

The Effectiveness of Kahoot Game–Based Learning and Social Support Coping Strategy among Undergraduate Students with Academic Problems

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Abstract

The aim of this study was to explore the effectiveness of Kahoot game–based learning and social support coping strategy among undergraduate students with academic problems and to examine whether on how students expected about the effectiveness of using Kahoot game–based learning and social support coping strategy with academic problems among undergraduate students. In this study, the researcher applied sequential mixed method study to determine the effectiveness of the Kahoot game based–learning and social support coping strategy with academic problems among undergraduate students. A total of 379 undergraduate students participated in this study. The quantitative study was evaluated by using descriptive statistics such as mean, standard deviation, while, correlation, and regression were used to answer the research question 1 (hypothesis 1 and hypothesis 2). In addition, a qualitative study used thematic analysis to interpret the data. The regression analysis showed that Kahoot game and academic problems among undergraduate students was negative and significant relationship ($R\text{-square} = 0.387$; $F = 22.844$; Beta (β) = -0.417 ; $T\text{-value} = -4.419$; and $P\text{-value} = 0.000$). Meanwhile, the regression analysis found that social support coping strategy and academic problems among undergraduate students was negative and significant relationship ($R\text{-square} = 0.096$; $F = 7.474$; Beta (β) = -0.290 ; $T\text{-value} = -2.643$; and $P\text{-value} = 0.000$). Students who agreed to be respondents for interviewing in the study, they revealed that Kahoot game–based learning and social support coping strategy were effective among undergraduate students with academic problems. The results were significance practical implication for Thai government, university, lecturers, and undergraduate students.

Keywords: Kahoot Game; Social Support Coping Strategy; Academic Problems; Undergraduate Students

Introduction

Transition from adolescence to adulthood for university students, it is a difficult journey, filled with various risks, rapid changes, and seemed endless choices when placed within a university environment (Sadoughi & Hesampour, 2016; Zyl & Dhurup, 2016). Students challenged facing various academic problems relating to their academic courses (Lavoie–Tremblay et al., 2021) such as inability to apply knowledge (Yusoff, 2018). Moreover, academic workload, it was pertained to the different activities, examinations, requirements, and other academic relating works given to students (Marin et al., 2023). Some students have faced with academic issues, they lacked memory to remember in all subjects that they were studied, some students were worrying about the exams. High stress of academic problems had negative impact on students' learning and overall students' performance (Yusif et al., 2022)

Thai undergraduate students faced various academic problems so the effectiveness of Kahoot game-based learning and the social support coping strategy could help them coping with their academic problems. The first objective of this study aims to establish the effectiveness of using Kahoot game-based learning and social support coping strategy among undergraduate students with academic problems. The second objective is to investigate on how undergraduate students expected using Kahoot game-based learning and practicing social support coping strategy for dealing with academic problems.

The researcher is designed the theoretical foundation including the effectiveness of Kahoot game-based learning and social support coping strategy among undergraduate with the academic problems, there were Social Support Theory; Theory of Intrinsically Motivating Instruction; Social Support Coping Strategy with Academic Problems; and the Effectiveness of Kahoot game-based learning as show following.

Social Support Theory

Social support and well-being were attributable more to an overall beneficial effect of support in main or direct effect model or to a process of support protecting person from potentially adverse effects of stress events (buffering model. Evidence for a main effect model is found when the support measured assessing a person's degree of integration in a large social network. In addition, Evidence for a buffering model is found when the social support measured assessing the perceived availability of interpersonal resources that were responsive to the needs elicited by stressful events (Cohen & Wills,

1983). Moreover, social support is a basic in theories about how social relationships influence on cognitions, emotions, behaviors, and biology. The role of social relationship could have main effects on psychological and physical health. For those who have participated in social network, they were subjected to social control and peer pressure that influence normative health behavior (Lahey et al., 2000).

