

Comparing The Effectiveness Of Distance Learning And Onsite Learning In Pre-Medical Course



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Abstract

Distance learning has experienced a significant surge in popularity due to the increasing digitalization of education. This study explores the effectiveness of distance learning compared to on-site learning in the context of pre-medical course students (grade 12). The research investigates students from the math science class and utilizes an online questionnaire in conjunction with the final results of the Thai Professional Aptitude Test (TPAT). Crucially, the research reveals that distance learning students tend to outperform their on-site counterparts in TPAT exams, although the difference is not overwhelmingly significant. This study contributes valuable insights into the growing impact of distance learning and its potential benefits for pre-medical course students. Further research and analysis in this domain could provide educators and institutions with valuable guidelines for optimizing educational approaches in the digital era.

Keywords: Comparison, Effectiveness, Distance learning, On-site learning, Thai Professional Aptitude Test (TPAT)

1. Introduction

The global outbreak of COVID-19 in recent years has had a profound impact on education, leading to a surge in distance learning as an alternative to traditional in-person education (Asaqli, 2020). Online teaching and learning have emerged as crucial components of educational development during this pandemic, providing diverse options for educators and learners alike. Distance learning will continue to co-exist with conventional education, promoting educational equity and fostering innovative approaches to teaching and learning (Gallani, 2020). Few research has compared the efficacy of learning online to the outdated classroom instruction in the setting of pre-medical courses or 12th grade in Thailand. The research has the objective to fill this knowledge gap by comparing the final scores of students who took the Thai Professional Aptitude Test (TPAT) online with those who took the traditional classroom version.

Literature Review

1.1. Learning Effectiveness

It is a complex idea that may be measured in a number of ways, including students' enthusiasm for the course material, how much they learned, and how their performance and study habits changed as a result (Müller, Stahl, Alder, & Müller, 2018). Several researchers have emphasized the significance of exploring learners' perceptions and considering the results of the Thai Profession Aptitude Test (TPAT) as essential measures of learning effectiveness (Kintu, Zhu, & Kagambe, 2017).

1.2. Distance Learning

Distance learning has several advantages over in-person classroom training, which is why a variety of different names often refers to it. Effective online instruction typically exhibits characteristics such as Distance learning, which allows learners

to access educational materials and participate in classes from any location and at any time, accommodating individual schedules and preferences.

1.3 Measuring Learning Effectiveness

Whether a classroom is virtual or not, its success is evaluated in large part by the quality of its course materials, its instructors, and its overall learning atmosphere.

Course Content:

High-quality course content is essential for facilitating effective teaching and learning. To achieve this, educators should integrate research findings and best practice regarding teaching and learning into their instructional design. This includes making informed decisions about pedagogical approaches, instructional media, learning activities, and assessments. Specific elements to consider when developing course content include defining clear learning outcomes, structuring appropriate course length, planning engaging activities in the class, and providing supplementary materials (Almaiah & Alyoussef, 2019).

Teachers:

Teachers hold a crucial role in the learning process, influencing students' performance through their teaching strategies and methods. In the 21st century, teachers are expected to possess not only a deep understanding of the subject matter but also proficiency in utilizing technology (Kaur, 2019).

Learning Environment:

Learning environment refers to the physical spaces within educational institutions, such as classrooms, lecture halls, and laboratories, as well as virtual learning environments utilized in online education (Puteh, Che, Mohamed, Adnan, & Ibrahim, 2015).

1.4 Thai Profession Aptitude Test (TPAT)

The Thai Profession Aptitude Test, commonly referred to as TPAT was officially endorsed by the Council of University Presidents of Thailand on December 2022 (Thai University Central System, 2022). This aptitude test serves as a crucial tool for university selection purposes.

2. Materials and Methods

2.1. Research Settings

Since 2022, the selection process for entrance examinations at The University in Thailand has undergone a significant change, adopting the Thai Profession Aptitude Test (TPAT) as the new selection method. The TPAT is now a crucial tool for university admissions. To aid students aspiring to become doctors, the Math-Science education program offers TPAT preparation pre-medical courses. These courses are available both online and onsite, utilizing similar course materials, with a course duration ranging from 48 to 52 weeks.

