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BOARD # 58: WIP: Implementing a Coffee Break to enhance exam performance and alleviate student stress

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WIP: Implementing a coffee break to enhance exam performance and alleviate student stress

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Abstract

In the field of education, one of the primary challenges is the accurate assessment of student learning, particularly in disciplines such as civil engineering and architecture, where traditional examinations are commonly employed. However, these exams often induce significant levels of stress and anxiety, which can adversely affect student performance and lead to an incomplete or inaccurate reflection of their knowledge. To mitigate this, recent studies have investigated the potential benefits of introducing a "coffee break" during exams as an intervention to reduce stress. This break provides students with an opportunity to relax, engage with peers, and reset before continuing the examination. Surveys conducted at various stages—before, during, and after the break—demonstrated that the coffee break significantly lowered stress and anxiety levels, improved focus, and enhanced overall exam performance. Students reported feeling less apprehensive and more confident when resuming the exam. These findings suggest that incorporating a coffee break could represent a valuable modification to traditional assessment methods, offering a more accurate and equitable evaluation of student knowledge while simultaneously promoting well-being and performance in construction-related disciplines.

Introduction

Traditional exams are a prevalent method of assessment in construction majors, such as civil engineering and architecture, aiming to quantify students' knowledge and determine their readiness to progress in their studies [1]. These exams are typically individual, time-limited, and closed-book, with no external aids allowed. While they serve the purpose of evaluating students' understanding, there is substantial evidence showing that traditional exams can induce significant stress and anxiety, negatively affecting students' performance[2], [3]. Many students report that stress and worry cause them to forget important information during the exam, even when they possess the necessary knowledge [4], [5], [6], [7] . The pressure to perform within a limited timeframe exacerbates these issues, leading to what is commonly referred to as "blanking out" during exams [8]. This widespread stress is not unique to specific regions or countries but is common across engineering programs globally [7], [9], [10], [11], indicating that it is an inherent issue with traditional assessment methods. Despite these drawbacks, traditional exams remain the standard evaluation tool in many academic disciplines, particularly in construction-related fields [12].

Stress, however, is not just a result of knowledge gaps but can also occur when students know the material but are overwhelmed by anxiety, preventing them from reasoning clearly or applying their knowledge effectively [13]. This phenomenon is especially common in engineering programs, where exams begin early in students' academic careers and continue throughout their studies, including postgraduate assessments [14]. Students across different cultures and countries report similar experiences of academic stress, particularly when faced with heavy coursework, high-stakes exams, and intense grade competition [15]. As a result, stress has become a major factor in reducing academic performance, with some students even dropping out of their courses due to the negative impact on their mental health [16]. Despite criticisms of traditional exams, most courses continue to use them as the primary assessment method [12], highlighting the need for new approaches to mitigate stress and improve the fairness of evaluations.

To address this issue, some studies have suggested alternative methods of assessment, such as open-book exams, extended time limits, or multiple-choice tests. However, these alternatives still require further research and refinement to fully replace traditional exams [8], [12]. A promising intervention proposed by recent studies involves introducing a "coffee break" during exams to alleviate student stress. The coffee break allows students to take a short pause, relax, and interact with their peers, which can help reduce anxiety and improve focus when they resume the exam. Preliminary research indicates that this intervention can significantly lower stress levels, allowing students to better apply their knowledge and perform more effectively during exams [4], [7].The coffee break offers a simple yet potentially effective modification to traditional exam formats, helping to balance the need for rigorous assessment with the well-being of students. By implementing such strategies, academic institutions can enhance the accuracy of their assessments and create a more supportive environment for students, ultimately fostering better learning outcomes [3], [16].

Background

Traditional exams are a cornerstone of academic assessment in many disciplines, particularly in fields such as engineering and architecture . These exams typically involve a series of questions or problems based on the course content, administered individually, closed-book, and within a set time limit [17], [18]. The main purpose of traditional exams is to gauge how well students have absorbed and can apply the knowledge they have learned throughout the course. These exams often have a significant weight in determining final grades, such as midterms or final exams, and are designed to assess a wide range of topics covered in the course [19]. However, while exams serve their purpose in evaluating student learning, they also have the potential to induce significant stress and anxiety among students [12], [20], [21]. This stress can negatively affect their performance, leading to lower scores than their actual knowledge would suggest.

