WIP: Unannounced Tests and Examinations to Improve Student Performance and Build Academic Integrity

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WIP: Unannounced Tests to Improve Student Performance and Build Academic Integrity

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Abstract

Human self-evaluation is something that has been part of each one since birth and has allowed everyone to mold and develop our cognitive faculties. Over time, education has evolved in terms of content and ways of teaching students, resulting in a system based on evaluations for which students must prepare, which has generated responses such as stress, anxiety and nervousness. In response to this problem, researchers propose a teaching method where evaluations are not announced, so students must prepare constantly, being supported by activities that will help them prepare for the tests and reinforce their knowledge. These evaluations were applied in two civil engineering and two architecture courses, with a total of 121 students, where at the end of the semester a survey was conducted to observe their reaction and thoughts regarding these new evaluations. It was possible to notice how at first many of the students felt nervous, but reinforcement activities were helpful in understanding the subject and generating greater confidence when taking a test, which resulted in better performance of students, because due to the constant preparation during the semester achieved greater security of knowledge. We also discuss possible factors driving these results and new ways in which institutions could implement these pedagogical strategies to achieve academic integrity.

Introduction

Pedagogical approaches have evolved over the years, always seeking the well-being of students despite the challenges that arise. However, conventional pedagogical methods cause several problems of stress and mistrust in students that affect their academic performance and integrity. “Pathological factors of these stresses may include the inability to manage time, the lack of academic skills of competing with classmates” [1]. These conventional methods include evaluations, tests, and assignments that are announced in advance so that students can complete them satisfactorily in the required time. However, this way of evaluating students is not correct because it cannot accurately measure how much a student has learned [2,3]. These conventional methods appeal to a culture of memorization and automation, “Traditional exams are generally defined as a set of questions and problems that require individual, closed-book, and time-limited work” [4,5] but not one of critical reasoning, therefore that students do not develop their way of thinking and finding solutions. For example, open book evaluation proposes a new form of reasoning, where students must use the information provided by the text to find an answer, instead of learning a concept by heart and repeating it in a conventional exam. Furthermore, in many cases, students commit plagiarism, which calls into question the results obtained and the credibility of the educational methods implemented, which is why new teaching methods such as unannounced tests are sought to be implemented. to provide a more authentic measure of student

learning. “Students find traditional closed book exams to be more threatening than open-book exams and that the ability to use a textbook or other resource increases the student's confidence while decreasing anxiety levels” [6]

Currently, evaluations are considered the main way to measure a student's knowledge, which gives us a different vision of education than what is really sought. Disciplines have maintained higher grades on evaluations which induces to academic cheating or use other means to gain advantage. “Students engaging in cheating during examinations is a prevalent phenomenon worldwide, regardless of the country’s stage of development.” [7–9]. This type of traditional evaluation exacerbates student stress due to its tendency to feature fewer exams with higher assessment scores. “Traditional grading practices vary considerably in which behaviors they include in a grade and to what extent” [10]. Traditional methods of evaluation continue to face criticism regarding their accuracy in assessing student learning, progress, and consequently, the quality of education [11–13]. “It should be noted that assessment for learning from the teacher was preferred because students appreciated the teacher’s authority and experience” [14]. Consequently, in response to these limitations, alternative evaluation strategies like unannounced evaluations have been suggested. These alternatives aim to offer a more authentic measure of student learning.

Considering that the skills and knowledge of each student can be limited, the aim of unannounced evaluations is to create courses where each student can get the most out of new courses and more inclusive and diverse evaluation techniques to avoid high levels of stress and pressure-filled environments, which severely affect each student's learning. “The concept of general ability, as measured by traditional IQ tests such as the Wechsler scales, has had a long and successful history in psychology and education so much so that the tests have been used to define intelligence” [15]. In this context, exams are perceived as the exclusive indicator of student knowledge, overlooking other potential measures of understanding and skill acquisition [12]. This narrow perspective on education restricts the cultivation of essential skills vital for future success. The study proposes initiatives to actively involve students, such as designing courses that align with their interests and aspirations [16]. Additionally, it frequently generates elevated stress levels among students and fosters a pressure-filled atmosphere that may not foster optimal learning conditions [17].

Criticism of the traditional approach to evaluation is growing more pronounced over time. Academic interventions that tackle uncertainty avoidance related barriers may focus on dismantling said toxic culture starting from breaking down traditional paradigms and the requirements they put forward, in both majors [18–20]. “This pandemic forced the use of this type of pedagogy and now that its effectiveness has been proven, many will not go back to traditional methods” [11,21–24]. This criticism has prompted calls for the adoption of more diverse and comprehensive evaluation techniques that accurately reflect the varied ways in which students learn. Starting from this, new evaluation methods are being sought that better fit the way of learning of each student, so our research will focus on finding a new form of evaluation based on frequent unannounced evaluations to improve student learning. and contribute to academic integrity. This new method was applied in civil engineering and architecture courses, along with activities that develop student learning.

Background/Framework

Academic integrity within the student environment is related to honesty, responsibility, and respect, and implies that students must follow rules and regulations, demonstrating their commitment to responsibility and ethics against frowned upon activities such as plagiarism and cheating [25–27]. “Plagiarism, on the other hand, is defined as a kind of academically dishonest behavior that will damage academic integrity” [28]. When students do not prepare correctly for a test, they usually commit these acts due to the pressure of not being able to pass or take their test in a set time [29]. In many cases, they are not taught the values of honesty and responsibility [30].

