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Embracing the Extend Platform in Postgraduate Education: Unveiling Student Perspectives on Technological Trends in Course Delivery

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Abstract: Recent global events have made it crucial for higher education to continuously update course content with digital alternatives to meet evolving student expectations and enhance their learning experience. The extent of course redevelopment varies widely, depending on the specific learning outcomes. While numerous studies investigate the impact of digitally revitalized course materials on tertiary students, less is known about the user experiences of international postgraduate students in the context of a second language teaching methodology course using different delivery modes. Our study examined postgraduate students' perceptions of Extend using the Technology Acceptance Model 2 (TAM 2). Extend is an online platform implemented as the main course delivery platform in two postgraduate courses at a large urban Australian university. The results from mid-term evaluation surveys and end-of-semester course evaluations indicated that most students had positive attitudes towards Extend, finding it beneficial for content inclusivity and course objective transparency. The findings highlight both the perceived usefulness and ease of use for building their independent learning journey. However, for a long-term successful learning outcome in delivering this platform across various class deliveries, other aspects related to individual differences need to be taken into consideration.

Keywords: digital revitalization; student perceptions; tertiary studies; L2 methodology course; online platform; technology acceptance model (TAM)

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1. Introduction

Recent global events have made it crucial for higher education institutions to continually revitalize course content with digital alternatives to meet the evolving expectations and needs of students and enhance their learning outcomes [1–4]. While Learning Management Systems (LMSs) such as Blackboard have remained popular for the past two decades, strategies for implementing inclusive teaching and classroom management practices have changed, especially since the recent global pandemic. The importance of inclusive practices was stressed in the revised Professional Standards Framework (PSF) for teaching and supporting learning in higher education [5]. According to Currens [6], inclusive practices were revised as "a key element of practice... in the Areas of Activity as a Dimension" [6] (p. 6).

In higher education contexts, the extent of course redevelopment for inclusive practices varies from adding a simple online presence to incorporating ongoing digital technology adaptations, depending on the course learning requirements and outcomes. Some changes also occur over the semesters as different delivery modes are offered during the transition of higher education institutions to post-COVID-19 adaptations. As part of the implementation of inclusive practices, a growing number of studies examine the perceptions of both teachers and students to understand how course redevelopment has contributed to their classroom experience (e.g., [7–9]). Each study provides further insight into the

importance of flexible and ongoing pedagogical processes to provide all students with equitable learning experiences and/or environments [9].

One of the main theoretical perspectives used to explain the impact of digital transformations is Sociocultural Theory (SCT). Mediation, which includes both internal (language, conceptual knowledge) and external (technology, learning materials) tools, plays a significant role in the development of higher mental functions [10]. Digitally revitalized course material provides further opportunities for students to socially interact in different ways because the course introduces alternative forms of computer-mediated communication (CMC) for various participatory levels for teacher–class to student–student or teacher–student interactions.

To align with the professional values of PSF 2023 [5], this study focused on examining the extent of postgraduate students' technology acceptance when the learning content of two courses was redeveloped on Extend, which is a platform using online learning modules embedded in Blackboard for flexible classroom delivery. The online learning modules for both courses were redesigned according to the five principles for creating inclusive teaching within the flipped learning approach [11]. These principles encompass (1) the establishment and support of a class climate that fosters belonging for all students, particularly the new modules on Blackboard that we aim to improve; (2) clear guidelines with explicit articulation of learning objectives and goals; (3) the selection of course content that recognizes diversity and acknowledges barriers to inclusion; (4) the accessibility of the design of all course elements; and (5) the reflection on teaching beliefs to enhance self-awareness and commitment to inclusion. All learning materials for weekly pre-class, in-class, and post-class activities and for assessments were included within each online learning module by combining edX tools, an open online course, with an open-source software called H5P to enhance the student experience. The combination of tools and software allowed staff to redevelop interactive content in courses to create alternative and flexible modes of communication for student participation and engagement. Because inclusive teaching principles are considered to be part of the three dimensions of PSF 2023 [5], the ongoing reflective process is a crucial part of the teaching/learning cycle to maximize awareness and inclusion [11], especially in relation to the appropriate use of digital and/or other technologies, and resources for learning (K4 from Core Knowledge; see [5]). Consequently, exploring students' perceptions of the digital revitalization of different course material provides valuable insight on the factors involved in technology acceptance and adoption for flexible and inclusive learning practices.

2. Literature Review

The current literature on educational technologies has shown how digital tools support classroom dialogue and foster collaborative learning in light of the SCT perspective [12]. In SCT, the development of higher mental functions, such as content learning in tertiary education, is viewed as a social and cultural process. One of the main aims of adopting the SCT perspective is to examine the effectiveness of educational technology and possible constraints in specific learning environments from students' perspectives [13]. The following section reviews the current research on the use of new digital tools for redeveloping existing courses over the past years to cover recent changes before, during, and after the global pandemic. We begin by revisiting the influence of digital transformation on students' learning, focusing on studies conducted in this domain, especially at the postgraduate education level. Then, we delve into research related to the acceptance and adoption of models of technology for teaching purposes.