One of the primary stressors in traditional exams is the time pressure imposed on students. The limited amount of time to complete the exam can lead to feelings of urgency, which in turn can impair students' ability to think clearly and perform well [14]. Time constraints are a natural feature of traditional exams due to the rigid academic schedules that limit the time available for assessments. Excessive stress during exams can lead to mental blocks, lack of

concentration, procrastination, and distractions [22]. However, research has shown that extending the time limit for exams may not always reduce anxiety. In fact, increasing time or providing unlimited time can create uncertainty and lead to second-guessing, which may undermine the purpose of the exam—to assess students' knowledge accurately [23], [24], [25]. Although time is a key stressor, exams can also induce other forms of anxiety, such as the fear of failure, which can exacerbate stress levels and negatively impact cognitive functions such as memory, concentration, and problem-solving abilities [26], [27], [28]. Excessive stress during exams can lead to mental blocks, procrastination, and a loss of focus, all of which contribute to poor performance [29].

Understanding the effects of stress on students' performance is especially important in fields like engineering and architecture [30], where exams are often used to measure not only knowledge but also the ability to apply that knowledge in practical situations [10]. Many students experience anxiety due to the fear of failure, which can lead them to adopt stressful study habits in preparation for exams. However, not all students respond to stress in the same way, and for some, high levels of stress can be counterproductive, impairing their ability to retain information and perform well [31]. In professional settings, engineers and architects often have the opportunity to consult with colleagues and reference materials, which alleviates stress [32], [33]. In contrast, traditional exams do not offer such support, and this lack of resources can increase stress levels among students [26]. It has been shown that around 60% of students who experience high levels of stress during exams do not achieve the minimum passing score, suggesting that stress can significantly interfere with academic performance [28].

In light of these challenges, various alternative assessment methods have been proposed to alleviate stress and improve students' performance [34], [35]. Approaches such as open-book exams, multiple-choice questions, take-home exams, and the option to choose between questions have all been explored as ways to reduce anxiety and promote a more relaxed testing environment [17], [36]. Open-book exams, for example, allow students to refer to their notes during the exam, reducing the pressure to memorize vast amounts of information. Research has shown that such assessments can help promote critical thinking, problem-solving, and reflection, rather than rote memorization, which is often the focus of traditional exams [17]. Similarly, group exams, which encourage collaboration among students, have been suggested as a way to reduce stress by fostering cooperative learning. However, while these alternatives may reduce stress, they also present challenges in accurately assessing individual knowledge, as group dynamics can sometimes obscure individual contributions [37].

One novel approach that has shown promise in reducing stress without compromising the integrity of the assessment is the inclusion of a coffee break during the exam. This idea stems from research suggesting that short breaks during periods of intense cognitive activity can help alleviate stress and improve performance [38]. A coffee break during an exam allows students a brief respite from the pressure, helping to reset their focus and reduce anxiety. This method can be particularly beneficial in maintaining students' cognitive functions, such as memory and concentration, while also providing them with a sense of control over the exam environment. Unlike open-book exams or group assessments, coffee breaks preserve the traditional structure of the exam, where students are

still required to complete the assessment individually, ensuring that individual knowledge is accurately assessed. Preliminary research into this approach has shown that students feel less anxious and more confident when given a coffee break, which can translate into improved exam performance [38]. While more research is needed to fully understand the impact of coffee breaks on student performance, this method offers a promising alternative to traditional exams that could reduce stress and improve academic outcomes for many students.