Anxiety and stress are often related to evaluations. “Traditional time-limited exams can generate stress and anxiety; some students had worse performance than students who were unaffected by the time factor in the exam” [4]. Even when tests are announced in advance, students still reported experiencing feelings of pressure and uncertainty [31]. Anxiety impacts students' ability to maintain attention and concentration across various formats of evaluations [32]. Also, anxiety can have consequences such as damaging students’ confidence which affects their performance, so new learning methods must be developed to guarantee academic success and improve the mental health of students [33]. In addition, a relationship can be noted between emotional intelligence and academic performance, so if a student obtains high scores on emotional intelligence tests, they can be expected to have better management of his or her emotions and recovers more quickly from the stress of an exam [34]. There is some concern regarding the way in which the evaluations are taken, since in the case of evaluations that do not allow revisiting previous questions, students must be much more careful because they know that if they make a mistake, they cannot correct it later, it is unfavorable for them [35]. Thus, the stress experienced by students during exams, stemming from fears of failure, can result in a decline in self-esteem [36]. Additionally, anxiety is induced by the anticipation of the test outcome, which can further contribute to feelings of anxiousness among students “In relation to stress, only GPA and social factors were significant; compared to low stress, moderate to high stress had significantly higher odds for GPA” [37].

Nonetheless, a noteworthy shift in the dynamics of anxiety and stress occur when students engage in consistent preparation across all their classes, which shows a relationship between stress, anxiety and academic performance, so it is said that when there is a certain level of concern on the part of students, their academic success increases. For example, students who are tested constantly tend to perform better than those who are not tested as often [38]. By being constantly evaluated and taking tests more frequently, students generate greater and better study habits, which results in an improvement in performance, obtaining better results on the tests [39] [40]. It is generally assumed that a student having good grades should also master the subject, but this is not always the case, since passing a test is not an indicator of having learned, and grades do not necessarily show how much a student has learned [35]. This happens because grades are being used as an indicator of academic achievement [41]. This is why it is preferred that students demonstrate how much they have learned through constant work that has the same level of difficulty as an exam or even greater to master the topics and generate greater confidence and increase the chances of success in an evaluation [42].

The prediction of academic achievement varies depending on the selected criteria, as supported by empirical evidence [43]. Consistently engaging with homework, tailored to support the learning process, aids students in enhancing their learning by solidifying concepts covered in class and refining their skills through repetition and practice [44]. Research indicates that the enhancement in student performance observed in both Singapore and the United States correlates with the increase in the frequency of homework assignments [45]. The students' perceptions of significant learning gains, which are positively associated with improved examination results, are influenced by their thorough comprehension of the subject matter and the tasks they have completed throughout the semester [46]. They elucidate that within this pedagogical approach, a self-reported study style, intelligence, attitude, time commitments, and homework complexity significantly influenced whether students' completion of assigned homework impacted their academic performance [47,48]. They stress the significance of aligning homework difficulty with that of tests to prevent issues during exams. A study delineates the distinct effects of a methodology involving high-frequency homework assignments. The research revealed that students with low grades showed improvement in academic performance, whereas those with higher grades experienced challenges due to the increased frequency of homework. Intelligence, attitude, time commitments, and homework complexity significantly influenced whether completing assigned homework affected students' academic performance [49]. Homework serves as a valuable tool for student learning, yet an excessive workload can have negative consequences. While some view homework assignments as a means to foster student engagement and cultivate effective study habits, an overabundance of low-quality homework can result in student disengagement from school and exacerbate mental health issues, leading to its rejection [50].

Research objective

The main objective of this research is to understand and explore the effects of frequent unannounced evaluations on university students' performance. Moreover, this research aims to examine the pedagogical approach associated with frequent unannounced evaluations to determine its effectiveness in fostering habits of academic integrity among students. This involves promoting positive study habits for genuine learning, as opposed to extended periods without learning that could potentially lead to temptations for cheating and other problems associated. The article presents the findings derived from a pilot study that was conducted to address these objectives.

Procedures

This exploratory study encompasses the results of frequent unannounced evaluations in architecture and civil engineering courses. Upon the middle and the conclusion of the semester, an anonymous survey was distributed to students enrolled in the respective courses during Fall 22 , Spring 23 and Fall 23 in the following way: Structures 1 (n=65 students) and Structures 2 (n=18 students), Structural Analysis 1 (n=22 students) and Construction Costs (n=16 students). The survey provided to the students included open-ended and multiple-choice questions about the topic. The pedagogical strategy mentioned was implemented across all students enrolled in the aforementioned courses. Depending on the course, data was collected at the middle and conclusion of the fall semester 2022, spring 2023 and fall semester 2023 with the objective of

analyzing the evolution of the teaching methodology. The choice of anonymous surveys with open-ended and multiple-choice questions as a method to obtain information facilitated students to express their viewpoints of having frequent unannounced evaluations [51]. The survey questions focused on eliciting responses related to students' perceptions of subject learning and their commitment to academic integrity.

This study specifically examines student's perceptions of frequent unannounced evaluations versus traditional evaluations and how they gauge the effectiveness of these assessments in terms of learning. It is important to emphasize that the research design does not incorporate a comparison between the group of students subjected to unadvised tests and a control group. Consequently, a direct comparison in student performance between students who took unannounced evaluations and those who took traditional evaluations is not included. As a result, conclusions regarding whether students who underwent unannounced evaluations achieved better results than those who underwent traditional evaluations cannot be obtained. For the reasons mentioned previously, this study is considered as a work in progress in which future investigations are intended to provide more information of the subject more comprehensively, incorporating both quantitative and qualitative methodologies to provide a more detailed analysis.