2.1. The Impact of Digital Revitalization on Students' Learning

With the advent of the digital transformation, considerable scholarly attention has been directed toward learner engagement and the evolving educational experiences resulting from changes in course delivery methods. While LMS platforms should encourage active engagement and create meaningful connections with content, research on the impact

of embedding additional interactive digital tools on a platform such as Extend is still being developed. Digital tools have a mediating role in extending further social interaction across different participatory structures. Within this research, a number of studies have explored the impact of digital revitalization on students' learning. Kohnke and Moorhouse [14], for example, explored the impact of digital gamification tools for improving student engagement and academic performance. Their review affirmed that incorporating Kahoot! as a digital resource in the classroom improved on-task behavior, collaborative language learning, and the delivery of personalized and targeted instruction. Similar improvements in student engagement were shown by Coleman [15], with the implementation of digital badges in undergraduate education in the context of co-curricular education. Their findings showed how digital badges provided diverse incentives and opportunities for students while allowing them to connect their extracurricular activities and experiences to their overall learning and personal development journey. Furthermore, while investigating the potential impact of digital artifacts on classroom dynamics, particularly in motivating students to engage with national literature, Walton et al. [16] affirmed that activities focused on creating digital artifacts heightened students' engagement with literary material, resulting in positive learning outcomes, bolstering their digital literacy, and refining their English language skills. Creative learning exercises and collaborative efforts were seen to play a pivotal role in fostering student engagement, whereas the effect of innovative teaching approaches varied among students, depending on a range of individual differences. Insights from these studies focusing on tools like Kahoot!, digital badges, and digital artifacts highlight their potential to amplify student engagement, elevate learning outcomes, and cultivate an integrated and personalized approach to language education. The findings also confirm the value of strategically harnessing digital tools to advance language instruction, rendering it more effective and captivating for student learning. The impact that each individual digital tool contributes to research on mediation in tertiary education will be discussed in the next section.

2.2. Digital Revitalization and Students' Perceptions

A growing number of studies have delved into students' perceptions to gain further insight on digital technology (e.g., [1,5,17]). Many of these studies report on the positive perceptions that tertiary students from various universities have on the use of LMS platforms based on interactivity and accessibility [17]. Students tended to appreciate the accessibility of course content on LMS platforms, but less is known about how students view the newly embedded online learning modules on existing LMS platforms.

Amid the transformation of education delivery, especially in the post-COVID-19 era, Cramarenco et al. [8] conducted an extensive bibliometric and systematic review spanning from March 2020 to September 2022, focusing on student perceptions of online education. Their research offered valuable insights into how students perceived the advantages and disadvantages of online learning during the pandemic. Positive viewpoints were contingent upon students' digital readiness and accessibility to educational platforms, while negative perspectives were shaped by various challenges, including limited technology access, digital skills, and communication with educators and peers; emotional factors like stress and anxiety also contributed to the students' technology acceptance. In a separate investigation, Dianati et al. [18] explored student attitudes toward technological tools like Padlet, Kahoot!, and Cirrus within the context of second language learning at an Australian university. Their findings indicated that students generally held favorable views regarding these web-based tools. However, it was noted that these positive perceptions often stemmed from the mere presence of technology rather than deeper pedagogical considerations. Additionally, in a university context but within a different program, Cook et al. [1] conducted a study on the rapid transition of an English-to-Chinese translation course to an online format. One part of their exploration was students' perceptions and responses to the course redevelopment, including their engagement in the redesigned course and their formal evaluation of its structure, content, and overall learning experience. Interestingly,

while exploring whether student satisfaction exhibited an upward or downward trend following the course's redesign, the study concluded that students were discerning in their evaluation of online delivery. Considering these studies, it is evident that, despite numerous investigations into the efficacy of digital revitalization in education, students' perceptions towards these implementations tend to vary based on specific contexts.

3. Theoretical Framework

In educational technology research, a number of models have been commonly used to help instructors determine the best digital alternatives. Among these, the Technology Adoption Model (TAM) [17] is one noteworthy framework that serves as a valuable tool for examining the integration of technology within educational settings, offering insights into how educators and users incorporate technology into their teaching and learning practices, especially as a mediation tool.

In the realm of studies examining the impact of digital revitalization on language education, TAM can be used to understand, explain, and predict an individual's readiness to embrace technology. TAM comprises two fundamental components: perceived usefulness (PU) and perceived ease of use (PEU) [17]. These constructs serve as significant indicators of an individual's intent to use and embrace technology. PU revolves around an individual's belief in how a specific technology enhances their effectiveness in their role. This concept of usefulness can manifest in various ways, including improvements in work quality, increased control or support, heightened productivity, and enhanced efficiency. In contrast, PEU delves into the extent to which an individual believes that employing a particular technology demands minimal effort. Essentially, it examines the user-friendliness of the technology, taking into consideration factors such as ease of operation, mental effort required, ease of recalling essential actions, frustration levels, the smoothness of interaction, and adaptability to cater to specific user needs [19].

