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Time Management Strategies in Graduation Projects: Systematic Scheduling vs. “All-Nighter” Culture

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Abstract

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Time management plays a critical role in students' success and their readiness for professional practice. This study examines the impact of structured planning compared to all-nighter work habits among Architecture, Industrial Engineering, and Software Engineering students in Saudi universities during their graduation projects. A descriptive cross-sectional survey was conducted across 212 students. The findings indicate that frequent all-nighters are associated with higher academic stress, while structured scheduling is linked to improved perceptions of time control. Although students who slept less than three hours during intensive work periods reported higher subjective satisfaction, this appeared to reflect the perceived effort intensity rather than the quality of work or overall well-being. The study further identifies a gap between students' intended planning strategies and their actual work behaviours. In alignment with Saudi Vision 2030, the study recommends structured scheduling practices to better equip students with the skills required to meet evolving industry demands.

Keywords: Time Management; Systematic Scheduling; All-Nighter Culture; Graduation Projects; Architecture Education; Student Stress; Saudi Vision 2030.

1. Introduction

Time management is defined as the practical systems of determining task priorities and managing time while working under pressure (Lakein, 1973). Recently, the study and application of time management have gained growing attention, as modern life has accelerated the many demands placed on students, requiring them to control and navigate many activities within a fixed and often overlapping deadlines. This challenge became more apparent across students within design and engineering disciplines, as the nature of the projects requires students to manage multiple phases, where each phase must be completed within strict time constraints. Moreover, in engineering disciplines, the processes that involve problem-solving and creativity are more complex and require additional layers of time management. This study examines graduation projects among three disciplines: Architecture, Industrial Engineering, and Software Engineering. Graduation projects are the culmination of multiple disconnected processes, including research and design, multiple rounds of modifications and development, and a final presentation, all of which must be accomplished within a predetermined time frame. After graduation, students enter the world of practice, where effective time management shifts from being an academic necessity to becoming an essential professional skill.

Despite the acknowledged value of effective time management at both educational and professional levels, many students struggle to adopt consistent, efficient practices. As a result, two contrasting approaches commonly emerge among students: structured planning and last-minute, all-nighter-driven work. Each of which has implications for personal productivity, work performance, and personal health and well-being. Previous studies clearly indicate that consistent planning and healthy sleep habits are well associated with improved academic outcomes, whereas sleep deprivation and procrastination negatively affect cognitive functioning and the project's overall quality (Suardiaz-Muro et al., 2023). However, there remains a lack of targeted research that directly compares these two approaches within the specific context of graduation projects in the area of engineering education, particularly in Saudi Arabia. Therefore, this study aims to examine the impact of structured scheduling in comparison to all-nighter work habits on students' academic performance, stress levels, and the overall quality of graduation project outcomes in engineering programs in the Kingdom of Saudi Arabia.

1.1 Theoretical Foundations of Time Management

The importance of time management for students' academic performance is highlighted in project-based programs. This is particularly true for architecture and engineering programs, where students are expected to manage research, technical work, and presentations within constrained timeframes. In this context, time management is crucial for completing a task and ensuring the quality of the final product. Taylor's, 1911 theory of scientific management posits that productivity increases when time and tasks are organized and differentiated. This affirms the results of several studies that report a positive correlation between time management and the academic performance of university students. According to Aduke, 2015, students who schedule their tasks and organize their time perform better in academics and are able to submit their work on time. Consistent with these findings, Khan et al., 2022 report that time management positively influences academic performance. This is even more evident during the graduation period, when students work independently for extended periods of time. Graduation work is unique and involves many activities that span an entire academic semester. Unlike other regular courses, graduation projects involve multiple stages that include research, implementation, presentations, and revisions. Abdullah et al., 2013 support the idea that project-based learning environments take a long time to complete and require students to demonstrate a high degree of responsibility and self-management to ensure successful completion. Moreover, self-management would be even more vital in the period leading up to the submission, when the majority of students encounter overlapping deadlines despite having planned their schedules. Kumar, 2022 notes that students who follow and maintain organized schedules usually report better control over their workload and lower stress levels than those who only plan without following through. This gap between planning and actual implementation is clearer in engineering and architecture programs, where projects require sustained continuous effort rather than short periods of intense work.