Theory of Intrinsically Motivating Instruction

Instruction is designed in a new way which captivate and intrigues learners as well as educates them. Therefore, fantasy is claimed to have both cognitive and emotional advantages in designing instructional environments. A distinction is made between extrinsic fantasies that are intimately related to the use of the skill. Cognitive curiosity can be aroused by making learners believe their knowledge structures are incomplete, inconsistent, or parsimonious (Malone, 1981). Intrinsically motivating instruction theory by Malone (Malone, 1981). This is a manifestation which covered a wide range of in-service activities, from the acquisition of functional information to deep philosophical reflection about teaching and learning (Svendsen et al., 2020).

Social Support Coping Strategy with Academic Problems

Social support is adequacy given by family, friends or significant other contributes to well-being (happiness, life satisfaction and domain satisfactions) across the life span (Brajsa-Zganec & Lipvcac, 2015). Moreover, social support is effective to help students cope with their academic problems and the perceived social support in the social environment upon receiving assistance increasing their positive as well (Cevik & Yidiz, 2017). Furthermore, social support is important resource considering in coping with chronic conditions (Palant a& Himmel, 2019). Social support coping strategy related to seeking support from other people to handle the problems or to help deal with stress resulting from academic problems (Sullivan, 2010; Sadoughi & Hesampour, 2016).

The Effectiveness of Kahoot Game-Based Learning with Academic Problems

Game-based students' response systems (GSRS) such as Kahoot, it has become a popular tool to increase students' motivation, enhance classroom engagement, and facilitate collaborative learning (Alawadhi & Abu-Ayyash, 2021). Kahoot is a game-based learning in higher education, it could be used to enhance the learning experience among undergraduate students (Hobrey, 2020). The effectiveness of Kahoot supported by game-based learning among undergraduate students, a student said that he/she wished all courses should implement Kahoot in the classroom because he/she was not

getting bored and having fun while studying (Altawalbeh & Irwanto, 2023). Though the introduction of an online quizzing application utilized a game show–like user interface called Kahoot, there has potential to enhance and improve high–stakes examination scores at college and university level (Iwamota et al., 2017). In addition, students who studied by using Kahoot! technology were able to engage actively in the classroom, enjoyed with the subjects and learned effectively (Ghawail & Yahia, 2022). Kahoot! could have a positive effect on learning performance, classroom dynamics, students' attitudes, and students' anxiety (Wang & Tahir, 2020).

Research Objectives

1. To explore the effectiveness of the Kahoot game–based learning and social support coping strategy among undergraduate students with academic problems.
2. To examine whether on how students expected about the effectiveness of using Kahoot game–based learning and social support coping strategy with academic problems among undergraduate students.

Research Questions

1. What is the effectiveness of the Kahoot game–based learning and social support coping strategy among undergraduate students with academic problems?
2. How do undergraduate students expect using Kahoot game–based learning and practicing the social support coping strategy to deal with academic problems?

Research Methodology

The researcher applied sequential explanatory design mixed method to conduct and emphasize the quantitative research, analyzes the results in the first phase of the study, followed by the results to explain them in more detail with qualitative research in the second phase (Cresswell & Cresswell, 2018). The researcher started the first phase of the study by collecting quantitative data to explore the difference practices among undergraduate students on the effectiveness of the Kahoot game–based learning and social support coping strategy with academic problems. In the second phase of this study, the qualitative data was used thematic analysis (Fugard & Potts, 2015) to find out the information about

how undergraduate students solve their academic problems by using Kahoot Game Based learning and practicing their social support coping strategy.

Population/ Sample

The population of this study were undergraduate students who were studying at Rajamangala University of Technology Thanyaburi, Pathum Thani Province, Thailand, there is 12 schools with 24,182 students (Office of Academic Promotion and Registration, 2023). According to Morgan and Krejcie (1970) calculates a sample size by using statistical table, the samples were 379 undergraduate students (Table 1), the researcher randomly selected undergraduate students from six schools (Table 1), there were school of Business, school of Engineering, school of Fine and Applied Arts, school of Liberal Arts, school of Science and Technology, and school of Technical Education by applying purposive sampling (Cresswell & Guetterman, 2021).

