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Research Article

Development of a Board Game to Enhance Learning Achievement in Quality Store Systems for Retail Store Management

Tanya Supornpraditchai* **and Kittibhop Tansuwan**

Panyapiwat Institute of Management, Nonthaburi 11120, Thailand

*Corresponding author: tanyasup@pim.ac.th

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Abstract

The objectives of this study were to 1) create a board game to improve learning achievement in the quality store system (QSS) for retail store management, and 2) measure students' learning outcomes after playing the game. The study used a research and development (R&D) strategy, including design thinking, game-based learning (GBL), and the mechanics-dynamics-aesthetics (MDA) framework to create "MyShop," a board game that simulates product selection, staffing decisions, and quality store systems. Purposive sampling was used to identify 30 key informants working for a major convenience store chain, including 10 QSS executives, 10 operational workers, and 10 store managers who were chosen based on their knowledge, position in QSS implementation, and participation willingness. In addition, three specialists in instructional game design and retail management analyzed and improved the board game prototype. The sample group consisted of 278 first-year students from the Modern Trade Business Management Program chosen at random using cluster sampling. The research instruments comprised 1) in-depth interviews and focus group questions examined using content analysis, 2) the "MyShop" board game prototype with cards (Situation, Product, Customer, Event, and QSS), tokens, and boards, and 3) a 35-item multiple-choice pretest and posttest. To assess changes in learning achievement, data from student assessments were evaluated with paired t-tests. The game is considered "very appropriate" by specialists, demonstrating its high quality and suitability for instructional usage. QSS knowledge improved significantly, with exam scores improving from 18.83 to 26.54 ($p < .05$). The game improved students' comprehension of QSS principles, including service, assortment, and value, while also encouraging interactive and practical learning. These findings show that combining GBL with MDA can result in immersive, effective educational tools. The "MyShop" board game is a unique way for students to learn retail management that encourages critical thinking, collaboration, and real-world application, making it useful for both academic and professional development.

Keywords: board game, learning achievement, quality store systems, retail store management

Introduction

The modern retail industry, notably huge convenience store chains, is critical to the Thai economy, with thousands of outlets and millions of daily visits (Krungsri Research Center, 2021). To promote long-term growth and standardized operations, these firms have incorporated quality store system (QSS) principles, which include seven key elements: service, assortment, value, environment, quality, cleanliness, and the quality management system. Traditional teaching approaches, such as lectures or manual-based training, frequently fail to engage and prepare students for practical applications. The COVID-19 pandemic has further disturbed this learning paradigm, requiring students to rely on online instruction owing to lockdowns and social isolation. This change decreased students' opportunity to use QSS ideas in real-world situations, restricting their capacity to develop critical thinking and decision-making abilities required for retail management.

Conventional approaches, such as lectures or intensive manual-based training, frequently fail to interest students and prepare them for practical applications (Freeman et al., 2014; Shana & Abulibdeh, 2020; Alessa & Hussein, 2023). This is especially evident among first-year students, who are still developing their critical thinking and decision-making skills (O'Neill & Holmes, 2022). To bridge this gap, a study uses a board game as an educational intervention to teach QSS principles. The board game's design, based on the mechanics-dynamics-aesthetics (MDA) paradigm (Hunicke et al., 2004), integrates theoretical and practical aspects of game-based learning (GBL) (Plass et al., 2015). The game's rules and structure imitate real-world activities, while the dynamics emphasize interactive aspects, encouraging involvement, teamwork, and critical thinking. The aesthetics make the gameplay experience immersive and enjoyable, encouraging continued involvement and knowledge retention (Pope, 2021).

By incorporating QSS ideas into gameplay scenarios, the board game improves students' capacity to apply retail management concepts in real-world settings. This educational innovation addresses both the constraints of teaching QSS during the pandemic and the broader limitations of traditional learning methods, providing a more individualized and participatory approach to retail education.

Objectives

1. To develop a board game for enhancing learning achievements in QSS for retail store management.

2. To assess students' learning achievement in the QSS after playing the developed board game.

Hypothesis

Students' learning achievements related to the QSS are higher after playing the board game than before playing at a significant level of .05.

Literature Review

The literature relevant to this study can be categorized into four main areas: 1) QSS and its importance in retail management, 2) GBL in the context of business management, 3) MDA framework for game design, and 4) Work-Based Learning (WBL) in the Modern Trade Business Management Curriculum.

QSS and its importance in Retail Management

QSS is a structured retail management framework that aims to standardize operations and ensure service quality in modern convenience store networks. It consists of seven key components: service (S), assortment (A), value (V), environment (E), quality (Q), cleanliness (C), and quality management system (QMS), also known as SAVEQC and QMS. These aspects ensure that stores run smoothly and consistently, increasing customer happiness and upholding a high level of retail service. (CP All Public Company Limited, 2008). According to CP All Public Company Limited's Senior Executive Vice President, Mr. Wichian Chuengwiroj, "SAVEQC is a strategy designed to enhance the customer experience, aiming to create lasting impressions, deliver positive experiences, and encourage repeat visits" (CP All Public Company Limited, 2021).