1.1.2 Stress and Academic Pressure

Academic stress is considered one of the most common challenges that university students face, especially during graduation projects and major submissions in engineering and architecture programs. As during these submissions, students have to deal with overlapping deadlines, multiple revisions, technical issues, and long working hours at the same time. These conditions usually increase stress levels, which negatively affect their academic performance and personal well-being. Research shows that students who depend on last-minute work and all-nighters usually experience higher stress levels than students who follow a more structured work habits. Ramsey et al., 2019 found that insufficient sleep and irregular work patterns are more associated with psychological stress among university students. Similarly, Antony et al., 2025 explain that academic pressure and heavy workloads can contribute to anxiety, emotional exhaustion, and sleep-related problems. Many students think that stress helps them become more productive, especially when deadlines start coming close. Even with that, studies show that excessive stress often makes it hard to focus, weakness performance, and negatively affect students overall well-being. Sirois & Tosti, 2012 found that procrastination and delayed work are directly connected to high stress levels and lower psychological well-being among university students.

1.1.3 The All-Nighter Phenomenon

Pulling an all-nighter means staying awake through the night to meet an academic deadline. It is one of the most common yet ineffective study behaviors adopted by university students. Thacher, 2008 surveyed 120 undergraduate students, and found that 60% had engaged in at least one night of total sleep deprivation since starting university; those who did earned significantly lower GPAs and reported later bedtimes and stronger evening preferences than those who did not. Pilcher & Walters, 1997 found in a controlled experiment that 24 hours of sleep deprivation can significantly decrease the student's ability for critical thinking, attention to details, and creativity. In addition, Lund et al., 2010 reported that students who struggle with irregular sleep habits usually experience fatigue, anxiety, and difficulty maintaining focus during academic work. Despite this evidence, all-nighter culture persists, especially in architecture and design education, where long studio hours are usually equated with creative dedication and commitment to work. Research on architecture studio culture across multiple countries documents that the studio environment implicitly encourages excessive time investment and unhealthy work patterns as signals of seriousness. According to Ibrahim, 2020, a qualitative study of 303 undergraduate architecture students at Beirut Arab University found that these normalized patterns place a serious burden on students' mental health and overall wellbeing, calling into question the sustainability of current studio culture norms, that often normalizes reactive work habits that cluster effort close to submission deadlines. From a behavioral perspective, Steel, 2007 explains this as a present-moment bias, where students prioritize immediate convenience over long-term results. This leads to slower task initiation, and intense pressured workload just before deadlines.

1.1.4 Higher Education, Professional Readiness, and Saudi Vision 2030

Beyond academic performance, the habits students develop during their undergraduate work, carry direct impact on their professional practice. Saudi Vision 2030, has clearly identified the preparation of a skilled, productive, and discipline-ready graduate workforce as a national priority, with local universities and institutes encouraged to bridge the gap between academic outputs and the structured demands of the industry (Mohiuddin et al., 2023). Research on Saudi labor market readiness highlights that graduates usually lack the self-regulation and the disciplined workflow management that employers require. Therefore, aligning academia with industry expectations is essential for achieving Vision 2030's goals (Alrashedi, 2025). In this context, the work habits formed during graduation projects, which are the most industry-proximate academic experience, are of particular strategic importance. Students who enter professional environments having relied mainly on last-minute effort are poorly prepared for the structured workflows, planning, and consistent project delivery that professional practice demands.

1.2 Research Objectives

This research aims to:

1. Document the range of time management strategies adopted by students across Architecture, Industrial Engineering, and Software Engineering programs in universities across Saudi Arabia during their graduation projects.
2. Evaluate the results of systematic scheduling versus all-nighter approaches with respect to productivity, stress levels and sleep quality.
3. Discover the factors that influence students toward each method.
4. Develop evidence-based recommendations to enhance time management strategies within design and engineering programs.

1.3 Research Question

This study addresses the following research questions:

- (1) What is the most effective time management strategy among engineering and architecture students?
- (2) How does systematic scheduling compare to all-nighter work patterns in terms of academic success?
- (3) To what extent do these two approaches influence students' overall performance, as reflected in stress levels and sleep quality?