Then the researcher applied stratified sampling strategy. Cresswell and Guetterman (2021) defined that the researcher divided (stratify) the population on some specific characteristic and then, using simple random sampling, sample from each subgroup (stratum) of the population (e.g., school of Business, school of Engineering, school of Fine and Applied Arts, school of Liberal Arts, school of Science and Technology, and school of Technical Education). This guarantee that the sample will be included specific characteristics that the researcher needed including in the sample.

The samples were randomly selected from school of Business were 63 (16.63 %). The samples were randomly selected from school of Engineering were 63 (16.63%). The samples were randomly selected from school of Fine and Applied Arts were 63 (16.63%). The samples were randomly selected from school of Liberal Arts were 63 (16.63%). The samples were randomly selected from school of Science and Technology were 65 (17.15%) and the samples were randomly selected from school of Technical Education were 62 (16.33%) (Table 1).

Table 1 Demographic Information of the Respondents.

Demographic information	n	%
Gender		
Male	189	49.87
Female	190	50.13

Demographic information	n	%
Level of the study		
Undergraduate	379	100.00
School		
Business	63	16.63
Engineering	63	16.63
Fine and Applied Arts	63	16.63
Liberal Arts	63	16.63
Science and Technology	65	17.15
Technical Education	62	16.33
Year of the Study		
First Year	127	33.50
Second Year	126	33.25
Third Year	126	33.25
Grade Point Average (GPA)		
2.00–2.50	128	33.77
2.51–3.00	145	38.26
3.01–3.50	72	19.00
3.51–4.00	34	8.97

The Instruments

To best answer the research questions of this study, the Kahoot survey platform (Ismail & Mohammad, 2017), the Social Support Coping Strategy Questionnaire (Sullivan, 2010), and the Academic Problems (Mooney Problem Checklist, College Form), 1950) were used in this study. The questionnaires used in this study, there have tested for reliability and validity.

Quantitative Study

Kahoot Survey Platform

Kahoot survey platform (Ismail & Mohammad, 2017), there was measured using 12 items. The respondents were asked to respond how effective of using Kahoot in the classroom by using a 5–point

scale. The scale ranged from 1 (strongly ineffective) to 5 (strongly effective). Cronbach's alpha of the 12 statements of Kahoot survey platform was 0.88 (Table 2).

The Social Support Coping Strategy

The Social Support Coping Strategy consisted of 14 statements; the original version of the questionnaire was written in English (Sullivan, 2010). However, the questions were based on literature review and have got the feedback on students' thought about the important of social support coping strategy on academic problems. The respondents were asked to rate each statement by using a 5-point scale, ranging from 1 (unimportant) to 5 (crucially important). Cronbach's alpha of the 14 statements of the social support coping strategy was 0.83 (Table 2).

Academic Problems

Academic problems in the Mooney Problem Checklist, College Form (Mooney, 1950) consisted of 30 items. Students were asked to answer on how often you have academic problems. Students were rated each item by using a 5-point scale, the scale ranged from 1 (never) to 5 (always). Cronbach's alpha of the 30 items of Academic problems was 0.96 (Table 2).

Table 2 Cronbach's alpha of the variable in the study

Variable	Cronbach's Alpha	No of Items
Academic Problems (Mooney Problems Checklist, College Form, 1950)	0.96	30
Kahoot Game (Ismail & Mohammad, 2017)	0.88	12
Social Support Coping Strategy (Sullivan, 2010)	0.83	14

Qualitative Study

This study used a semi-structure interview with undergraduate students who participated in the study (Licorish et al., 2018). A sample size is given three respondents for analysis a single study (Smith et al., 2009). The sample size is selected by using purposive sampling method (Cresswell & Cresswell, 2018).