2.2. Research Design

This study employs a descriptive research design utilizing an online questionnaire and the final TPAT exam scores of two groups of learners: one group attending on-site courses and another engaged in distance learning courses or online courses. The descriptive research method is chosen for its ability to efficiently gather data from a large number of respondents in a relatively short timeframe (Nassaji, 2015).

2.3 Research Instruments

Surveys are used.

2.3.1 Questionnaire of Learners' Perceptions of Effective Distance Learning

In order to assess learners' perceptions of the distance learning course's effectiveness, the research team created an online survey containing three main sections.

2.3.2 Learners' Academic Performance

The learners' proficiency levels were categorized as level A (65%up), level B (55.1-65%), level C (50-55), or unrated if their performance was unsatisfactory.

2.4 Participants

The research respondent in this study were distance learning groups or online learners enrolled in the Math-Science eLearning Education program between May 2021 and January 2022. Participant size is 124. Table 1 presents the demographic details of the respondents.

Characteristics	Number	Percentage
Gender		
Female	77	62.1 %
Male	47	37.9 %
Occupation		
Students	124	100 %

Table 1.
Demographic details of participants (N = 124)

3. Results

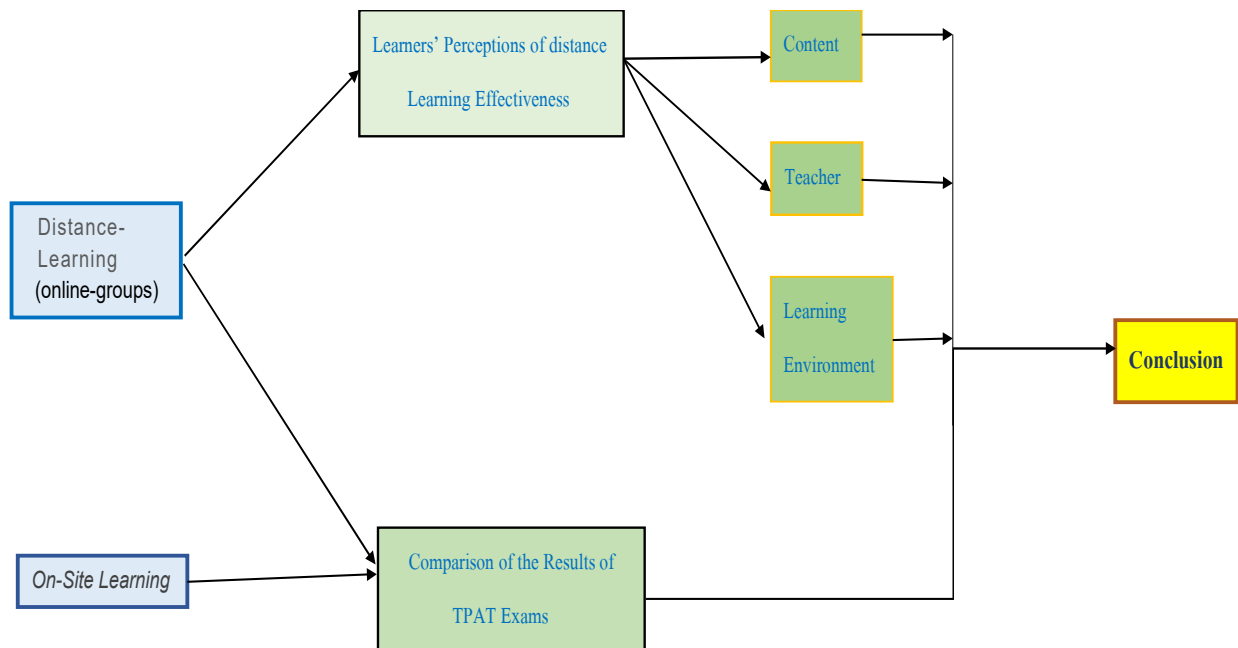
The findings are meticulously presented and discussed, encompassing an in-depth analysis of the data derived from both the survey responses and the TPAT (Teaching Presence, Social Presence, and Cognitive Presence) score comparison.

3.1. Learners' Perceptions of Distance Learning Effectiveness

This section delves into learners' perceptions of the distance learning course's effectiveness, focusing on three essential aspects: content, teachers, and learning environment.