1.4 Scope and limitations

This study investigates time management strategies used during graduation projects across undergraduate students in Architecture, Industrial Engineering, and Software Engineering in university programs in Saudi Arabia. In particular, it investigates cases in which students have a high level of responsibility, control, and freedom in both managing and executing their projects. This study covers students' project management behavior, their self-reported productivity, sleep patterns, stress levels, and a qualitative account of their work processes. This study has several constraints and self-imposed limitations, including reliance on self-reported productivity, the lack of participation, controlled institutional elements, such as faculty feedback and assessment criteria, and limited geographical and academic boundaries, which may affect the applicability of the study's results.

2. Materials and Methods

This study adopted a descriptive cross-sectional survey design. Data was collected using an electronic self-administered questionnaire distributed to students in the departments of Architecture, Industrial Engineering, and Software Engineering. The questionnaire had questions on demographic and project-related details. It included Likert-scale statements on time management, working hours, stress, sleep, and productivity behaviors. Moreover, it included an open-ended question exploring the major time management challenges students face. Quantitative data were analyzed descriptively and compared across different fields, while the open-ended responses were analyzed using a thematic approach.

2.1 Sample and Selection Criteria

The target population includes Saudi university undergraduate students who are currently or have recently completed graduation projects, in three programs: Architecture, Industrial Engineering, and Software Engineering. These academic programs were chosen specifically due to their reliance on long-term and self-managed graduation projects. A total of 212 valid responses were collected and analyzed. This study adhered to established ethical standards for research involving human participants. All participants were fully informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any time. No identifying information (such as names, addresses, or contact details) was collected. To ensure that participants did not experience discomfort.

2.2 Data analysis

Quantitative data was analyzed using descriptive statistics, including standard deviations and frequency distributions, to determine sample characteristics and the distribution of time management behaviors. A comparative analysis was conducted to identify differences in outcomes between those who follow a schedule and those who stay up all night, and Pearson correlation coefficients were calculated to examine the relationships between planning frequency and self-reported outcomes.

3. Results

The results indicate that most students across all three disciplines spend between 3–5 hours daily on their graduation projects, making it the most common working pattern. This trend is consistent in Software Engineering (40.30%), Architecture (33.73%), and Industrial Engineering (33.87%).

In Software Engineering, this is followed by 28.36% of students working 6–8 hours, 20.90% working less than 3 hours, and 10.45% exceeding 8 hours. In Architecture, 27.71% of students fall within the 6–8 hours range, while a relatively higher proportion 22.89% report working more than 8 hours a day, compared to 15.66% who work less than 3 hours. In

Industrial Engineering, 32.26% of students work around 6–8 hours, followed by 22.58% working less than 3 hours daily, and 11.29% exceeding 8 hours of continuous work. Architecture students show a higher tendency toward extended working hours, while Software and Industrial Engineering students show a more balanced distribution across moderate ranges.

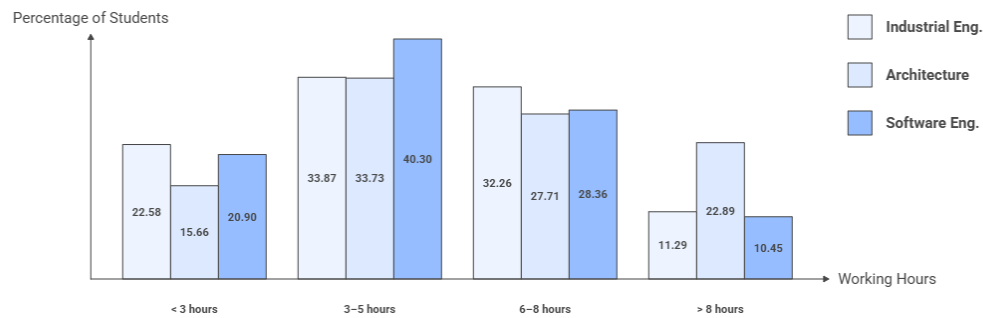


Figure 1. Daily Working Hours Distribution by Discipline.