More recently, Venkatesh and Davis [20] introduced TAM2, an extended model that incorporates additional elements to further elucidate PU and PEU. TAM2 integrates social influence processes (e.g., subjective norms, image, and voluntariness) and cognitive instrumental processes (e.g., job relevance, output quality, and result demonstrability) into the framework. As suggested by Venkatesh and Davis [20], "image" refers to the positive reputation associated with both the group and the individual, while "voluntariness" considers whether the use of the technology is mandatory or discretionary. Cognitive instrumental processes, such as job relevance (the perceived applicability of the technology to one's job), output quality (the technology's performance in fulfilling required tasks), and result demonstrability (how easily users can articulate the benefits of the technology), play crucial roles in mediating the influence of PU and PEU.

It is worth noting that PU and PEU have the potential to influence each other. As Davis [21] points out, PU is influenced by PEU, with increased ease of use, generally resulting in higher perceived usefulness. Across diverse contexts, PU often exerts a more substantial influence than ease of use when it comes to determining technology usage. Beyond the surface level of PU lies an individual's response to using the technology, their intentions to use it in the future, and their actual adoption of the technology.

4. Research Gap and Research Questions

Previous studies on digital revitalization have shown how different digital tools have made a substantial and positive imprint on tertiary education. Insights from studies focusing on LMS platforms like Blackboard and digital tools like Kahoot!, digital badges, and digital artifacts highlight their potential to amplify student engagement, elevate learning outcomes, and cultivate an integrated and personalized approach to language education [14–16]. These findings also confirm the effectiveness of strategically harnessing digital tools to advance language instruction, rendering it more effective and captivating for students.

Our review showed that, despite a substantial number of studies focused on the efficacy of digital revitalization in education, the outcomes tend to vary based on specific contexts. An increasing number of inquiries are shedding light on the impact of digitally revitalized course materials for tertiary students [1,22]. However, there remains a notable gap in our understanding of the experiences of international postgraduate students, particularly within the context of second language teaching methodology courses delivered through diverse modes. Investigating students' perceptions of their experiences with the newly embedded online modules on platforms such as Blackboard will provide valuable insight to further enhance flexible and inclusive learning practices. In our study, we employed the extended TAM2 model to investigate the appropriate use of digital tools (see K4 from [5]) from students' perspectives to understand how individuals perceive and adopt technology. Factors such as PU, PEU, social influence, and cognitive instrumental processes were considered.

Building on previous studies, our study addressed the following research questions to understand students' perceptions of the newly embedded online learning modules within Blackboard for two different courses, and to discover whether there were improvements in students' overall evaluation of the course and whether students' individual needs contributed to their responses. The two research questions were:

1. What were students' perceptions of the usefulness and ease of use of the new Extend platform?
2. Were there improvements in the course evaluations in general after the implementation of the Extend platform?

5. Materials and Methods

5.1. The Study Context

This study was conducted within two courses in the Applied Linguistics Program of an urban Australian university. Focusing on an introduction to second language teaching and learning, course I, an introductory course, is offered to students of the master's course of Applied Linguistics in both semesters. Course A, an advanced course, is exclusively offered to master's students in Semester 1 each year, covering the current approaches to TESOL and second language teaching in the context of current understanding of second language acquisition. Both courses are taught within a 13-week semester. The students in these two courses are mainly international students with diverse socio-cultural and linguistic backgrounds.

In 2021, the learning materials for both courses were initially revitalized through the university's digital uplift program, which aims to create inclusive and flexible teaching and learning environments in alignment with the Higher Education Academy's Professional Standards Framework [5]. After reviewing different alternatives, Extend was selected as the platform of choice for the digital uplift program because the university adapted edX tools to support the teaching and learning needs. The online learning modules for both courses were organized using pre-class, during-class, and post-class elements to reflect the flipped learning approach, which has been implemented since 2018. Through the navigation tabs, students can access all materials within the module across different delivery modes from online, blended, and face-to-face before, during, and after weekly classes. In both courses, the online modules embed different interactive tools from gamification quizzes, discussion boards, individual text input, to text visualization charts to increase student engagement with weekly learning materials.

During the duration of this study from Semester 2, 2022 to Semester 2, 2023, the online modules were delivered through dual and face-to-face modes. Dual-mode classes were introduced by combining both online and offline learners as pandemic restrictions eased. To enhance student engagement in these dual-mode classes, Extend was initially introduced in course I during Semester 2, 2022, and subsequently in Semester 1, 2023. Following its success in course I, course A also adopted Extend as the primary course delivery platform starting from Semester 1, 2023 through dual, face-to-face, and online-only modes.

5.2. Participants

International postgraduate students from an urban Australian university were the participants of our study. The students had completed either course I, course A, or both. Those who had taken course I were first-year students, while those who had enrolled in course A could be in their first semester or beyond. Some students had completed course I before taking course A. In the period of 2022 and 2023, approximately 200 students were enrolled in these courses. However, not all students who participated in the surveys were collected. In total, 138 responses from the students for the two courses between 2022 and 2023 were collected. More details of the enrolments of these participants and the number of responses are shown in Table 1 below, and those of the surveys are presented in the next section.

Table 1. Participants' demographic data and number of responses.