Data Analysis

Surveys were distributed through Qualtrics software, and responses were imported into Excel. These responses included both five open-ended questions and multiple-choice questions with their respective answers. This data was visually categorized based on similar ideas for each question. Different colors, such as yellow for moderately positive opinions, green for positive answers, and red for negative answers, were employed to represent distinct ideas [52]. The main ideas obtained were organized into overarching themes that illustrated the outcomes of the study technique involving a high frequency of unannounced testing, while secondary ideas were utilized to support and elaborate on the results.

The open-ended questions obtained in the surveys were centered around evaluations to discern the influence of the pedagogical strategy on the students. The first question aimed to explore the effects of this strategy on the students' learning process. The second question delved into how students' perspectives toward this technique evolved throughout the semester. The third question inquire of whether the strategy assisted them in preparing for tests. The fourth question probed into the psychological state of the students and their feelings about this format of testing. Lastly, the fifth question investigated whether students were satisfied with their performance, if the pedagogic method proved helpful, or if they would have preferred to receive prior notification of upcoming tests.

Characteristics of the pedagogic strategy

All the courses examined in this study were under the instruction of the same professor, who meticulously designed the schedules to include two announced evaluations and five unannounced evaluations, collectively constituting 15% of the final grade. The evaluations taken throughout the semester for both the two engineering courses and the two architecture courses

were similar in difficulty, pedagogical approach, resolution methods, and subject matter. Despite the diversity in college majors, the evaluations consistently comprised six multiple-choice questions and three problem-solving questions, maintaining these variables constant.

To prevent cheating, three versions of each exam were utilized, with questions that were similar but featured subtle differences to ensure different responses. Students were aware of the existence of multiple versions and were permitted to have essential tools such as pens, pencils, erasers, rulers and calculators. Strict rules were enforced regarding cell phones, mandating that they had to be turned off and placed in backpacks, not clothing pockets. These regulations applied to all evaluations, whether announced or unannounced.

In addition to evaluations, the courses incorporated various activities, including group work and individual homework assignments, designed to match the difficulty level of evaluations. These activities aimed to foster active participation, provide opportunities for feedback, and enhance communication and learning abilities through collaborative efforts. Another aspect of the course involved the practical application of knowledge to real-life problems and scenarios, enabling students to apply acquired skills in practical settings. This approach not only deepened their understanding of basic course theory but also equipped them with practical and relevant abilities for their future professional performance. Homework was regularly assigned by the professor at the end of each session, with deadlines set for the night before the subsequent class. Additionally, the instructor conducted office hours, both in person and via Zoom, ensuring that students had access to clarify any question or concern they may have had.

Results

The survey results obtained from the student group have uncovered valuable insights into their perspectives and experiences with unannounced evaluations. These findings offer a comprehensive overview of the students' opinions regarding this assessment method. The analysis of the results will provide a deeper understanding of the impact of unannounced evaluations on students and identifying potential areas for improvement. To facilitate comprehension, the results will be categorized to address the questions: "How do unannounced evaluations contribute to student learning?" and "How do unannounced evaluations contribute to academic integrity?" These categories aim to present the advantages of unannounced evaluations for student learning and the role of the pedagogical method in fostering academic integrity.

Beginning with the first research question, “how unannounced evaluations contribute to student learning” the following results were captured. Stress reduction, improved performance, enhanced confidence, and the adoption of new study techniques were some of the positive outcomes of the pedagogic strategy applied. A detailed presentation of these responses is provided in the table below.

How do unannounced evaluations contribute to student learning?	
Stress reduction in students	- Better results in previous evaluations
	- Preparation through homework
	- Greater attention to classes
	- Lower exam value on the overall grade
Improvements in student performance	- Constant review in class and homework

	- Continuous preparation for evaluations
	- Conscientious study and review
The students feel more secure and confident	- Knowledge of the exam format
	- Homework with same complexity of evaluations
	- Confidence of their knowledge
	- Clarification of matter and homework doubts
Development of new study techniques	- Getting out of the comfort zone
	- Increased creativity

Stress reduction in students

The feedback from students highlights a positive impact of frequent unannounced evaluations on their engagement and preparation. Many students reported that the regular tests encouraged them to pay closer attention in class while consistently keeping up with their homework. Also, this proactive approach has contributed to a notable decrease in stress among students. For example, one student states that "when a (test) was due I felt calm because I knew that with the homework, I had done I could solve the tests without a problem, and I did not feel that previous stress."

Although some students initially experienced anxiety due to the uncertainty of when a test might occur, this apprehension diminished when actual test-taking moments arrived. The fear further dissipated after the first set of evaluations when students received their grades. Notably, the course's structure, with several tests distributed throughout the semester, played a significant role in reducing stress. One student emphasized the comparative relaxation of the course stating that "This course was much more relaxed, it caused me maybe 70% less stress than other math courses where the tests are very important and there are only two in the semester". This shows that by having more evaluations during the semester, the reduced grade value of evaluations generated a reduction in stress when performing the multiple unannounced evaluations.

A crucial factor in stress reduction was student’s deeper understanding of the subject matter, leading to increased confidence in facing unannounced evaluations. As expressed by a student, “I prepared myself by consciously doing my homework, this makes me really feel ready for the tests”. Throughout the semester, the interest in class contributed to a decline in anxiety and stress, as students felt well-prepared for evaluations. Some students even reported feeling relaxed, attributing this ease to the upfront information that doing homework would adequately prepare them for the unannounced evaluations. As stated by one of the students “I felt relaxed, since from the beginning it was said that if we did our homework the tests would be and literally easy it was”.

Improvements in student performance

The responses to the questions expressed that students experienced improved performance due to the pedagogical strategy of consistent class review and homework. One student explicitly stated, "Definitely, because if the homework was done in a concentrated and dedicated way, the tests were very similar, and therefore, they were more bearable. At the course level, having this type of homework also allowed me to put everything I had learned into practice." This emphasizes the positive correlation between focused homework completion and better performance in tests.