3.1 Relationship Between All-Nighter Frequency and Stress Levels

The analysis across Industrial Engineering, Software Engineering, and Architecture students reveals a clear and consistent positive relationship between the frequency of all-nighter work and reported stress levels. In the Industrial Engineering department, students who “always” pull all-nighters report the highest average stress level (4.65/5), while those who “never” do so report the lowest (3.10/5). Which indicates that sleep deprivation, or the workload conditions that necessitate all-nighters, is a significant contributor to elevated stress levels. A similar pattern is observed among Software Engineering students, where stress levels increase in alignment with the frequency of all-nighters. General stress rises from an average of 2.00 among students who never pull all-nighters to 3.67 among those who always do. This suggests a strong positive correlation between intensified, all-nighter work habits and perceived stress, both in general and in relation to deadlines. Architecture students demonstrate a comparable pattern. Those who never engage in all-nighters report the lowest average stress level (2.00), whereas students who always rely on all-nighters report significantly higher stress levels (4.20), more than double that of their peers who avoid such practices. Across all disciplines, deadline-related stress consistently exceeds general stress levels, with the gap becoming most pronounced among students who frequently engage in all-nighters. In the “always” category, deadline stress reaches a peak average of 4.44, compared to 3.67 for general stress. Overall, the findings highlight that increased reliance on all-nighter behavior is strongly associated with higher stress levels, reinforcing the negative implications of such practices on students’ well-being.

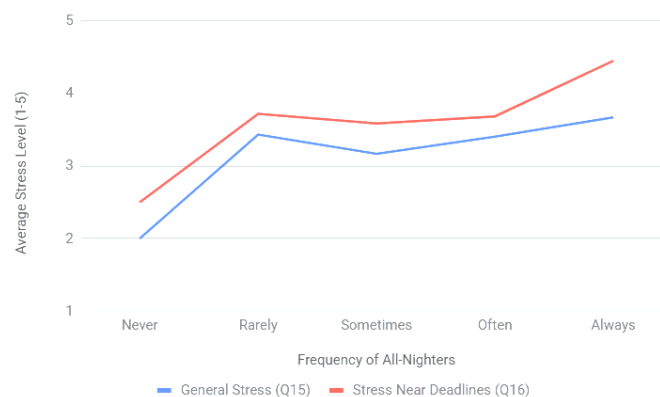


Figure 2. Relationship Between All-Nighter Frequency and Stress Levels.

3.2 Sleep Duration and Project Satisfaction

The analysis reveals a non-linear and discipline-consistent relationship between sleep duration during intense project periods and satisfaction with the final output. Across all three majors, a recurring pattern emerges:

- Students reporting the least sleep (less than 3 hours) tend to show relatively high satisfaction levels, with the highest scores observed in Industrial Engineering (4.50/5) and strong results in Software Engineering (4.00/5) and Architecture (3.56/5). This suggests that periods of extreme effort, often associated with “all-nighter” work habits, may lead to a heightened sense of accomplishment or perceived output quality.
- Moderate sleep durations (5–6 hours) appear to provide a balanced outcome, particularly in Architecture (3.90/5) and Software Engineering (~3.82/5), and represent the most common pattern among students. This indicates a potential “optimal range” where students maintain both productivity and acceptable well-being.
- Lower satisfaction is associated with 3–4 hours of sleep, especially in Architecture (3.15/5) and Industrial Engineering (3.29/5), suggesting that even partial sleep deprivation may negatively impact the experience and perceived students’ performance.

- Students with higher sleep durations (7–8 hours) report lower satisfaction levels across all disciplines, most notably in Software Engineering (2.89/5) and Industrial Engineering (3.11/5). This may indicate lower engagement intensity or reduced immersion during critical project phases.

Overall, the findings highlight that extreme and moderate work patterns produce different outcomes, surprisingly, with intense and low-sleep periods often linked to higher satisfaction. While moderate structured effort (5–6 hours of sleep) offers a more stable and balanced performance. These results reinforce the complexity of time management behaviors, where perceived success is not only aligned with healthier practices, but is also influenced by effort intensity, engagement, and project pressure.