Course	Year and Semester	Number of Enrolled Students	Number of Responses	
			Mid-Term Evaluation	End-of-Semester SECaT
Course I	Semester 1, 2022	35	12	23 (INT 5 + 18 EXT)
	Semester 2, 2022	59	6	17
	Semester 1, 2023	25	20	16
Course A	Semester 1, 2022	126	30	41
	Semester 1, 2023	147	15	64 (57 INT + 7 EXT)

5.3. Data Collection

To investigate the experiences of international postgraduate students using the innovative course delivery platform, Extend, across various delivery modes, including face-to-face, online, and blended (dual mode), we gathered their feedback through several evaluation surveys of courses I and A. In total, we collected 10 evaluation surveys from students during 2022 and 2023 from these two courses. For course I, we collected two mid-semester evaluation surveys and two end-of-semester SECaT evaluations which are the university's standardized course evaluation survey. Surveys to investigate students' perceptions were collected in Semester 2, 2022 and Semester 1, 2023 for course I, when this course implemented the Extend platform in their teaching. We also collected one mid-term evaluation and one end-of-semester SECaT in Semester 1, 2022 of this course before the Extend platform was implemented to compare whether there were any differences in students' evaluations before and after the Extend implementation. Likewise, for course A, one mid-term evaluation survey and one end-of-semester SECaT in Semester 2, 2022 were collected before the Extend implementation, together with one mid-term evaluation survey and one end-of-semester SECaT in Semester 1, 2023 when implementing Extend.

5.3.1. Mid-Term Evaluation

Mid-term evaluation surveys were designed by the course coordinators and distributed to the students online in approximately Week 8 or 9 of the semester. The survey for course I in Semester 2, 2022 and Semester 1, 2023 consisted of 23–26 questions, including students' evaluation of all aspects of the course, such as the effectiveness of online video lectures, required readings, and assessment items. The surveys included a combination of multiple-choice questions, short answers, and long answers. Among these 26 questions, 4 questions from 19 to 22 particularly focused on the students' evaluation of the use of Extend in the flipped classroom. Question 19 focused on whether the flipped classroom had improved the learning strategy using a Likert scale, Q20 sought further comments, Q21 asked whether the flipped learning classroom helped the student become a more independent learner, and Q22 asked whether the Extend materials were engaging to complete in class. Further written feedback on these questions was also collected.

For course A, the mid-term evaluation survey consisted of 23 questions. Like course I's mid-term evaluation, the survey covered all aspects of the course, and Q13a and 13b focused directly on the use of Extend. Q13a focused on how often the students used Extend in class. Q13b asked whether the students found the Extend platform helpful because all information was available there. Three other questions (Q15, 16, and 17) also explored students' perceptions of the use of the flipped classroom which was reinforced through the implementation of Extend. These questions used Likert scales to investigate whether the flipped classroom had improved their learning effectiveness (Q15), whether the flipped classroom had improved their learning strategies (Q16), and whether the students enjoyed learning in a flipped classroom more than a traditional classroom (Q17). Similar to course I, further elaborated responses in the written comments of these questions in course A were also collected.

5.3.2. SECaT

The SECaT for both courses was pre-designed by the university to gather students' evaluations of the courses at the end of every semester. The design of the SECaT is standardized for all courses, consisting of two main parts. Part A has eight Likert scale questions that include students' evaluation of different aspects of the course. The scores are given from 1 to 5, with 5 as the maximum score. Part B invites students to provide open responses, allowing them to comment on the aspects that worked best for them and suggest areas for improvement. In our study, we used the overall SECaT score (Q8) and Q7, which addressed whether learners learned a lot in this course in Part A, combined with written comments where relevant in Part B for both of the courses. We used these results in Semester 1, 2022 before implementation and in Semester 2, 2022 and Semester 1, 2023 after implementation for course I. Likewise, for course A, the results of these two questions in SECaT in Semester 2, 2022 before the Extend Platform implementation and those in Semester 1, 2023 after the implementation were used.

5.4. Data Analysis

From the mid-term evaluation surveys and end-of-semester SECAT from both course I (Semester 2, 2023 and Semester 1, 2023) and course A (Semester 1, 2023), we took the responses from relevant questions that were related to the implementation of the Extend Platform. Following the TAM approach, we arranged these responses, both closed and open, into two relevant themes, such as PU or PEU. For the closed questions in the surveys, we reported the score number out of five to indicate students' perceptions towards certain aspects. For the open questions, we read the students' responses and coded and labeled the relevant themes [23]. The next section presents the findings for these two themes for the mid-term evaluation surveys and end-of-semester evaluation surveys.

6. Findings

The mid-term evaluation and end-of-semester SECaT provided insights into the students' perceptions of embedding the new Extend platform within the existing LMSs (Blackboard) for two courses. The following sections address the two research questions by examining students' PU and PEU of the Extend platform, and discussing whether there were improvements in course evaluations.

6.1. Perceived Usefulness (PU)

As mentioned above, PU focuses on an individual's belief in how a particular technology can enhance their effectiveness in their role, such as improvements in work quality or productivity, efficiency, as well as increased control or support. In our study, we gauged postgraduate students' PU regarding the implementation of the Extend platform by their own evaluation and perceptions related to their learning strategies, advancements in becoming independent learners, and their overall evaluation of the course, including whether they felt that they had gained substantial knowledge from it.

6.1.1. PU in the Mid-Term Evaluation Survey

PU was shown from the questions in the mid-term evaluation survey focusing on the students' perceptions of the Extend platform within the flipped learning approach.