As part of conscientious study and review, students noted that seeking clarification for doubts about homework significantly contributed to their overall improvement. One student articulated, "Absolutely. Some homework did cause me a lot of doubts due to its complexity, but with help and analysis, I could solve them. In this way, the homework exercises allowed me to learn and study for evaluations." Another student stated " Homework was a key tool to do better on tests. These helped me a lot to study constantly to maintain the practice that I needed so much to master the topics." This suggests that addressing uncertainties during the learning process positively impacted performance. Furthermore, the continuous preparation for evaluations proved to be effective in enhancing student performance during unannounced evaluations, as students were consistently ready to take a test at any given time. According to one student, unannounced evaluations "helped me to always be prepared and pay close attention to classes and homework," emphasizing the role of constant preparation in achieving better outcomes. Throughout the semester, students demonstrated improved performance as a result of being encouraged to consistently review the subject matter.

The students feel more secure and confident.

Students express that the implementation of unannounced evaluations as a pedagogical study strategy has significantly contributed to their increased confidence, sense of security, and readiness for assessments. The similarities between the complexity of homework assignments and the exercises presented in evaluations was a key factor. Students noted that the familiarity of the homework content made them feel more prepared and confident when facing the tests. For example, one student mentioned, "the homework prepares you a lot and I even think they were a little more complicated than the evaluations, which allowed us to learn at a good level", highlighting the positive impact of consistent homework on confidence levels. Another student stated "It made me feel more confident about the knowledge from the class. I used to review topics I had already noticed, but it didn't make me wait until a test to just understand." This underscores the proactive approach adopted by students in reviewing material even before formal assessments.

The high frequency of evaluations and homework assignments generated a culture of constant review among students, contributing to the development of confidence in their knowledge. Understanding the test format further boosted their confidence, as homework reinforced their retention of learned material. A student shared, "The course evaluations allowed me to prepare myself with more time and in a better way.... during the evaluations, I already feel much calmer because I know that I have the knowledge and practice to solve the exercises." This indicates that the study technique effectively assists students in retaining and feeling confident in their acquired knowledge.

In the process of receiving course material and completing homework, students actively engaged with the most crucial points of each topic. This approach facilitated the clarification of doubts by the teacher during class, with the overarching goal of enhancing student learning and building confidence in their understanding of the subject matter. A student's remark stated, "I noticed that since I was less concerned about grades because there were several frequent cumulative tests, I spent more time on really understanding the subject and not just for one lesson." This awareness reflects student's commitment to comprehending the material thoroughly and preparing for all

evaluations throughout the course. Also, students considered “It was a lower level of stress since I knew that the tests were a type of training for the final evaluations”. This shows how confidence was increased by the multiple test taken.

Development of new study techniques

The pedagogical strategy involving unannounced evaluations is characterized by a high frequency of tests and a large amount of homework assignments, fostering a continuous review for students. Recognizing that students must study multiple subjects and manage their time effectively; the adoption of creativity becomes a key factor in developing innovative studying techniques to achieve with the academic demands associated with the unannounced evaluation method. A student expresses this need, stating, "This semester, in order to do all the homework and review for a possible test, I had to develop a new way of studying to help me keep up." This necessity encourages imagination and enhances critical thinking skills, providing students with the opportunity to apply study approaches to meet the challenges generated by the academic workload, particularly in the context of unannounced evaluations.

The pursuit of new study routines not only is useful to manage the academic load but also presents additional benefits. Students, in their quest for alternative methods, have the potential to further develop problem-solving and comprehension skills, which can prove advantageous during evaluations in other courses. This approach encourages students to move beyond traditional, monotonous study techniques, prompting them to step out of their comfort zones. As expressed by students, "it got me out of my comfort zone and also out of monotonous teaching". By venturing outside their usual learning environments, students have found that they can create more efficient and effective ways of learning, ultimately aiding in the retention of knowledge. This adaptability to change and exploration of diverse learning methods contribute to a more enriched educational experience.

The second research question obtained from the analysis is ***How do unannounced evaluations contribute to academic integrity?*** Of this question, some of the positive outcomes of such pedagogic strategy include greater organization and development of new study techniques. These responses are presented in the table below.

How do unannounced *evaluations* contribute to academic integrity?	
Greater organization and responsibility	- Better planning
	- Clear homework deadlines
	- Unanounced evaluations
	- Need for constant review
	- Continuous class attendance
Development of new study techniques	- More study frequency
Reduction in copy rate	- Opportunity to clarify doubts
	- Study frequency
	- Different types of evaluations

Greater organization and responsibility

Enhancing organization and fostering responsibility among students is closely linked to effective planning. The implementation of unannounced evaluations has played a significant role in promoting better planning, serving as a guide for all pending activities and tasks. A student highlighted the impact on their sense of responsibility, stating that unannounced evaluations "…made me more responsible because I constantly reviewed my notes to have fresh knowledge and practice the exercises, and not forget what I learned in classes and homework." This testimonial emphasizes that the regular assessments have prompted students to adopt a proactive approach in consistently reviewing their notes, thereby reinforcing their understanding and retention of the material covered in classes and homework. The element of surprise in unannounced evaluations has contributed to the cultivation of a sense of responsibility, encouraging students to stay well-prepared at all times.

The need for constant review of class topics and homework, coupled with regular class attendance, has become crucial for staying on top of all necessary activities. A student stated, "Having frequent tests made me study more often, reviewing the material frequently to make sure I did well on the test." This approach not only enhances understanding but also promotes greater organization to manage the workload effectively. The frequency and consistency of homework assignments, coupled with clear deadlines, serves as a tool for instilling responsibility among students. The established deadlines create a structured framework, emphasizing the importance of timely submission. Meeting these deadlines not only promotes responsibility but also correlates with a deeper understanding of the topic, which can prove beneficial in preparing for any unannounced evaluations.