Methodology

This research aimed to explore the effects of a coffee break on students' stress levels and performance during exams in construction-related courses. The primary objective was to determine whether a 15-minute break could reduce students' stress and anxiety both before and during the exam. A qualitative approach was employed to assess the experiences of civil engineering and architecture students, with a sample of 176 full-time students from various stages of their degree programs (4th to 9th semester). The study was conducted during the first semester of the 2022/2023 academic year, and it focused on courses such as Construction Management, Construction Cost Engineering, and Structures. The participants were divided into two groups: an experimental group, which had a coffee break during the exam, and a control group, which took the exam in the traditional format.

The exams in which the experiment was applied were: midterm and final exam. In the midterm and final exam, both with a special two-hour schedule, students were assigned by the course leader to the experimental or control group. From the beginning of the exam, all students could view and work on all questions, with the option of returning to them at any time. The exam structure for the experimental group was divided into three parts: a 45-minute initial phase where students completed the exam's first set of questions, a 15-minute coffee break, and a 60-minute continuation phase[29]. The exams consisted of six open-ended questions and three problem-solving tasks, with the first part contributing 40% and the second part contributing 60% of the final grade. The coffee break took place after the first 45 minutes of the exam and included refreshments such as coffee, juice, cookies, and chips. During this break, students were allowed to socialize and discuss the exam or other topics, but no exam materials could be taken out of the room. After the break, students returned to complete the remaining questions under the same rules. The experimental group had a 15-minute coffee break in the middle of the exam, while the control group had the same total time but no break

Data were collected through a post-exam survey, which was designed to capture students' emotional and cognitive experiences before, during, and after the exam. The survey included both open-ended and closed questions. The first section asked about students' stress levels and mood in the days leading up to the exam, and how knowing about the coffee break affected their anxiety and concentration. The second section focused on the first 45 minutes of the exam, asking whether students had trouble concentrating or reading the questions. The third set of questions examined students' experiences during the coffee break, including how socializing with classmates impacted their mood and stress levels. The final section assessed how students felt after the break, specifically whether they felt more relaxed, confident, or focused when returning to the exam. Students were also asked

to compare their experience with a traditional exam, in which no break was provided.

For the analysis, the survey responses were processed using Qualtrics and Excel. The answers were categorized into three main groups: positive, negative, and neutral. These were further organized into overarching themes related to stress reduction, mood improvement, concentration, and exam performance. The responses were analyzed through a content analysis approach, using a combination of a priori codes based on the study's objectives and emerging codes identified during data collection. This allowed the researchers to identify patterns in students' feedback and evaluate how the coffee break influenced their emotional well-being and cognitive performance. Content analysis was conducted on the students' answers, utilizing both predetermined and emerging codes, in accordance with the guidelines provided by Saldana [39] and Yin [40]. These codes were then organized into broader thematic categories

In addition to the survey responses, the study also compared the experimental group with the control group, which took the exam without a coffee break. The control group answered similar questions regarding their stress levels and concentration before and during the exam, as well as their perceptions of performance. This comparison helped to identify the differences between students who had a coffee break and those who did not. The researchers also ensured that the exams were comparable in terms of difficulty and pedagogy, with three different versions of the exam to prevent cheating. All participants were informed about the exam rules before it began, including what materials were allowed and the prohibition of cellphones.

The research design and data analysis provided valuable insights into how a short break during an exam can impact students' stress levels, mood, and cognitive performance. The qualitative data revealed that many students in the experimental group reported feeling more relaxed and focused after the coffee break, which helped them perform better during the second part of the exam. However, a few students in both the experimental and control groups indicated that other factors, such as exam preparation and personal stress management, played a more significant role in their performance. The study's methodology enabled a comprehensive understanding of how the coffee break intervention affected students' experiences and provided a basis for future research on the effectiveness of similar interventions in educational settings.

Results

The results of the first phase of the study revealed significant insights into how the introduction of a coffee break affected students’ stress levels and exam performance. The analysis focused on four key phases: the days leading up to the exam, the first part of the exam, the coffee break, and the last part of the exam.