Course I

The mid-term surveys for course I in Semester 2, 2022 and Semester 1, 2023 both revealed students' positive perceptions of Extend in their course. As shown in Figure 1, a significant majority (17 out of 20 respondents in Semester 1, 2023) found that the flipped classroom had improved their learning strategies, demonstrating the efficacy of this approach. Additionally, Figure 2 shows that 18 out of 20 students in Semester 1, 2023 reported that the flipped learning classroom had made them more independent learners, highlighting the benefits of Extend in fostering autonomy. Students also commented positively in the written comments on the flipped learning nature, such as "Good", "Very good", or "I love flipped classroom".

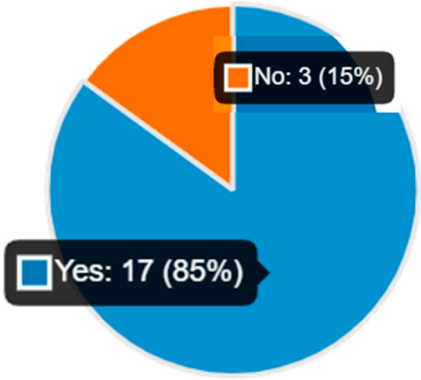

Figure 1. Do you think the Flipped classroom has improved your learning strategy?

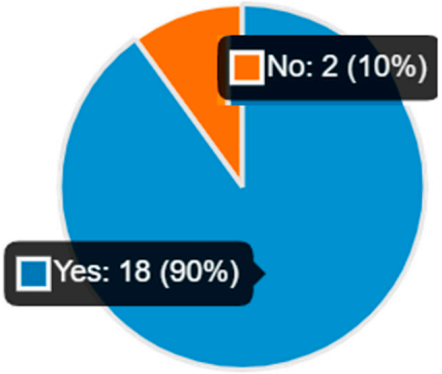

Figure 2. Has the flipped learning classroom helped you become a more independent learner?

Even though only six students responded to the mid-term evaluation surveys in Semester 2, 2022, almost 70% of respondents (4) agreed that the flipped classroom had improved their learning strategy and helped them become independent learners. In the written comments, students also expressed favorable sentiments regarding the Extend platform. One student mentioned that "Through the tutorial interaction, I improved my critical thinking skills" and noted that "It encourages student autonomy." These comments underscore how the Extend platform supported the course's objectives in terms of students' critical thinking abilities and their autonomy, which are essential factors to improve the effectiveness of the course. In addition, several students provided valuable feedback and raised specific concerns about the platform. For instance, one student recommended that the Extend content should include more in-depth analysis and examples related to challenging theories from the reading material. Another student suggested incorporating additional

practice opportunities before the in-class activities to facilitate a better understanding of the theories.

Overall, the mid-term survey responses reflected students' positive perceptions of the beneficial impact and utility of Extend for the flipped classroom to enhance their learning strategies and independence. However, it is important to consider these additional recommendations to further optimize the platform's effectiveness in supporting students' learning experiences.

Course A

Similar to the students' perceptions of Extend in course I, students in course A reflected overwhelmingly positive feedback in the mid-term evaluation survey in Semester 1, 2023. PU was shown through the students' perceptions of the use of Extend in their courses regarding the flipped classroom approach and its integration with Extend. According to the responses to questions 13 to 17 on the mid-term evaluation survey, which specifically focused on the students' evaluations of the use of Extend, students expressed a positive outlook on the integration of this platform. The flipped classroom approach, which was facilitated through Extend, received strong support from students, as addressed in Q15 and Q16 in the mid-term survey. A significant portion (i.e., 86.7%) of students agreed that the flipped classroom has improved their learning effectiveness, underscoring the benefits of engaging with course materials before attending tutorials. Similarly, the same percentage of respondents believed that the flipped classroom had enhanced their learning strategies, emphasizing its positive impact on their academic skills and approaches to learning.

In the written comments, students also advised that "we got clear explanation of the course content during tutorials", which showed that the implementation of Extend as the main delivery platform for the course content was effective in conveying the course content in general. While the majority shared positive feedback, one student identified how the platform could be improved to increase its usefulness, "I think the Extend content should add more practices before the in-class activities part to make students better understand the theories. I think the tutorial activities should provide students with some suggested answers to help students improve their solution..." (Semester 2, 2022). Similar to students' perceptions of Extend in course I, some students in course A suggested that providing explanations of important concepts before engaging in activities, as well as including slides with video lectures, would enhance their comprehension of the course content when utilizing the lecture videos uploaded on Extend.

6.1.2. PU in the End-of-Semester Evaluation

PU was shown from SECaT of both course I and course A via Q7, which addressed "I learned a lot in this course" and Q8 "Overall, how would you rate this course". Regarding course I, the respondents from both Semester 2, 2022 and Semester 1, 2023 provided high ratings when addressing Q7 "I learned a lot in this course", with 4.69 and 4.5 out of 5, respectively, for internal students agreeing with this statement. They also rated 4.59 and 4.5 out of 5 regarding their overall rating of the course in Semester 2, 2022 and Semester 1, 2023, respectively. In Semester 2, 2022, there were external students, and they also rated 4.43 and 4.57 out of 5 for Q7 and Q8. As can be seen, external students in this semester rated the course lower than internal students of the same course in the same semester.