In the context of academic integrity, the factors mentioned contribute to better preparation among students, fostering honesty and trust. The proactive approach encouraged by frequent tests and homework, along with adherence to deadlines, creates an environment where students are well-prepared for assessments. This feeling of preparation not only contributes to academic success in the specific subjects under study but also lays the foundation for promoting integrity and trust in various academic disciplines that each student may encounter.

Development of new study techniques

The increased frequency of unannounced evaluations proves useful in enhancing knowledge through the consistent review of class topics. A student expressed this impact by stating, "Having tests frequently helped me, firstly, to pay close attention to the class because I think it is the main thing to develop a subject of knowledge, secondly, it helped me to always stay active studying or reviewing, if I did not understand a subject, I had to review it again the class, and third, it helped me realize what topic I didn't understand so I could study again." This testimony emphasizes how regular assessments prompt class engagement, active study habits, and identification and review of challenging topics.

The continuous study routine, developed as a response to frequent evaluations, not only contributes to improved knowledge but also plays a role in building greater academic integrity. Students, confident in their understanding and preparation, are less likely to resort to copying during unannounced evaluations. This increased confidence fosters a sense of honesty and integrity among students, as they rely on their own knowledge and efforts to navigate

assessments. The connection between frequent evaluations, continuous study habits, and the promotion of academic integrity is evident in the students' testimonies.

Reduction in copy rate

The frequency of evaluations along with the fact of having unannounced evaluations contributed to the reduction of copy rate as students are more prepared and tend to solve their doubts. As expressed by one of the students, unannounced evaluations “helped me develop a study habit since I always had to be prepared for any assessment in class….. it helped me form more and more an attitude of excellence in class and at home.” From this testimony, we can see that the opportunity to clarify doubts along with the study habits developed during the course of the class contributed to a more conducive environment where copying was not necessary to obtain the desired results. Students also discussed that they would have been more tempted to copy if the evaluations had been announced since they probably would not have developed constant study methods mentioned and would not have studied or prepared poorly.

Regarding academic integrity, the fact that students feel more prepared for the evaluations encourage them continue developing more study strategies that helped them be as prepared as possible. Also considering that for the same exam there were several versions of tests, students tend to focus on their own exam rather than seeking for information with their classmates.

Discussion

From the results obtained in the surveys, it can be seen that the students totally agree that the frequency with which homework is sent allows them to have a constant review, helping to improve their performance in the unannounced tests, since there were no negative responses. to this question. Performance improves because the difficulty of the tasks is similar to that of the evaluations, allowing them to be prepared for the tests. Our observations can be confirmed, for example, with the following statements: "The evaluations were mostly based on topics covered in homework. Therefore, developing homework with complicated exercises helped to be better prepared for the tests, guaranteeing a good performance." performance in these." This shows that the teaching methodology generates confidence in students where they are sure of the knowledge learned. The pedagogical strategy of unannounced assessments requires a greater academic load, because students had homework in almost all classes, but the results will bring better benefits in the future [47]. Based on the survey responses, our recommendation is to focus on balancing the level of difficulty of the assignments so that students have a moderate academic load, since each student generally takes five subjects during the semester.

We were able to identify that the majority of students felt that their anxiety and stress decreased as the semester progressed, making them feel more secure, confident, and prepared for unannounced assessments [33]. The improvement in their emotional health comes from better understanding the test they face and feeling more prepared thanks to the lessons and assignments. The next self-reported response said: "Compared to the other subjects it was less (anxiety and stress), yes there was stress but it was less because it was calmer after practicing constantly." Regarding the methodology in courses where there are few tests and which have a lot of value in the final grade, the students have the following opinion: "Before a written exam I always get nervous, especially if it is a mid-semester or final exam. "This fact often hurts my performance

because of the pressure." We can see that the reduction of anxiety and stress also depends on the type of person, since there are students who will always be nervous when taking a test but those stress levels must be lowered so that the student can demonstrate their knowledge. and what was learned in classes. The students' responses present a trend where they emphasize that this methodology has reduced their anxiety levels when taking the evaluations since they are confident in their knowledge.

It can be noted that the majority of students agree on a pedagogical approach that involves dedication and constant review of the topics covered in class, making sure to always be prepared for possible evaluations [53]. Maintaining constant attention in class has contributed to strengthening students' confidence, reducing stress levels. Confidence in the topics covered in class translates into better performance in evaluations, since students, feeling relaxed, can think more clearly [33]. When students feel safe, obtaining the final grade reflects their effort throughout the semester, as some of them expressed: "After taking the tests, I felt calm because I trusted my knowledge." note that I wanted was the one I expected." However, it is important to note that an excess of difficult tasks can generate anxiety or even lack of sleep in some cases, so control must be taken over the techniques used [47].

By exploring the difference between a conventional course, with announced evaluations, and a course with unannounced assessments, several benefits and challenges were identified. With the unannounced assessment method, which involves constant revision and homework, students experience greater security, relaxation and less stress compared to regular courses, where a single mistake on an exam could result in a complete failure of the course. Consistent study routine not only boosts students' confidence but also makes them more responsible and organized. Organizing and tracking tasks and deadlines are linked to better grades, encouraging students to better manage their time and achieve greater academic success. In terms of academic integrity, those students who possess these qualities do not feel the need to resort to plagiarism during an exam, since they have the necessary knowledge to fulfill all course requirements [54].