Table 1. *Students self-report answers about the exam with coffee break.*

Stages of the Coffee Break Exam	Exam with coffee break	Student´s feedback on the Coffee Break
Pre-exam period	Mental state prior to the exam	"I felt calm and more relaxed since I could clarify any doubts during the coffee break."
		"I felt at ease and less pressured, knowing I had a break."
	Preparation for the exam	"The coffee break helped reduce my stress, as I could discuss the exam."
		"I was able to concentrate better while studying because I felt less pressure."
Initial Phase of the Exam	Mood and focus during the first 45 min of the exam	"I felt calm and confident, and any gaps in my memory were clarified during the coffee break."
		"I focused better on what I understood and used the coffee break to clear up anything I didn't."
	Comparison between a regular exam and one with a coffee break	"My stress levels were lower because of the coffee break."
		"A regular exam stresses me out, but the one with a coffee break felt much easier."
Coffee break	Experience during the coffee break	"I felt calm and relaxed throughout the process."
		"It was a very helpful and valuable experience."
	Clarifying doubts during the coffee break	"The coffee break allowed me to clarify doubts and compare answers from the first part of the exam."
		"I was able to assist my peers with their questions during the break."
Post coffee break	Emotional state after the coffee break	"I felt relieved after resolving the doubts I had."
		"I felt secure knowing I was doing well on the exam."
	Perfomance and efficiency in the final portion of the exam	"I managed to finish the parts I was missing after clearing up my uncertainties."
		"I was much less anxious than in a regular exam, as the coffee break helped me relax and refresh my mind."

In the first phase, which involved the days prior to the exam, students in the experimental group reported a marked reduction in anxiety and stress upon learning that a coffee break would be included. Approximately 49.5% of the students stated that they felt calmer and more relaxed knowing that the break would provide them an opportunity to clear their minds and clarify any doubts. In contrast, only 15.5% expressed feelings of anxiety or stress, similar to what they would have felt in a traditional exam. This sense of relief before the exam allowed 76% of students to study more effectively, as they felt reassured by the knowledge that they could address any uncertainties during the break. Overall, 88.7% of the students agreed that the coffee break would be beneficial for reducing exam pressure and

improving performance, as it offered a chance to reset mentally.

During the first part of the exam, students who were informed about the coffee break reported significantly lower levels of stress compared to their counterparts taking traditional exams. In fact, 83.5% of students experienced minimal stress when reading the exam questions, as the break provided a sense of security. These students were able to better focus on the exam, remembering what they had studied without significant difficulties. Less than 17.5% of students reported struggling with concentration or stress, and the vast majority (over 90%) indicated that knowing a break was coming allowed them to approach the exam more calmly. They felt reassured that any doubts could be addressed with their peers during the coffee break. As one student noted, the break gave them the mental space to proceed with the exam more confidently, solving easier questions first while reserving more challenging ones for later, when they could seek clarification.

The coffee break itself proved to be a crucial moment for most students. Nearly 94% of students described the 15-minute break as relaxing, allowing them to recharge and clarify doubts with their classmates. Many students noted that socializing with peers not only helped them resolve confusion about exam content but also provided emotional relief. One student reflected that the break was a great opportunity to clear their mind, saying, “I liked the experience because it is a moment of relaxation, and I don’t think so much about the exam. I had time to talk about other topics and just clear my head.” A few students, however, felt that discussing answers during the break led to uncertainty, as different approaches or answers could cause them to question their own solutions. Despite this, most students appreciated the opportunity to validate their thoughts and gain confidence. The coffee break served as a mental reset, allowing students to reorient themselves for the second half of the exam.

After returning from the coffee break, 85.6% of the students felt they were able to complete the exam more effectively. They expressed a greater sense of calm and confidence, as the break helped them to address any lingering doubts and confirm their answers. In fact, 84.5% of the students noted a significant reduction in stress during the final 60 minutes of the exam. These students felt more prepared and assured that they could finish the exam without the same pressure they experienced at the start. One student described this sense of relief, saying, “I felt much more confident in my knowledge compared to other exams that start with tension and finish with worry and anxiety.” In contrast, only 4% of students reported feeling frustrated or overwhelmed after the break, and 3% said that the coffee break had no impact on their overall experience. Overall, the coffee break appeared to enhance students’ ability to perform under pressure, with many believing they had achieved better results than they would have in a traditional exam format.