The analysis of learners' perceptions of the course's content revealed that a majority of participants indicated a favorable level of agreement with the provided materials and resources. The comprehensiveness and relevance of the content were generally well-received,

enhancing the overall learning experience. Regarding the aspect of teachers, participants expressed appreciation for the instructors' commitment to facilitating effective online instruction. The teachers were perceived as knowledgeable and supportive, nurturing a sense of engagement and interaction within virtual learning settings. Their availability and responsiveness to queries further strengthened the students' learning journey. Within the learning environment aspect, participants revealed a positive outlook on the overall online learning experience. The platform's user-friendliness, interactive features, and organized structure contributed to a seamless and engaging learning environment. Additionally, the availability of multimedia elements and collaborative tools promoted active participation and peer interaction among learners (Mahlan, et.al, Wahab, 2022). The amalgamation of survey responses and TPAT score comparison provided valuable insights into learners' perceptions of the distance learning course's effectiveness. The favorable reception of course content, the supportive and knowledgeable instructors, and the engaging learning environment underscored the course's positive impact on the learners' overall educational journey. These findings shed light on the strengths of the distance learning approach, paving the way for future enhancements to optimize the learning experience further.



Figures 1.1 Research Design Diagram

3.1.1. Content

Table 2 presents the respondents' agreement levels with the effectiveness of the content in the distance learning course.

es. Poor audio or video quality can significantly impact the learning experience, and addressing these concerns is essential to improve the overall effectiveness of distance learning. In conclu-

Characteristics	0	1	2	3	4
Program content meets expectations.	6 (4.8%)	3 (2.4%)	7 (5.7%)	45 (36.3%)	63 (50.8%)
The program duration is reasonable.	2 (1.6%)	5 (4.0%)	23 (18.6%)	52 (41.9%)	42 (33.9%)
Lessons are well-presented.	2 (1.6%)	2 (1.6%)	23 (18.6%)	49 (39.5%)	48 (38.7%)
Classroom activities are suitable.	5 (4.0%)	7 (5.6%)	28 (22.6%)	43 (34.7%)	41 (33.0%)

Table 2. Descriptive results of the effectiveness of content (N = 124).

3.1.2 Teachers

Table 3 displays the results, showing 50% had increased level of agreement with various aspects concerning online teachers' effectiveness.

sion, while internet connectivity remains crucial for successful distance learning, some aspects require attention, such as technical issues affecti

Characteristics	0	1	2	3	4
Teachers have extensive knowledge of the subject matter.	0 (0.0%)	2 (1.6%)	6 (4.8%)	38 (30.6%)	78 (62.9%)
Teachers have a good and intelligible method for knowledge delivery.	6 (4.8%)	6 (4.8%)	20 (16.1%)	44 (35.5%)	48 (38.7%)
Teachers have good interaction with learners.	1 (0.8%)	2 (1.6%)	11 (8.9%)	54 (43.5%)	56 (45.2%)
Teachers use technology to teach effectively.	2 (1.6%)	3 (2.4%)	9 (7.3%)	55 (44.3%)	55 (44.3%)

Table 3. Descriptive results of the effectiveness of teachers (N = 124).

3.1.3 Learning Environment

Internet connectivity plays a vital role in facilitating distance learning (Mafruudloh, Arifatin, & Chasanah, 2021). This finding suggests that there might be challenges or concerns related to internet access that need to be addressed to optimize the online learning experience. On the other hand, the statement "Zoom Meetings are easy to use" received agreement from above 50% of participants (Serhan, 2020). It indicates that platforms like Zoom are generally well-received and user-friendly for online instructional purposes. However, the statement "The image and audio quality of the lesson is qualified" received agreement from less than 50 percent of the participants, suggesting technical issues in delivering online cours-

ng the image and audio quality of online lessons.