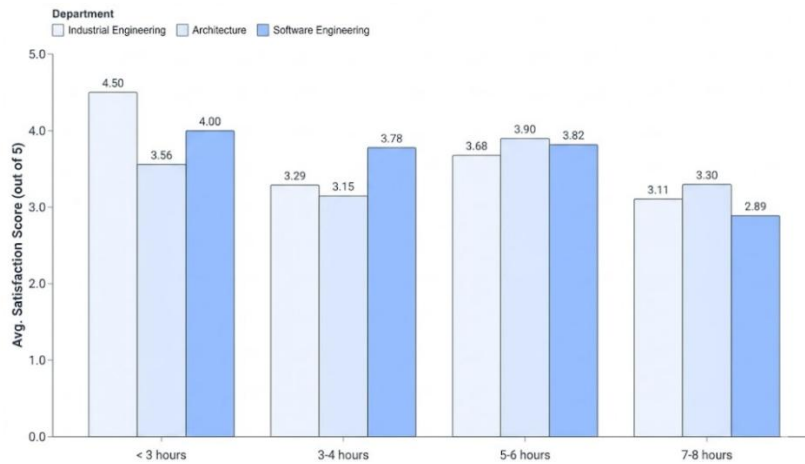


Figure 3. Average sleep during intense project periods.

3.3 Perceived Effectiveness Under Last-Minute Pressure

The analysis of responses to the statement “I work most effectively under last-minute pressure” across students reveals a general tendency toward an agreement. This occurs for about 56.62% of Architecture students, 53.22% of Industrial Engineering students, and about 49.25% of Software students. This data collectively shows that students in all three fields of study noted that they work effectively under pressure, with the strongest endorsement observed in Architecture, followed by Industrial Engineering and Software Engineering.

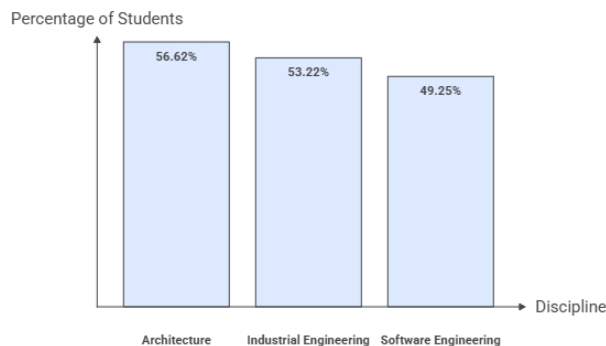


Figure 4. Student Perception of Last-Minute Pressure Effectiveness.

3.4 Structured Scheduling Behaviour

The analysis of students' responses regarding schedule creation and actual implementation reveals a generally positive but imperfect relationship between planning and execution. In Architecture, students report relatively strong planning habits, with an average score of 3.88 for creating a schedule and 50% scoring 4 or higher. However, the average score drops to 3.45 for following the schedule, indicating that maintaining consistency is more challenging than initial planning. A similar pattern is observed in Industrial Engineering, where a positive relationship exists between creating and following schedules. While in Software Engineering, approximately 31% of students report high scores (4 and 5) in both creating and following schedules. The analysis across the three majors indicates a generally positive relationship between creating schedules and students' perceived control over their time. In Software Engineering, a moderate alignment is observed, with 16.42% of students reporting mid-level ratings (3) for both scheduling and control. Students who consistently create schedules are more likely to feel in control, yet a notable 26.87% experience a “control gap,” where strong planning does not translate into a high sense of control. In Architecture, a positive but relatively weaker correlation (0.27) exists between schedule creation and perceived control. However, adherence to the schedule shows a stronger relationship (0.45), indicating that execution plays a more critical role than planning alone in their perception of time control. As students who consistently follow their schedules report the highest levels of control, while those who plan but do not adhere experience lower perceived effectiveness. In Industrial Engineering, a stronger correlation (0.46) is observed, suggesting a clearer and more direct link between scheduling and time control. Students who report high levels of planning are also the most likely to feel in control, with consistent alignment across both high- and low-scoring groups.

