	11.215	62.593	1.383	23.049	47.001
3	0.614	10.232	72.825	0.614	10.232	72.825	1.111	18.514	65.514
4	0.596	9.940	82.765	0.596	9.940	82.765	1.035	17.251	82.765
5	0.535	8.917	91.682						
6	0.499	8.318	100.000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component			
	1	2	3	4
DSL1		0.635		
DSL2		0.896		
DSL3	0.893			
DSL4	0.642			
DSL5			0.917	
DSL8				0.928

Extraction Method: Principal Component Analysis.

a. Rotation converged in 5 iterations.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69.521	1	69.521	169.179	<.001[b]
	Residual	138.072	336	.411		
	Total	207.592	337			
2	Regression	83.087	2	41.544	111.779	<.001[c]
	Residual	124.505	335	.372		
	Total	207.592	337			

a. Dependent Variable: AP

b. Predictors: (Constant), DSL

c. Predictors: (Constant), DSL, DWB

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.278	.138		9.230	<.001
	DSL	.578	.044	.579	13.007	<.001
2	(Constant)	.798	.154		5.189	<.001
	DSL	.431	.049	.432	8.853	<.001
	DWB	.307	.051	.295	6.042	<.001

a. Dependent Variable: AP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.579[a]	.335	.333	.641
2	.633[b]	.400	.397	.610

a. Predictors: (Constant), DSL

b. Predictors: (Constant), DSL, DWB