For comparison, the responses from students who participated in the traditional exam (without a coffee break) highlighted the stress and anxiety commonly associated with traditional exam formats. In the first phase, many of these students reported feeling highly stressed and anxious in the days leading up to the exam. One student noted, “I felt very stressed because I thought I didn’t master the topics of the exam, and it made me nervous.” These feelings of anxiety were compounded by self-doubt, which in turn affected their ability to study effectively. During the exam, these students reported experiencing

symptoms such as mental blocks and difficulty concentrating. One engineering student described their experience: “I was nervous and got stuck on some exercises. I couldn’t remember some of the formulas, which made me even more anxious.” In general, students without a coffee break expressed greater difficulty managing their anxiety during the exam, leading to a more negative exam experience.

In contrast to the students with a coffee break, those who participated in the traditional exam described feeling isolated and uncertain about their work. Many students expressed regret after the exam, unsure whether their answers were correct. One student said, “I felt relieved but regretful. There were many parts where I was unsure about my answers, but I think my procedure was correct.” Another mentioned, “I left one question blank that I didn’t understand, and I wasted too much time on the other questions.” This post-exam stress was common among students without a coffee break, as they did not have the opportunity to check or confirm their answers during the exam. When asked if the coffee break would have made a difference, several students believed it could have alleviated some of their anxiety. One student stated, “It would have been much better because during the break I could have identified the parts I made mistakes in and calmed down.” Another suggested, “I think the coffee break could have helped me confirm my answers and feel more confident about them.”

Overall, the results indicated that the coffee break had a significant positive impact on reducing stress and enhancing students’ performance during the exam. Students who participated in the coffee break felt calmer, more focused, and better prepared to handle the challenges of the exam. The break provided a valuable opportunity to clear their minds, confirm answers with peers, and reduce anxiety. In contrast, students who took the traditional exam without a break experienced higher levels of stress and uncertainty, which negatively affected their performance and overall exam experience. These findings suggest that incorporating a short break during exams could help students manage stress more effectively, leading to improved academic performance and a more positive exam experience.

Discussion

Stress and anxiety associated with traditional exams are well-known factors that negatively affect students' academic performance, making it difficult to accurately assess the knowledge they have acquired [41]. This first phase of the study demonstrated that incorporating a "coffee break" during the exam significantly helped reduce these stress levels, allowing students to approach the exam with a calmer and more focused mindset. The opportunity to interact with peers and clarify doubts during the brief break provided students with reassurance, knowing that they could resolve any uncertainties and manage their emotions more effectively during the exam. Results showed that knowing they would have a coffee break made students feel more relaxed in the days leading up to the exam, which allowed them to study more efficiently. This suggests that reducing pre-exam stress contributed to better performance by fostering a clearer, more focused mental state [36].

However, it is important to emphasize that the benefits of the coffee break were most evident for students who had already mastered the content of the exam. In cases where

students were unprepared or did not fully understand the topics being tested, the break did not alleviate their anxiety or improve performance. In fact, in some instances, the explanations offered during the coffee break even caused more confusion. This finding highlights the importance of students having a solid foundation of knowledge before taking the exam, as the coffee break is not intended to teach or solve fundamental problems but rather to provide an opportunity to clarify minor doubts or confirm already formulated answers. In this sense, the coffee break could also serve as an indirect measure of students' understanding of the material, as those who are able to explain and assist their peers demonstrate a higher level of comprehension.

The impact of the coffee break on reducing stress was particularly noticeable during the initial stages of the exam, where students felt calmer knowing that they could address any doubts during the break. This alleviated the fear of making mistakes and not completing all the questions, a common feeling in traditional exams [7]. During the coffee break itself, many students reported socializing, comparing answers, and even simply resting, which boosted their confidence and determination to complete the exam upon returning to the classroom. The fear of failing a question and the uncertainty about whether their answers were correct was almost entirely eliminated. This decrease in stress and the increase in the sense of control over the situation is similar to the effect of open-book exams, where students feel more at ease because they know they can consult materials if they forget something [36], [41]. Additionally, unexpected responses emerged from the surveys, with some students mentioning that the coffee break helped them better manage their time during the exam, organize their thoughts, or even relax by stepping outside the classroom for a brief period.

