A CUSTOM-DESIGNED GPTUTOR LEARNING SPACE TO ENHANCE SELF-LEARNING MOTIVATION: A STUDY OF UNDERGRADUATE STUDENTS' ATTITUDES AND READINESS

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Abstract

The increasing prevalence of AI-based tutoring systems in higher education is opening new avenues for enhancing student learning experiences. This study examines GPTutor, a ChatGPT-powered programming tool designed to assist students in engaging with complex theories by facilitating reflection on learning materials and encouraging the exploration of unfamiliar knowledge. A custom learning space within the university's GPTutor platform was developed specifically for an applied business ethics course. In other words, students have access only to the learning materials uploaded by the instructor. A pilot study was conducted in Hong Kong with 106 undergraduate students to explore their attitudes toward using GPTutor as part of a pre-class learning activity. In October 2024, a self-administered survey was distributed via the university's Learning Management System before the lesson. The results indicate that students have a positive attitude towards using the custom-designed GPTutor as an educational resource to achieve their learning goals. Students view GPTutor as a valuable tool, offering the convenience of summarizing and analyzing pre-reading materials anytime and anywhere. It acts as a 24-hour personalized tutor, effectively catering to their individual learning needs. The study also examines their perceived competence level in using the tool, as it plays a crucial role in enhancing students' readiness to self-learn the subject content, which was often overlooked. Additionally, incentives are seen as effective motivators to encourage students to prepare for lectures in advance. The findings provide valuable insights into student perceptions and highlight the potential of integrating AI-based tools like GPTutor into pedagogical models to enhance learning outcomes in the future.

Keywords: Active learning, business ethics, educational technology, GPTutor, higher education, undergraduates.

1 INTRODUCTION

The growing presence of AI-based tutoring systems in higher education is opening up new opportunities to enhance student learning experiences. When applied appropriately in a learning context, systems like GPTutor can potentially function as a 24-hour personalized tutor, catering to each student's unique learning needs [1]. For instance, pre-class reading materials can be provided to students, with GPTutor acting as a learning partner to help them prepare more effectively for lectures.

A customized learning space was developed within the university's GPTutor platform. Instructors can upload course materials, and students can utilize a conversational interface to ask questions, helping them gain a deeper understanding of the content. This learning space is designed to answer students' questions based solely on the relevant content from the uploaded documents. As such, this approach enables course instructors to ensure that the answers are both trustworthy and relevant.

To investigate how such systems can support future learning, this pilot study examines students' attitudes and readiness toward using the custom-designed GPTutor learning space to foster self-learning. Understanding students' perceived competence in using the platform is essential to assess their readiness to independently engage with subject content. Additionally, this study explores whether incentives can motivate students to read in advance and prepare for lectures.

2 METHODOLOGY

This pilot study was conducted in Hong Kong with 106 undergraduate students enrolled in a Business Administration program. One of the course projects involved assessing the corporate social performance of case companies using a business ethics approach. Students were required to read pre-assigned academic papers as a framework for evaluating the companies' performances. GPTutor was introduced as a learning partner to help them understand the said framework. Before undertaking this self-directed

reading task, students completed a self-administered survey distributed through the university's Learning Management System in October 2024. The questionnaire consisted of 20 statement items aimed at evaluating students' perceptions of their competence [2][3] in using the platform, their attitudes toward achieving their learning goals, and their motivation to learn. A 5-point Likert scale is employed, with responses ranging from 1 (strongly disagree) to 5 (strongly agree).

3 RESULTS

The data was analyzed using SPSS version 29. Out of 106 students, 85 responded, resulting in a valid response rate of 80%.

3.1 Perceived Competence

Table 1 below presents the mean values of students' perceptions regarding their competence in using the university's GPTutor for the first time. The factor mean value is 4.09 indicating that participants agree they are competent and have a positive attitude toward it. The item mean values range from 3.94 to 4.19. Given most students have experience using prompts to ask questions on ChatGPT, they can apply similar skills to GPTutor, making the platform familiar to them. For instance, students find the system easy to use, with a rating of 4.19, and feel comfortable (4.18) and at ease when using it (4.16).

Table 1. Mean Value of Perceived Competence.

Items	*Mean*	*Std. Deviation*
I will enjoy using GPTutor in my learning process.	4.15	.664
I will feel comfortable using GPTutor in my learning process.	4.18	.658
I will feel at ease employing GPTutor in the learning process.	4.16	.670
I think GPTutor is easy to use.	4.19	.587
I think GPTutor is a pleasant tool for interaction.	3.93	.632
I am smart enough to use GPTutor effectively.	3.94	.746

3.2 Motivation to Learn

In the area of motivation, the factor mean value is 4.0. Three key statements were evaluated: students' motivation to learn about GPTutor, which received a mean score of 3.86, and their motivation to explore new technologies, which scored 4.05. These results reflect a generally positive attitude among students. Additionally, when asked if incentives such as bonus marks would motivate them, the results showed a mean value of 4.09. This suggests that students are indeed more motivated when incentives are offered for this type of learning activity.