Implementing more frequent assessments also demonstrated to offer several benefits to both students and educators. Firstly, frequent evaluations provide a more accurate and nuanced understanding of students' comprehension levels. Instead of relying on occasional high-stakes evaluations, educators can have an overview into students' progress on a regular basis. Moreover, the reduced weight of individual evaluations in the overall grade calculation can reduce the pressure on students. With the traditional model of high-stakes evaluations, students often experience high anxiety and stress, which can contribute to low performance. By distributing assessments more evenly throughout the course and lowering the stakes of each individual evaluation, students may feel less overwhelmed, relaxed and suffer less stress, being motivated to engage actively in their learning. This shift in the evaluation method fosters a more supportive and conducive learning environment where students feel empowered to take risks and learn from their mistakes.

Likewise, it was possible to identify a relation between lower stake evaluations and unannounced evaluations. As expressed by one of the students “I felt comfortable, in other subjects I have taken, the majority of the class is summarized in two or three evaluations which means that if you miss one or do not do so well, your grade changes drastically and the stress level increases

significantly. In this class, however, with the unannounced evaluations I had more aspects that affected my grade and in turn the tests helped me to perform my evaluations better. [….]". From this comment, It can be noted a clear relation between frequent and lower stake evaluations and unannounced evaluations as students make a comparison between other courses that maintain a high stake evaluation. This shows that a nuanced interplay between the frequency of assessments and their stakes contribute to a better understanding and also reduced stress on students. Consequently, the feedback generated from these lower stakes assessments may be more focused on conceptual understanding and critical thinking skills rather than rote memorization which were generated from the methodology of unannounced evaluations.

Although the majority of students express confidence in obtaining positive results after an exam, there is a smaller group that has a different perspective. These students argue that if they had known the exam date, they could have studied more and gotten a better grade. This opinion contrasts with that of the majority, who feel confident about their grades after taking an exam, maintaining high expectations. However, it is relevant to mention that upon leaving the exam, these students experience a decrease in anxiety. Since students often tend to prepare a few days before an exam, lack of knowledge about the date can lead to dishonest behavior during testing [55].

Conclusions

Academic integrity is a valuable quality in an academic environment that promotes fairness and honesty in all academic activities. To maintain this aspect, it is important that students accept the challenge of the exam and prepare for it with hard work and dedication. Unprompted evaluations help form academic integrity as it reduces the temptation for students to cheat or plagiarize. In addition, new teaching strategies and constant preparation ensure student engagement and motivation to better understand the subject matter. Homework is an important tool to reinforce class content and help students better understand the subject. But too much homework can generate stress and anxiety, resulting in the sacrifice of academic integrity as there is a possibility that they may decide to cheat in order to turn in homework within the deadline. Encouraging students to adopt new learning styles and continually prepare themselves can also help reduce stress and promote academic integrity. In addition, incorporating different teaching methods, such as hands-on projects, interactive activities, or lectures, can also help promote academic integrity. This varied approach helps to engage students in different ways, reducing the likelihood that they will become bored and, therefore, plagiarize. It has been observed that students who actively participate in classes are more likely to store this information, which reduces the stress of cheating on tests or plagiarizing assignments.

Through effort, preparation and a new approach to learning, academic integrity is formed where students value the knowledge gained and feel that they are capable of continuing to meet their goals without cheating throughout their student and professional lives. Unannounced tests, new teaching methods and continuous preparation help promote academic integrity and reduce stress and anxiety. Through this educational approach, students develop subject matter more deeply while maintaining academic integrity and a sense of well-being. For future work, we plan to add quantitative data and analysis on stress levels, quality of student learning and academic integrity, and extend the research to other engineering and architecture courses. In terms of data collection, we aimed to include a combination of analytical and descriptive research at the end of each

evaluation. The goal was to delve into the different opinions about the research method and how it helped improve academic integrity during the semester. Course-specific studies were developed to determine if a specific activity has helped improve academic integrity. Also, by combining a control group with traditional pedagogy, we can compare all of the factors mentioned above to indicate whether these changes in the way we teach favor or disadvantage students.

References

[1] Nazari, N., and Far, D. M., 2019, "The Relationship between Teaching Skills, Academic Emotion, Academic Stress and Mindset in University Student Academic Achievement Prediction: A PLS-SEM Approach," J. Intellect. Disabil. - Diagn. Treat., **7**(3), pp. 119–133.

[2] Guerra, M., and Shealy, T., 2018, "Teaching User-Centered Design for More Sustainable Infrastructure through Role-Play and Experiential Learning," J. Prof. Issues Eng. Educ. Pract., **144**.

[3] Núñez-Andrés, M. A., Martinez-Molina, A., Casquero-Modrego, N., and Suk, J. Y., 2022, "The Impact of Peer Learning on Student Performance in an Architectural Sustainability Course," Int. J. Sustain. High. Educ., **23**(1), pp. 159–176.

[4] Granja, N., Guerra, M., and Guerra, V., 2022, "Give Me a Coffee Break! Pilot Study on Improving Exam Performance and Reducing Student Stress."

[5] Toscano, R. E., Guerra, V., and Guerra, M. A., 2023, "Work in Progress: Introducing a Coffee Break to Improve Exam Performance and Reducing Student Stress in Construction Majors," *2023 ASEE Annual Conference & Exposition*.

[6] Johanns, B., Dinkens, A., and Moore, J., 2017, "A Systematic Review Comparing Open-Book and Closed-Book Examinations: Evaluating Effects on Development of Critical Thinking Skills," Nurse Educ. Pract., **27**, pp. 89–94.

[7] Tiong, L. C. O., and Lee, H. J., 2021, "E-Cheating Prevention Measures: Detection of Cheating at Online Examinations Using Deep Learning Approach -- A Case Study."