For course A, in Semester 1, 2023, the course had both internal and external students. The student cohorts in both modes expressed a positive perception of their learning from the course, with ratings of 4.47 and 4.26 out of 5, respectively. Interestingly, external students gave a slightly higher overall course rating than internal students, with ratings of 4.43 and 4.41 out of 5, respectively.

6.2. Perceived Ease of Use (PEU)

As discussed in Section 3, PEU examines the technology's ease of use, considering elements such as how easy it is to operate, the mental effort it demands, the ability to

remember essential actions, levels of frustration, the fluidity of interaction, and its capacity to accommodate user requirements. In our study, we focused on these elements while analyzing students' perceptions towards the Extend platform and flipped learning using both mid-term surveys and end-of-semester evaluations of both courses. However, the PEU was not clearly shown in the SECaT; therefore, here, we present PEU from the mid-semester surveys instead.

In the mid-semester evaluation survey of both courses, PEU was mainly demonstrated through the students' responses related to questions addressing their views of the platform's use in general, such as whether the platform was engaging, easy to use, or accessible. Details of these perceptions for each course are presented below.

Course I

In Semester 1, 2023, addressing Q22 of the mid-semester evaluation, 14 out of 20 students agreed that the materials were engaging, which indicated their positive perception of the ease of use of this platform. It is still notable that six remained neutral, which suggests a need to enhance the appeal of certain Extend materials to ensure consistent engagement across all students in the course.

Although the mid-semester survey for course I in Semester 2, 2022 did not include direct questions regarding the ease of use of the Extend Platform, insights can be shown from written comments made by students in response to various questions. Some students noted the platform's "engaging" nature. For instance, one student enthusiastically expressed, "I really enjoy the contact hours, and the activities are really engaging" (Semester 2, 2022). Another student, in the same mid-semester survey, mentioned their appreciation of the environment in the flipped classroom.

However, it is important to acknowledge that not all students shared these positive sentiments. Some students expressed reservations about the platform being too complicated and time-consuming. Another student indicated a general dislike for online work. Based on their feedback, it was evident that, for some students, face-to-face lectures held greater appeal compared with pre-recorded ones posted on the Extend Platform because they believed it facilitated better class engagement. Furthermore, students provided suggestions for platform design improvements in their written comments. They proposed the integration of more online questionnaires, designed for easy usability, to encourage active participation in the class. For example, one student said that "More online questionnaires can be added in the class, and students can be ranked by answering questions online, so that they can participate in the class more actively" (Semester 2, 2022).

Course A

As shown in Figure 3, the mid-semester survey in Semester 1, 2023 for course A showed that a substantial percentage (86.7%) of students reported using Extend regularly in their classes, indicating its consistent relevance and utility in their in-class learning. Figure 4 shows that more than 93% of the respondents agreed that Extend was a helpful resource because it provided access to all the necessary information, which highlighted the ease of use of this platform for students. This high level of agreement suggests that students highly valued the comprehensive and easily accessible nature of Extend. A considerable 80% of students also expressed a preference for learning in a flipped classroom over a traditional one, highlighting the appeal and advantages of this innovative approach. These findings collectively affirm the value and effectiveness of Extend in promoting a more engaging and impactful learning experience for students.

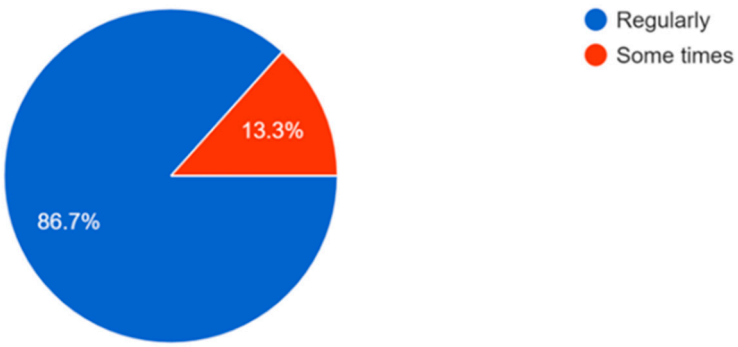

Figure 3. How often do you use the platform in class.