Table 2. Mean Value of Motivation to Learn.

	Mean	*Std. Deviation*
I am motivated to learn about GPTutor.	3.86	.774
I feel motivated to use GPTutor in this learning activity due to the incentives, such as bonus marks.	4.09	.684
I feel motivated to learn about new technologies, such as GPTutor.	4.05	.722

3.3 Learning Needs and Goals

Finally, five statements were presented to evaluate students' learning needs and goals. The mean values ranged from 3.85 to 4.14. The statement "GPTutor will satisfy my individual learning needs" scored 4.14, indicating that students perceive GPTutor as capable of meeting their individual learning needs, as it allows

them to ask questions anytime and anywhere. The factor mean is 3.95. In general, students agree the GPTutor could enhance their self-confidence, higher-order thinking skills, or lifelong learning.

Table 3. Mean Value of Learning Needs and Goals.

Items	*Mean*	*Std. Deviation*
GPTutor will enhance my academic self-confidence.	3.93	.720
GPTutor will satisfy my individual learning needs.	4.14	.620
By using GPTutor to study the assigned reading, I will enhance my higher-order thinking skills.	3.85	.748
I plan to use GPTutor to achieve my learning goals.	3.94	.807
GPTutor will support my lifelong learning journey.	3.87	.828

3.4 Regression Analysis of the Factor Motivation to Learning Needs and Goals

Before performing the linear regression analysis, three statements related to motivation were subjected to factor analysis using the principal components method with varimax rotation. The Kaiser-Meyer-Olkin (KMO) measure was 0.637 and the Bartlett's Test of Sphericity was 80.699 with a significance level of less than 0.001. The factor loadings ranged from 0.723 to 0.895 with a Cronbach's Alpha of 0.775. All statements were kept in the factor. For the factor of Learning Needs and Goals, the Kaiser-Meyer-Olkin (KMO) measure was 0.792 and the Bartlett's Test of Sphericity was 158.528 with a significance level of less than 0.001. The factor loadings ranged from 0.745 to 0.846 with a Cronbach's Alpha of 0.872. All statements were kept in the factor.

Linear regression analysis using a stepwise method was performed to estimate the coefficients of the linear equation involving the factor of motivation to the factor of learning needs and goals. The overall regression model was significant, $F(1, 83) = 45.33$, p. < .001, $R^2 = .35$ [4].The results indicate that when students are motivated to learn and engage with GPTutor, they perceive this personalized tutor as a valuable aid in achieving their learning needs and goals. Additionally, GPTutor can support them in their lifelong learning. Therefore, the results highlight the crucial role of the factor of motivation to learn.

4 CONCLUSIONS

This study explores GPTutor, a ChatGPT-powered tool custom-designed by a university in Hong Kong, as an innovative and interactive learning environment aimed at enhancing educational experiences. The self-learning tasks associated with GPTutor require students to exercise self-regulation and motivation. The findings of this study offer valuable insights for the future design of learning tasks that promote active learning.

Firstly, GPTutor is not an entirely new technology as it functions similarly to using prompts in ChatGPT on this platform. This familiarity means that there are no significant prerequisites in terms of knowledge and skills for instructors or students, facilitating easy adoption. The perceived competence score of 4.0, achieved without any pre-training, suggests a positive readiness to use the tool. For future implementations of this learning platform in pre-class and after-class activities, a brief pre-training workshop focused on prompt-writing skills will be sufficient.

Secondly, motivation to learn plays a crucial role. Regression analysis indicates that students benefit from using GPTutor to achieve their learning goals. They value the opportunity to collaborate with GPTutor, considering it a valuable tool that offers the convenience of summarizing and analyzing information while prompting further questions to clarify misunderstandings. As a 24-hour personalized tutor, GPTutor effectively addresses individual learning needs, particularly given the complex theories involved in the business ethics course. This learning mode encourages students to step out of their comfort zones from traditional learning method.

Thirdly, if students perceive the learning partner as beneficial for lecture preparation, instructors can utilize class time for more meaningful discussions or to address any misunderstandings. Furthermore, after-class readings can be uploaded to GPTutor, providing students with continuous access to learning materials. Those who find the tool advantageous also recommend uploading all materials to aid in exam

revision. Implementing diverse learning tasks can further motivate students to take ownership of their learning journey, encouraging active participation and deeper engagement with the course content.

By examining students' attitudes in this pilot study, the findings suggest that instructional strategies, such as conducting a pre-survey to assess learners' readiness to use technology and understanding the role of motivation in learning, are important. Creative ideas can be effectively integrated into the learning process, fostering a more personalized and engaging educational experience for students.

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