[8] Bonilla, J. M., Valarezo, M. S., Villacrés, B. D., and Guerra, M. A., 2023, "Board 44A: Work in Progress: Unannounced Frequent Examinations to Contribute Student Learning and Building Academic Integrity," *2023 ASEE Annual Conference & Exposition*.

[9] Paucarina, S. E., Batallas, J. D., Guerra, M. A., and Guerra, V., 2023, "Board 44B: Work in Progress: TikTok Format Videos to Improve Communicating Science in Engineering Students," *2023 ASEE Annual Conference & Exposition*.

[10] Knight, M., and Cooper, R., 2019, "Taking on a New Grading System: The Interconnected Effects of Standards-Based Grading on Teaching, Learning, Assessment, and Student Behavior," NASSP Bull., **103**(1), pp. 65–92.

[11] Acosta, J., and Guerra, M., 2022, "Validating Guerra's Blended Flexible Learning Framework for Engineering Courses."

[12] Bedón, A., Velásquez, H., Guerra, M., and Jiménez, M., 2022, "Exploring Interdisciplinary Contributions to More Sustainable Solutions in the Built Environment and Infrastructure Development Students."

[13] Jimenez, M. I., Velásquez, H. J., and Guerra, M. A., 2023, "Work in Progress: Measuring Interdisciplinary Teams\' Sustainable Design with an SDG Lense–Case Study," *2023 ASEE Annual Conference & Exposition*.

[14] Yan, Z., and Brown, G. T. L., 2021, "Assessment for Learning in the Hong Kong Assessment Reform: A Case of Policy Borrowing," Stud. Educ. Eval., **68**, p. 100985.

[15] Flanagan, D. P., and McDonough, E. M., 2018, *Contemporary Intellectual Assessment : Theories, Tests, and Issues*, The Guilford Press, New York.

[16] Howell, R. A., 2021, "Engaging Students in Education for Sustainable Development: The Benefits of Active Learning, Reflective Practices and Flipped Classroom Pedagogies," J. Clean. Prod., **325**, p. 129318.

[17] Co, M., Ho, M. K., Bharwani, A. A., Yan Chan, V. H., Yi Chan, E. H., and Poon, K. S., 2021, "Cross-Sectional Case-Control Study on Medical Students' Psychosocial Stress during COVID-19 Pandemic in Hong Kong.," Heliyon, **7**(11), p. e08486.

[18] Ubidia, J., Guerra, M., Viteri, V., and Murzi, H., 2022, "Pilot Study - Understanding Student's Perceptions of Cultural Dimensions in Construction Majors in Ecuador: Deconstructing Barriers between Architecture and Civil Engineering Students."
[19] Murzi, H., Ulloa, B., Gamboa, F., Woods Jr, J., Guerra, M., Soto, K., and Azar, R., 2021, *Cultural Dimensions in Academic Disciplines, a Comparison Between Ecuador and the United States of America*.
[20] Guerra, M., Murzi, H., Woods, J. C., and Diaz-Strandberg, A., 2020, "Understanding Students' Perceptions of Dimensions of Engineering Culture in Ecuador."
[21] Mariño, M. E., Ubidia, J., Guerra, M., and Játiva, F., 2022, "Work in Progress: Designing a First-Year Hands-on Civil Engineering Course to Reduce Students Dropout and Improve the Overall College Experience."
[22] Cartuche, D., Guerra, M. A., and Murzi, H., 2023, "Work in Progress: Influence of COVD-19 in Cultural Dimensions in Civil Engineering Students In," *2023 ASEE Annual Conference & Exposition*.
[23] Cartuche, D., Guerra, M. A., and Murzi, H., 2023, "Board 2A: WIP: Opportunities in Cultural Dimensions between Architecture and Civil Engineering Students in Ecuador," *2023 ASEE Annual Conference & Exposition*.
[24] CERVANTES, A. E., and Guerra, M. A. A., 2023, "Work in Progress: Impact on Students Dropout Rates of Introducing a First-Year Hands-on Civil Engineering Course," *2023 ASEE Annual Conference & Exposition*.
[25] Gamage, K. A. A., Silva, E. K. D., and Gunawardhana, N., 2020, "Online Delivery and Assessment during COVID-19: Safeguarding Academic Integrity," Educ. Sci., **10**(11), p. 301.
[26] Acosta, J., Ubidia, J., Guerra, M., Guerra, V., and Gallardo, C., 2022, "Work in Progress: Collaborative Environments in Architecture and Civil Engineering Education - Case Study."
[27] Guerra, M. A., and Gopaul, C., 2021, "IEEE Region 9 Initiatives: Supporting Engineering Education during COVID-19 Times," IEEE Potentials, **40**(2), pp. 19–24.
[28] Perkins, M., Basar Gezgin, U., and Roe, J., 2020, "Reducing Plagiarism through Academic Misconduct Education," Int. J. Educ. Integr., **16**.
[29] Oğuz Özbek, and Çeyiz, S., 2017, "University Students' Opinions On Cheating And Plagiarism."
[30] Morales Montes, M. D., and Vilchis, I. L., 2021, "Entre la integridad académica y el plagio estudiantil ¿qué dicen las universidades públicas mexicanas en su normatividad?," Educ. Policy Anal. Arch., **29**(August-December), p. 166.
[31] Universidad de San Martín de Porres, Perú, and Dominguez-Lara, S., 2017, "Procrastinación académica, afrontamiento de la ansiedad pre-examen y rendimiento académico en estudiantes de psicología: análisis preliminar," Cultura, **31**, pp. 181–193.
[32] Montenegro Ordoñez, J., 2020, "LA INTELIGENCIA EMOCIONAL Y SU EFECTO PROTECTOR ANTE LA ANSIEDAD, DEPRESIÓN Y EL ESTRÉS ACADÉMICO EN ESTUDIANTES UNIVERSITARIOS," TZHOECOEN, **12**(4), pp. 449–461.
[33] Sarı, S. A., Bilek, G., and Çelik, E., 2018, "Test Anxiety and Self-Esteem in Senior High School Students: A Cross-Sectional Study.," Nord. J. Psychiatry, **72**(2), pp. 84–88.
[34] Hearn, J. H., and Stocker, C. J., 2022, "Mindfulness Practice Correlates with Reduced Exam-Induced Stress and Improved Exam Performance in Preclinical Medical Students with the 'Acting with Awareness', 'Non-Judging' and 'Non-Reacting' Facets of Mindfulness Particularly Associated with Improved Exam Performance," BMC Psychol., **10**(1), p. 41.
[35] Elsalem, L., Al-Azzam, N., Jum'ah, A. A., Obeidat, N., Sindiani, A. M., and Kheirallah, K. A., 2020, "Stress and Behavioral Changes with Remote E-Exams during the Covid-19 Pandemic: A Cross-Sectional Study among Undergraduates of Medical Sciences.," Ann. Med. Surg. 2012, **60**, pp. 271–279.
[36] Parsons, D., 2008, "Is There an Alternative to Exams? - Examination Stress in Engineering Courses," Int. J. Eng. Educ., **24**.
[37] Othman, N., Ahmad, F., El Morr, C., and Ritvo, P., 2019, "Perceived Impact of Contextual Determinants on Depression, Anxiety and Stress: A Survey with University Students," Int. J. Ment. Health Syst., **13**(1), p. 17.
[38] Sotola, L. K., and Crede, M., 2021, "Regarding Class Quizzes: A Meta-Analytic Synthesis of Studies on the Relationship Between Frequent Low-Stakes Testing and Class Performance," Educ. Psychol. Rev., **33**(2), pp. 407–426.
[39] Gholami, V., and Morady Moghaddam, M., 2013, "The Effect of Weekly Quizzes on Students' Final Achievement Score," Int. J. Mod. Educ. Comput. Sci., **5**, pp. 36–41.