4. Discussion

Students of Architecture, Industrial Engineering, and Software Engineering, share many similarities in how they manage their time for graduation projects, with some notable differences shaped by the nature of each discipline and the culture within each department. Most students spend, on average, 3 to 5 hours on self-initiated work. Most students indicated that this time frame is a reasonable expectation for self-initiated work. However, students of Architecture reported spending longer hours on projects, which can be attributed to the intensive design project work of Architecture that usually is of a non-modular nature and is based on the studio culture and visual work (King et al., 2017).

One of the most distinct findings of this study is the association of all-nighters with elevated levels of stress, especially stress related to deadlines. Across all majors, participants that reported the need to all-nighter behavior also reported the most elevated levels of stress compared to participants who did not depend on all-nighters. This finding aligns with previous research showing that insufficient sleep is strongly associated with psychological stress, anxiety, and burnout among university students (Ramsey et al., 2019). The academic stress literature similarly confirms that heavy workloads and tight deadlines trigger insomnia and sleep disruption, creating a self-reinforcing cycle (Antony et al., 2025). These findings make clear that relying on all-nighters is not a cost-free coping strategy, but it carries serious consequences for students' mental well-being.

The relationship between sleep duration and academic satisfaction demonstrated high complexity. Most interestingly, students with sleep durations of below 3 hours reported high satisfaction levels, and this is likely an example of what is called the "effort heuristic" which can be defined as the tendency to associate exhaustion with productivity and to derive a sense of accomplishment from sacrificial effort (Rodgers et al., 2016). However, this subjective satisfaction should not be conflated with objective performance or sustainable well-being. Students sleeping 5 to 6 hours appeared to achieve a more functional balance, reporting acceptable satisfaction alongside fewer negative well-being indicators. Suggesting that disrupted sleep patterns are associated with poorer self-assessments of academic progress. Research on interior design and studio-based students corroborates this pattern, showing that students who cycle between severely restricted nights and recovery-long nights demonstrate pre-to-post-study declines in creativity and cognitive performance (King et al., 2017).

A notable perception gap emerged regarding work quality under pressure. Many students, particularly those in Architecture, believe they perform better when facing imminent deadlines. This belief is consistent with well-documented tendencies toward academic procrastination, which students often rationalize as productive urgency (Postiglione et al., 2026). Yet when this self-reported preference is viewed alongside stress data, it shows that students who most frequently work under last-minute pressure also report the highest stress levels. Research on procrastination consistently demonstrates that procrastination is associated with higher perceived stress and lower psychological well-being, even when individuals subjectively believe they function well under pressure (Sirois & Tosti, 2012). This gap between perceived effectiveness and actual well-being suggests that students may be rationalizing a coping pattern that is, in practice, harmful.

Finally, the results show a critical gap between intention and actual behavior. Many students claim to prepare schedules, but few implement them. The important part of the data is that the perception of time control depends on the adherence to one's schedules and not the preparation of them. Students who adhered to their schedules claimed to have greater control over their time. Numerous studies suggest that the control and management of time and presence of a perceived control of students' time has a positive relationship to their academic performance and the lack of control and poor management of time is a cause and contributor of procrastination and academic related stress (Hamzah et al., 2014).

Taken together, the results show that students of all three majors display similar work behavior, which is to complete tasks in an urgent and last-minute manner, which leaves students feeling accomplished, but adds stress and interrupted sleep in addition to a lack of reliability to plans. There is strong evidence that the proper time management practices will not only improve the desired performance but also the mental well-being of students.

5. Recommendations

Based on the findings of this study, the following recommendations are to manage time more effectively among students of Engineering and Architecture during their graduation projects.

5.1 Recommendations for students

First, students should shift away from all-nighter dependency toward distributed daily effort. The findings of this study clearly show that stress levels particularly deadline-related stress escalate consistently with all-nighter frequency across all three disciplines. Findings also indicate that on average, students worked for 3-5 hours in daily project work. Maintaining this work effort throughout each stage of the project would be more realistic and lead to better results than working all-nighters in the final stages of the project.