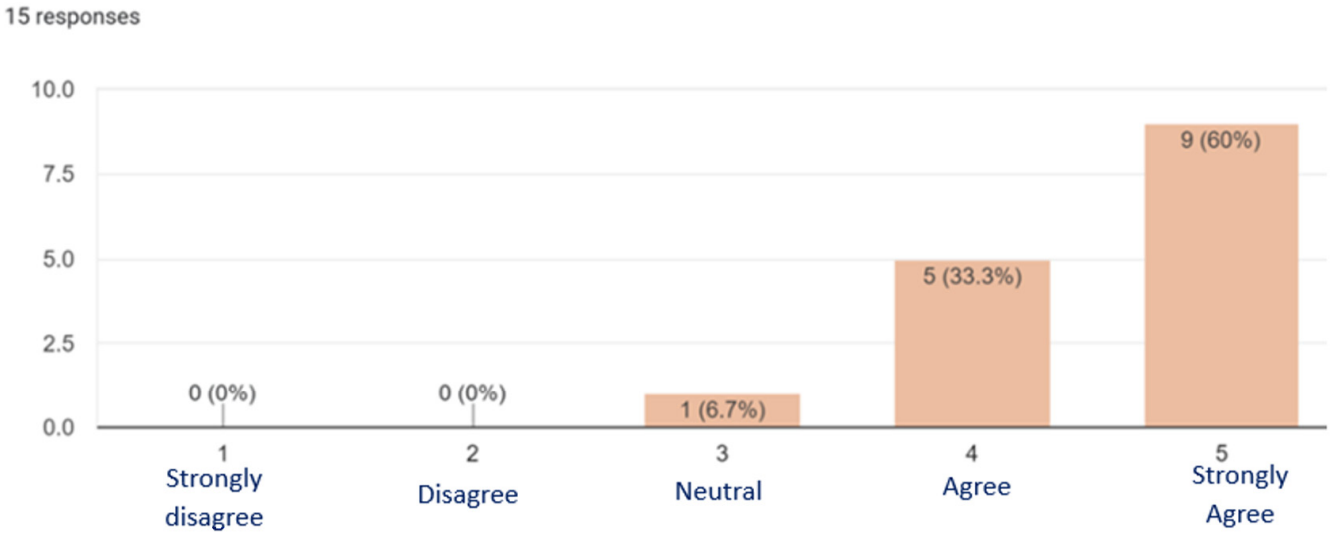

Figure 4. Whether the platform is helpful as all information is available there.

Notably, one student explained in their written comment that they love the flipped learning of course A because the lectures were not that long. One student added that, "if each video is more than eight minutes then it will be so boring." This suggests that the use of Extend is convenient for their lecture-watching habits and implies the need to optimize video length to maintain students' engagement. Additionally, some students suggested that uploading slides to the platform could aid the note-taking process during video lectures. Furthermore, students recommended incorporating quizzes and other apps like Kahoot!, which can be seamlessly integrated into the Extend platform, as a way to enhance the learning experience.

6.3. Course Evaluations before and after the Extend Implementation

The comparison of SECaT scores in course I and course A before and after the implementation of Extend revealed an interesting trend. As shown in Table 2, in course I, during Semester 2, 2022, the SECaT overall score was 4.59/5, and in Semester 1, 2023, it was 4.50/5. Interestingly, when we compared these scores to the period before the Extend implementation in Semester 1, 2022, which had a score of 4.83/5, we did not see an increase in the evaluation scores after the implementation of Extend. The similarity of scores, however, showed that the course quality from the students' perspective had remained consistent despite the modes of course delivery.

Table 2. Score for the course before and after implementation.

SECaT Overall Score	Semester 1, 2022		Semester 2, 2022		Semester 1, 2023	
	INT	EXT	INT	EXT	INT	EXT
Course I	N/A	4.83	4.59	4.57	4.5	N/A
Course A	N/A	N/A	4.53	4.32	4.41	4.43

INT: Internal students. EXT: External students. N/A: Not Applicable (where there is no students or no class.

Interestingly, course A saw similar patterns. In Semester 1, 2023, the SECaT scores were 4.41 for internal (INT) students and 4.43 for external (EXT) students. When compared with the scores in Semester 2, 2023, when Extend was not used, which were 4.53 for IN students and 4.32 for EXT students, the difference was not substantial. However, it is important to note that Semester 2, 2023, presented more significant challenges with a larger number of enrolled students and a more extensive teaching team compared with Semester 2, 2022.

In both cases, even though the SECaT scores did not show a significant increase, the fact that they remained consistent or only slightly decreased amidst greater challenges and increased responsibilities is a positive indication. This suggests that the implementation of Extend had a stabilizing effect on course quality and student satisfaction, ensuring that despite the external pressures, the courses maintained a high standard of teaching and learning.

7. Discussion and Conclusions

7.1. Students' Perceptions of the Extend Platform Implementation in Delivering Postgraduate Courses

Our study focused on international postgraduate students' perceptions of the Extend platform over the years of 2022 and 2023 to gain further insight into the appropriate use of digital technologies, according to Advance HE [5]. The students' PU was identified by evaluating the impact of the platform on learning strategies, independence, and overall course evaluation, while the students' PEU was examined through questions related to user experience, required cognitive effort, and/or level of engagement.

From the SCT perspective, the findings provide further insight on how students perceived the Extend platform as a mediation tool for enhancing classroom dialogue and internalizing course content. As reported in the previous section, responses from both the mid-term evaluation survey and end-of-semester SECaT of both courses show positive perceptions of Extend for both PU and PEU based on the TAM 2 model. Our findings resonate with Dianati et al.'s [22] study, which revealed that students held favorable views toward the implementation of new technologies in course delivery. From the SCT perspective, the survey results showed how students viewed the new online learning module as an interactive platform to encourage further engagement with course content. Similarly, most students agreed that the accessibility of materials on the new platform improved their learning strategies and increased their class engagement, thus contributing to research on educational technology. Notably, our study also aligns with the key patterns outlined in the Advance HE [5] for teaching and supporting learning in higher education, emphasizing effectiveness, impact, inclusion, and context as fundamental aspects of teaching and learning practice. The students' perceptions highlight how the implementation of the Extend platform aligns with and supports the development of this framework for postgraduate education.