Research Result

Correlation and Descriptive Statistics Analysis

RQ 1: What is the effectiveness of the Kahoot game-based learning and social support coping strategy among undergraduate students with academic problems?

To answer research question 1, hypothesis 1 to 2 were used to address.

H₀₁: Kahoot game-based learning has negative and statistic significant relationship with academic problems among undergraduate students.

To answer this research question, the researcher applied to use descriptive statistics such as means, standard deviations, correlation, and regression to test the hypotheses of this study.

The correlation as show in table 3 indicated that the Pearson correlation between Kahoot game based-learning and academic problems was negative ($r = -0.066$). In table 4, regression analysis showed that Kahoot game and academic problems among undergraduate students was negative and significant relationship (R-square = 0.387; $F = 22.844$; Beta (β) = -0.417 ; T-value = -4.419 ; and P-value = 0.000). The results of Beta (β) indicated that academic problems and Kahoot game was a negative relationship. The results of R-square meant that the academic problems among undergraduate students decreased 38.7% (Table 4) because of Kahoot game-based learning.

Table 3 Correlation analysis (n = 379)

Variables	Mean	S.D.	1	2	3
Academic Problems (Mooney Problems Checklist, College Form, 1950)	4.02	0.39	1		
Kahoot Game (Ismail & Mohammad, 2017)	4.11	0.47	-0.066	1	
Social Support Coping Strategy (Sullivan, 2010)	4.00	0.37	-0.016	0.164	1

H₀₂: Social support coping strategy has negative and statistic significant relationship with academic problems among undergraduate students.

Moreover, the correlation as show in table 3 indicated that the Pearson correlation between social support coping strategy and academic problems had negative ($r = -0.016$). In addition, regression analysis found that social support coping strategy and academic problems among undergraduate students was negative and significant relationship (R-square = 0.096; $F = 7.474$; Beta (β) = -0.290 ; T-value = -2.643 ; and P-value = 0.000). The results of Beta (β) value indicated that academic problems and social support coping strategy was a negative relationship. The results of R-square

indicated that the academic problems among undergraduate students changed 9.6% (Table 4) because of social support coping strategy (Table 4).

Table 4 Regression analysis (n = 379)

Academic Problems (Mooney Problems Checklist, College Form, 1950)					
	Beta (β)	T-Statistic	F-Statistic	Sig (p-value)	R-Square
Kahoot Game (Ismail & Mohammad, 2017)	-0.417	-4.419	22.844	0.000	0.387
Social Support (Sullivan, 2010)	-0.290	-2.643	7.474	0.000	0.096

RQ 2: What is the expected among undergraduate students on the effectiveness of using Kahoot game-based learning and social support coping strategy with academic problems?

Three undergraduate students who were respondents in the study. As confirmed by a male student in the following statement.

“A male students highlighted that Kahoot helped them to focus on subjects. Kahoot game helped him to motivate his study and he was more engaged with feedback through Kahoot. He also confirmed that Kahoot enhanced his understanding on the subjects. Moreover, when he had academic problems, he went to talk to his counsellor/lecturer for emotional” (Respondent 1, P 1–2).

Another a female, she said that *“I responded on Kahoot game as fast as possible to question on each Kahoot session because I wished to get the highest scores in the classroom, it was motivated to be the winner. Kahoot helped me to correct misunderstanding about the subject that I studied. In addition, she claimed that if she faced academic difficult problems, she was going to ask her supervisor to describe and lecture for her after the class” (Respondent 2, P. 3–4).*

As illustrated by a male student in the bellowing example.

“ I was eager to study in the classroom by using Kahoot, I felt positive on the subject, it was easy to learn via Kahoot. Meanwhile, when he did not understand the subject well, he found his close friends, they helped him to explain about the difficult lessons” (Respondent 3, P. 5–6).