3.2. Comparison of the Results of TPAT Exams

Table 5 shows that. When TPAT exam scores from the two groups were compared, it was clear that those who took their classes online performed better than those who attended traditional classroom settings. Both the online and on-site groups performed similarly well (34.68% and 34.92%, respectively) on the level A test. This suggests that at this proficiency level, the mode of learning (online or on-site) did not significantly impact the student's performance, and both groups performed similarly. However, at lev-

Characteristics	0	1	2	3	4
Internet connections can support online learning.	5 (4.0%)	5 (4.0%)	22 (17.7%)	48 (38.7%)	44 (35.5%)
Zoom Meetings are easy to use.	0 (0.0%)	3 (2.4%)	10 (8.1%)	48 (38.7%)	63 (50.8%)
The image and audio quality of the lesson are qualified.	3 (2.4%)	3 (2.4%)	13 (10.5%)	50 (40.3%)	55 (44.4%)

Table 4.

el B, the online group demonstrated a relatively higher percentage of exam success (46.77%) compared to their counterparts in on-site courses (41.27%). This result indicates that, at this higher proficiency level, distance learning or online instruction might have provided certain advantages that contributed to the improved performance of students. In conclusion, the study's findings revealed that online learners outperformed their peers in on-site courses, particularly at level B of the TPAT examinations. While both groups performed comparably at level A, the online group exhibited a higher success rate at level B, suggesting the potential benefits of online learning for students aiming to achieve higher proficiency in the TPAT examinations."

and learning assistance. One important discovery was the acknowledgment of instructors' pedagogy as a direct and decisive element in bettering the quality of online courses. Participants emphasised the need to use effective online teaching strategies to encourage student participation in online courses. Educational games, idea mapping, and group projects were all proposed as ways to improve the learning environment. These strategies aim to enhance student engagement and interaction, promoting a more effective online learning experience. Additionally, participants highlighted the crucial role of learning materials in influencing learning behaviors and academic performance (Alenezi,2020). To support self-directed learning, many learners

Levels of TPAT	Onsite		Online	
	Number	Percentage	Number	Percentage
Level A (65% ^{up})	44	34.92%	43	34.68%
Level B (55.1-65%)	52	41.27%	58	46.77%
Level C (50-55)	22	17.46%	15	12.10%
Unrated	8	6.35%	8	6.45%
Total	126	100%	124	100%

Table 5. Results of TPAT examinations.

3.3 Suggestions

In this study, participants were invited to suggest practical ways that online instruction may be improved, and their comments provided some fascinating new perspectives. Many students were pleased with their online courses and had no ideas for improvement, while others offered insightful comments that may be broken down into five main categories: professors' methodology, course materials, course duration, interactions,

suggested incorporating further materials within the e-learning system. Providing supplementary resources can empower students to take ownership of their learning journey and deepen their understanding of course content. As online education continues to evolve, it is essential to consider these valuable recommendations from learners to enhance the overall quality and effectiveness of online teaching. By focusing on innovative pedagogy and enriching learning

materials, educators can create more engaging and successful online learning environments.

4. Discussion

Depending on the objectives of the class, either on-site or online learning can be effective (Ananga & Biney, 2017). Students participate in lectures, do exercises, and hand in homework in both types of classrooms. However, some students may have a poor impression of remote learning, thus it's important to examine the pros and cons of both approaches from the students' point of view (Darkwa & Antwi, 2021). This research compared the efficacy of in-person instruction to that of online learning and found that students had a far more favourable impression of the latter in terms of the course material, their instructors, and the overall quality of the virtual classroom. Teachers who acted as helpful resources and experienced facilitators or scaffolds were highly regarded by their students. This conclusion is consistent with the research that has already been compiled (Mayasari & Kemal, 2020), which classifies successful online professors as demonstrators, motivators, and managers, all of which contribute to the success of their students in online courses. Standard performance criteria, such as test marks or final grades, were employed as a practical and effective technique to assess the efficacy of on-site and online education. The study compared the two groups of students based on their cumulative TPAT test scores. The results diverged slightly from those of numerous other studies, which had found that students who took classes online did as well as or better than their classmates who took classes in a traditional classroom setting. The primary value of this study is the empirical data it adds to the growing body of research demonstrating the efficacy of online education in improving students' attitudes towards and outcomes in their coursework.

5. Conclusion

As educational institutions increasingly rely on online teaching and learning for long-term sustainability, further investigations from diverse perspectives will be crucial to fully understand and harness the potential of this mode of learning.

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