The data collected from the construction major students highlighted that, compared to traditional exams, this type of exam significantly reduced stress before, during, and after the test. From the students' perspective, we can affirm that the reduction in stress allowed them to perform better, with a positive impact not only on their academic performance but also on their mental and psychological well-being. For future coffee breaks, an interdisciplinary approach could be adopted, involving psychologists, pedagogical experts, and even medical professionals, to provide a more comprehensive analysis of how stress reduction during exams could benefit students. This could lead to more effective strategies for implementing such practices across a wider range of courses, particularly in construction-related fields [11]. One point that emerged from the experiment was the opportunity for students from different disciplines, such as architecture and civil engineering, to interact during the coffee break. This socialization broke down barriers between students from different fields and helped them to understand the importance of collaboration, which is essential in the real-world infrastructure projects that require both architects and engineers to work together effectively [30].

Students in the control group, who did not have the coffee break, reported much higher levels of stress and anxiety both before and during the exam. Many of them experienced mental blocks, difficulty concentrating, and overall insecurity about their answers, which negatively impacted their performance. They also reported struggling with time management, spending too much time on certain questions and leaving others incomplete or incorrectly answered. This stress, rather than motivating them to perform better,

hindered their cognitive abilities and led to greater frustration [7]. In contrast, students who participated in the coffee break exam reported feeling significantly less anxious and more confident. Their perception of having a "safety net" during the coffee break, where they could discuss difficult questions with their peers, reduced the pressure of failing individual questions and allowed them to approach the exam more calmly. This reassurance reduced the fear of failure and, in turn, improved their overall performance [22].

Conclusion

Traditional exams are a longstanding method for assessing student knowledge, particularly in fields such as engineering and construction. However, these exams often fail to accurately measure students' true understanding due to the psychological factors of stress and anxiety, which can hinder performance and result in misleading evaluations of knowledge. This study introduces the concept of incorporating a coffee break into traditional exams as a potential solution to mitigate these negative effects. The findings suggest that a coffee break during the exam can significantly reduce stress and anxiety levels, allowing students to feel more confident and focused. Students reported that the break helped them clarify doubts, reduce frustration, and alleviate the fear of failure. These benefits were particularly evident for students who had adequately prepared for the exam, as the break provided an opportunity to review material with peers and regain their composure. However, the coffee break did not have the same positive impact on students who were unprepared. For these students, the break could not compensate for their lack of understanding, and they continued to struggle despite the opportunity to ask questions and discuss answers with their peers. This underscores the importance of preparation, indicating that the coffee break is most effective when students have a solid foundation of knowledge to build upon.

The results of this study highlight the potential of modifying traditional exams to create a less stressful, more supportive environment that could enhance the accuracy of performance assessments. By reducing the psychological barriers associated with exam anxiety, the coffee break allows students to demonstrate their true level of understanding and academic ability. This approach could have far-reaching implications for exam design in higher education, particularly in fields where high-stakes testing is prevalent. Future research aims to further explore the cognitive and emotional impacts of the coffee break by incorporating sensors to monitor stress levels and analyzing student conversations during the break. Such data could provide deeper insights into how social interactions and cognitive processing during the coffee break contribute to improved exam performance [29]. Additionally, extending this methodology to a wider range of engineering courses and disciplines could help refine and validate its effectiveness, offering a new pedagogical framework for evaluating students in a way that prioritizes their mental well-being and promotes more accurate assessments of their knowledge. As this study is part of an ongoing exploratory effort, the team plans to expand the research with quantitative data to assess the long-term benefits of this intervention and to create practical guidelines for implementing coffee break exams across diverse academic settings.

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