[40] Kayser, J. A., “THE EFFECT OF DAILY QUIZZES ON STUDENT LEARNING IN THE ADVANCED PLACEMENT CHEMISTRY CLASSROOM.”
[41] Rand, K. L., Shanahan, M. L., Fischer, I. C., and Fortney, S. K., 2020, “Hope and Optimism as Predictors of Academic Performance and Subjective Well-Being in College Students,” Learn. Individ. Differ., **81**, p. 101906.
[42] Fricke, H., Grogger, J., and Steinmayr, A., 2018, “Exposure to Academic Fields and College Major Choice,” Econ. Educ. Rev., **64**, pp. 199–213.
[43] Lotz, C., Schneider, R., and Sparfeldt, J. R., 2018, “Differential Relevance of Intelligence and Motivation for Grades and Competence Tests in Mathematics,” Learn. Individ. Differ., **65**, pp. 30–40.
[44] Gu, L., and Kristoffersson, M., 2015, “Swedish Lower Secondary School Teachers’ Perceptions and Experiences Regarding Homework,” Univers. J. Educ. Res., **3**, pp. 296–305.
[45] Asst. Prof., Düzce University, Düzce, Turkey, ufukguven@duzce.edu.tr, Güven, U., Akçay, A. O., and Asst. Prof., Eskisehir Osmangazi University, Eskisehir, Turkey, aoakcay@ogu.edu.tr, 2019, “Trends of Homework in Mathematics: Comparative Research Based on TIMSS Study,” Int. J. Instr., **12**(1), pp. 1367–1382.
[46] Bonney, K. M., 2015, “Case Study Teaching Method Improves Student Performance and Perceptions of Learning Gains.,” J. Microbiol. Biol. Educ., **16**(1), pp. 21–28.
[47] Planchard, M., Daniel, K. L., Maroo, J., Mishra, C., and McLean, T., “Homework, Motivation, and Academic Achievement in a College Genetics Course.”
[48] Guerra, M., and Abebe, Y., 2018, “Pairwise Elicitation for a Decision Support Framework to Develop a Flood Risk Response Plan,” ASCE-ASME J Risk Uncert Engrg Sys Part B Mech Engrg, **5**(011004).
[49] Al-Bahrani, A., Apostolova-Mihaylova, M., and Marshall, E. C., 2022, “Helping Some and Harming Others: Homework Frequency and Tradeoffs in Student Performance,” J. Econ. Educ., **53**(3), pp. 197–209.
[50] Ruipérez, G., and García-Cabrero, J.-C., 2016, “Plagiarism and Academic Integrity in Germany,” Comunicar, **24**(48), pp. 9–17.
[51] Yin, R. K., 2013, *Case Study Research: Design and Methods*, Sage publications.
[52] Miles, M. B., Huberman, A. M., and Saldaña, J., 2014, *Qualitative Data Analysis: A Methods Sourcebook. Thousand Oaks, Californinia*, SAGE Publications, Inc.
[53] Cabı, E., 2018, “The Impact of the Flipped Classroom Model on Students’ Academic Achievement,” Int. Rev. Res. Open Distrib. Learn., **19**.
[54] Adzima, K., 2021, “Examining Online Cheating in Higher Education Using Traditional Classroom Cheating as a Guide,” Electron. J. E-Learn., **18**(6).
[55] Sánchez, P. G., “La deshonestidad, elemento que altera la integridad en las prácticas académicas en las Instituciones de Educación Superior. Estudios de caso comparados.”

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