Second, students should target 5–6 hours of sleep during intensive project phases. This range corresponds to optimal results across the three disciplines, maintaining an acceptable level of satisfaction while preserving cognitive functioning and well-being. The subjective satisfaction reported by students who sleep less than 3 hours during project time is likely driven by effort intensity rather than actual performance quality and should not be treated as a reliable indicator of success.

Third, students should prioritize following schedules, over schedule creation. The gap between planning and follow-through is one of the study's most consistent findings. Creating a schedule is an essential first step, but it is alone insufficient; the habit of consistently following it is what truly translates into a sense of time control and a measurable reduction in deadline-related stress.

Fourth, students should utilize digital tools and use AI to support planning, tracking, and task management. Tools such as scheduling applications, task managers, and AI-assisted platforms can help students break down complex projects into

manageable smaller steps, add reminders, and enhance focus. These tools can reduce stress, improve consistency in execution, and bridge the gap between planning and actual implementation.

5.2 Recommendations for academic programs and instructors

Programs should introduce structured time management training before students begin their graduation projects. Students across the three majors report a planning-execution gap. Therefore, early intervention, such as workshops on scheduling, time management tools, and self-regulation, would directly improve their time management behaviors.

Instructors are strongly encouraged to integrate mandatory milestone checkpoints throughout the graduation project timeline. As structured, short deadlines reduce the conditions that make all-nighters feel necessary, and shift students toward a more progressive work habit. This is especially relevant for Architecture, where extended working hours and stronger beliefs in last-minute productivity suggest a culture of high-pressure, end-loaded effort.

Programs should address the widespread but misleading belief that last-minute pressure improves performance. The study showed that approximately 50–57% of students among the three disciplines agree with this perception. Faculty can counter this by making the stress and well-being costs of all-nighters explicit in advising conversations, and by designing assessments that reward process documentation and early-stage progress.

5.3 Recommendations for Future studies

Future studies should examine whether the high levels of satisfaction reported by students with minimal sleep reflect genuine output quality or are a subjective cognitive bias. This can be achieved by incorporating objective project quality assessments alongside self-reported measures. The study should be replicated across a broader sample of Saudi universities and additional engineering disciplines to test the generalizability of these findings. In addition to examining gender differences and cultural influences on time management behavior within the Saudi higher education context.

6. Conclusion

This study examined how time management behaviors, work habits, and sleep patterns shape the academic outcomes and well-being of students across Architecture, Industrial Engineering, and Software Engineering programs during their graduation projects. The findings across all three disciplines clearly show that students who adopt structured planning approaches experience lower stress, greater perceived control, and higher-quality results than those who rely on all-nighters and last-minute effort.

Despite this, a clear gap emerged between intention and behavior. As many students create schedules but fail to follow them consistently, and a substantial proportion continue to believe that deadline-driven stress enhances their performance. However, the evidence does not support this belief. Procrastination and sleep deprivation are associated with elevated stress and decreased well-being, regardless of how productive the work session may feel in the moment. Students who maintained consistent adherence to their plans reported meaningfully better outcomes, reinforcing that behavioral follow-through, not planning intention alone, is what drives academic success.

Beyond academic performance, the study identifies a significant gap between students' current work habits and the structured, disciplined workflows expected in professional environments, a concern that is directly relevant to Saudi Vision 2030's emphasis on developing a competent and industry-ready workforce. Equipping students with effective scheduling practices, task breakdown strategies, and reduced dependence on last-minute work is not only an academic priority but a professional preparation imperative. Institutional interventions targeting time management skills and the normalization of healthier work habits represent a practical and evidence-supported step toward closing this gap and aligning higher education outcomes with the demands of industry.

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Conflicts of Interest

The authors report no conflicts of interest.

Data Availability Statement

Due to ethical restrictions, survey data are not publicly available but may be obtained from the authors with IRB approval.

CRedit Author Statement

All authors contributed to the study conception and design. Individual contributions are as follows: *Conceptualisation: S.A.; Methodology: S.A.; Writing – original draft: M.A., S.H., S.S., G.S.; Writing – review & editing: M.A.; Data curation: S.H., S.S., G.S.; Visualization: M.A., S.H., S.S., G.S.; Supervision: S.A., M.A. All authors have read and approved the final version of the manuscript.*

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