The effective implementation of technology systems relies on providing the necessary conditions for students to use the technology comfortably and efficiently. Our study indicates that students' perceptions of PEU, focusing on ease of operating the technology and the cognitive effort required, were generally positive, with students finding Extend's materials engaging. However, students' suggestions for integrating additional functions on Extend indicate potential areas for improvement to enhance both effectiveness and engagement. This highlights the importance of gathering student perceptions of flexible

and inclusive teaching and learning. It is worth noting that not all students fully agreed on the platform's effectiveness or ease of use, indicating the need for further refinement. Students' suggestions for further aspects of the platform, including content-focused improvements such as further terms or notions on the platform with quizzes or providing PowerPoint slides for lecturers, together with reservations on the use of the platform in general, were presented in the written comments despite high overall ratings for the platform. These findings partly concur with McLay and Chua Reyes's [24] assertion that technology-focused educational reforms should undergo careful investigation of their effectiveness rather than being uncritically accepted as inherently "good". While our study provided valuable insights through student responses to mid-term evaluation and end-of-semester surveys, conducting additional in-depth interviews would provide a more comprehensive understanding of the platform's effectiveness.

When comparing students' overall course evaluations before and after the implementation of the Extend platform, it is notable that the overall ratings of both courses did not increase. This finding aligns with research by Bećirović [25] and Almaiah et al. [26], which highlights the challenges of integrating digital technologies into education. Given the minimal gap between the overall evaluations and the increasing challenges in course deliveries during and after the pandemic, the implementation of Extend is viewed positively because it has helped to maintain course quality and satisfaction despite the evolving educational landscape.

7.2. Potential Influential Factors and Further Implications

Our study contributes to the continuing line of inquiry investigating student perceptions of educational technology, more specifically, the use of the Extend platform within Blackboard. In contrast to Dianati et al.'s [18] emphasis on students' positive perceptions being linked to the mere presence of technology rather than deeper pedagogical considerations, our study reveals that students exhibited a profound understanding of the Extend platform and its potential impact on their learning. Many students, both from course I, an introductory course, and course A, an advanced course, expressed their desire for the integration of quizzes and slides within the platform to enhance their comprehension of course content. Additionally, the external students in both courses always had higher ratings on the use of Extend compared with the internal students. This may be because the use of the Extend platform is helpful for online learning when the class is delivered via Zoom. These findings show how digital transformation has played a pivotal role in facilitating changes in education, particularly in the context of online and dual-mode course deliveries. Our study shows that the ratings for Extend from course A were lower than course I, which could have resulted from several reasons. The students' perceptions of the use of the Extend platform are not just the result of students' preferences but also of their own experiences. First, the students in course I are first-year students. It could be assumed that these students had not used this platform before and were attracted by its convenience, whereas for course A's students, they might have used this platform before by attending course I or other courses. The content of course I is also easier, with fewer pre-reading and post-reflection requirements than course A, which could increase the average overall SECaT scores. It was shown from the written comments that while some students from both courses were very positive about the uses, some students had more expectations both in terms of usefulness with the integration of further content notions, theories, or lecture PowerPoint slides, and ease of use regarding the integration of quizzes or game-like apps like Kahoot!. These suggestions show that different expectations and preferences (online or off-line) influenced students' perceptions of the Extend platform in general (see also [27,28]).

Based on these findings, the pedagogical implications focus on how student evaluations such as feedback tools and TAM from the SCT perspective can be used as mediation tools for instructors and course coordinators within tertiary education to implement inclusive learning and teaching ([29,30]). As a feedback tool, the mid-semester evaluations

and SECaT created a systematic approach towards quality assurance and enhancement (K5), which is part of one dimension from PSF 2023 [5]. Encouraging students to rate the course and digital tools creates opportunities to further improve not only by the week but also by the semester. Course coordinators can stress the importance of gaining student perceptions as part of an inclusive teaching approach, providing further insight on the current classroom and even cohort dynamics.

In relation to digital revitalization, this study shows the positive impact of redeveloping the existing course content as an online learning module through the Extend platform. These findings provide additional examples of how a combination of digital tools can be used for curriculum design and contents to enhance students' engagement and autonomy. Instructors and/or learning designers can continue to find ways to enhance the student learning experience on LMS platforms. Consequently, incorporating technology acceptance models within the feedback tools can determine the students' PU and PEU as part of student feedback (see also [31–33]).

Considering variations in students' individual preferences toward the use of Extend, it is apparent that further research is warranted. Conducting focused group interviews or individual interviews could offer deeper insights into and explanations for these perceptions. Increased student participation in both mid-term and end-of-semester surveys would have provided a more comprehensive assessment of student perceptions towards the implementation of Extend. Additionally, the instructors' utilization of the platform in their teaching may significantly influence learners' perspectives and experiences. Future studies should consider examining the perspectives and experiences of other stakeholders involved in the implementation of this platform specifically and digital revitalization more broadly. As digital technology continues to develop, this study highlights the importance of continued research on the perceptions of stakeholders of their experience with new digital tools. The general practice of gaining stakeholders' perceptions of technological trends should continue to be a common pedagogical practice in higher tertiary education to create flexible equitable learning experiences and/or environments across time and space.

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