Conclusion

Based on the results of the study, Kahoot game-based learning and social support coping strategy were effective to undergraduate students with academic problems. The respondents who selected to be sample for this study, there were chosen from a university in Thailand. Undergraduate

students were randomly selected from six schools conducting 379 respondents, these undergraduate students were completed the questionnaires. While three students (0.79%) completed the questionnaire and then they agreed to be respondents for interviewing. Overall, 379 students, 190 females (50.13%) and 189 males (49.87%) who studied at school of Business were 63 (16.63 %), school of Engineering were 63 (16.63%), school of Fine and Applied Arts were 63 (16.63%), school of Liberal Arts were 63 (16.63%), school of Science and Technology were 65 (17.15%), and school of Technical Education were 62 (16.33 %) (Table 1). Undergraduate students agreed on the effectiveness of Kahoot game-based learning and social support coping strategy with academic problems. Undergraduate students had the highest mean value on the helpfulness of Kahoot game-based learning (Mean = 4.11, followed by academic problems (Mean =4.02) and social support coping strategy (Mean = 4.00) respectively (Table 3). Moreover, the result of correlation between Kahoot Game and Social Support Coping Strategy was correlated to be positively and statistically significant ($r = 0.164$) (Table 3).

Meanwhile, the researcher used thematic analysis to address Research Question 2. The interview results with three students, which comprised of two male and a female student. The interviews found that two male and a female student agreed on the effectiveness of Kahoot game-based learning and social support coping strategy help them to cope with their academic problems.

New Knowledge from this Research

The recommendations for future research were shown as follows:

To set up the effective and efficient game-based learning such as Kahoot and social support coping strategy to deal with undergraduate students' academic problems, these could be supported students to be best in their studying.

This study combined the explanatory sequential mixed method study, the interviews help lecturer to understand the learners and promote the innovation and techniques to support students' motivation. Game-based learning such as Kahoot effective on students' collaboration and participation in the classroom.

Suggestions

Implications

This study was recommended to the four main pronators who associated with undergraduate students, there were the Thai government, university, lecturers, and undergraduate students.

Thai Government needs to help erasing academic issues and suggest actions in social support coping strategy with academic problems by increasing environmental and social facilitators/counsellors and decreasing the influence of barriers (Toghroli et al.,2023). In addition, social support coping strategy is adopted and implemented at the educational systems (Hussain et al., 2020). In addition, game-based learning has become more common in the education and the emerging game-based learning platform is used in education institution, Kahoot should be seen as part of the learning process (Ismail & Mohamad, 2017).

University should utilize social support coping strategy and Kahoot crossing all years of study, this strategy was effective to deal with academic problems in the courses or classroom (Lavoie–Tremblay et al., 2021; Bonefont et al., 2022).

Lecturers were focused to provide social support to students, social support represented a valuable coping mechanism for various types of stress such as academic problems, social problems, general problems which experienced during the transition to higher education (Maymon & Hall, 2021). Moreover, lecturers should be integrated the type of question into Kahot! And students preferred more applied questions in the information systems domain, enabling them to problem–solve sing the knowledge that lecturers have been already revised (Owen & Licorish, 2020).

University students who have faced with academic problems, Kahoot game-based learning has been found to foster students' engagement, enhance classroom dynamic and improve overall students' learning experience (Licorish, Owen, Daniel, & George, 2018). In addition, Kahoot! produced marked students' engagement and satisfaction, it needed to be applied live for any learning session (Kalleny, 2020). Game-based students' response such as Kahoot has become a popular tool to increase motivation, enhance classroom engagement, and facilitate collaborative learning, undergraduate students were perception on the effectiveness of Kahoot! Gamified digital platforms could be incorporated as part of teaching pedagogy to retain students' attention, increase participation, and provide students with an enhanced enjoyable learning experience (Alaeadhi & Au–Ayyash, 2021).

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