The SAVEQC framework focuses on customer service excellence, product diversity, competitive price, store atmosphere, quality assurance, and hygiene requirements. Service (S) focuses on client engagement and effective service delivery, resulting in a seamless purchasing experience. Assortment (A) stresses product diversity to suit consumer demand while maintaining an ideal mix of necessities, snacks, and specialty items. Value (V) emphasizes inexpensive pricing methods, special promotions, and cost-effectiveness in attracting and retaining clients. Environment (E) emphasizes the importance of clean, well-organized, and safe retail environments that improve shopping convenience. Quality (Q) is maintained by stringent inventory control and quality checks. Cleanliness (C) is critical for food safety and general store hygiene, as it ensures compliance with health and safety regulations. Aside from these components, QMS (quality management system) is essential to QSS, which employs the PDCA cycle for continuous improvement. It ensures consistent operations across all sites, focusing on risk management, workforce training, and data-driven decision-making. QMS helps stores to anticipate and resolve operational difficulties, promoting consistency in service quality, customer experience, and operational efficiency. (CP All Public Company Limited, 2008).

Employees at all levels, from shop managers to front-line personnel, must thoroughly comprehend the principles of QSS for it to be applied effectively. However, traditional training approaches (manual-based instruction, on-the-job training, and in-store coaching) frequently result in low engagement and information retention. Employees frequently view QSS training materials as unnecessarily complex and time-consuming, resulting in a lack of motivation to learn and inconsistent application of standards. This knowledge transfer gap underscores the importance of alternate, interactive learning techniques that simplify QSS ideas while increasing engagement and comprehension.

GBL in the context of business management

GBL is a teaching method that uses interactive game features to improve learning outcomes. Research in corporate training and management education indicates that board games can greatly boost engagement, knowledge retention, and critical thinking skills when compared to standard teaching techniques (Yusof et al., 2016; Chew et al., 2023).

Board games offer experiential learning possibilities by allowing participants to practice decision-making, problem-solving, and strategic thinking in a simulated retail business setting (Bayeck, 2020). Unlike passive learning (e.g., lectures and textbooks), GBL promotes active engagement, allowing students to apply theoretical concepts in a controlled environment (O'Neill & Holmes, 2022).

Educational board games have been proven to be useful in boosting learning and critical thinking (Thammabut et al., 2022). Monopoly, Bulls and Bears, Ice Cream Empire, In Power Grid, Free Market NYC, Catan, The Entrepreneur, and other board games are already utilized in business education and training to develop decision-making skills (Moonpreneur, 2002). Similarly, a well-designed QSS-focused board game can bridge the gap between theory and practice, making training more effective, engaging, and memorable for learners.

MDA Framework for Game Design

MDA framework, created by Hunicke et al. (2004), is a useful model for game design and analysis that defines three interconnected components. Mechanics refer to the game's fundamental rules and structures, which include its components, interactions, and player actions. Dynamics occur as players interact with these systems, influencing in-game behavior and strategic decisions. Aesthetics refer to the emotional experience and involvement generated by the game, such as enjoyment, challenge, and immersion.

As a result, using MDA to teach QSS through a board game offers an organized but enjoyable learning experience. According to Plass et al. (2015), the mechanics should mimic real-world retail operations including

staffing, product selection, and quality control, while the dynamics should encourage collaborative problem-solving and adaptive decision-making. Finally, the aesthetics should foster an immersive learning environment, increasing motivation and knowledge retention. Applying MDA to QSS training through a board game results in a structured but engaging learning environment. The mechanics should resemble real-world retail tasks such as staffing, product selection, and quality control, but the dynamics should promote collaborative problem-solving and adaptive decision-making. Finally, the aesthetics should provide an immersive learning experience that boosts motivation and knowledge retention.

According to research, MDA-based games improve learning outcomes by encouraging interactive participation and practical application (Shen et al., 2009). As a result, introducing MDA into the MyShop board game can considerably improve its teaching value for QSS training.

WBL in the Modern Trade Business Management Curriculum

Panyapiwat Institute of Management (PIM) offers a Bachelor of Business Administration (BBA) in Modern Trade Business Management that incorporates WBL to equip students for real-world retail management (Panyapiwat Institute of Management, 2024). The curriculum mixes theoretical training with hands-on experience, forcing students to switch between classroom study and practical in-store apprenticeships. One of the basic courses, "professional management of stores", teaches front-end retail management principles based on the QSS framework. It covers human resource management, equipment maintenance, and sales operations, ensuring that students learn how to efficiently manage retail operations while adhering to quality standards. The program also covers process flowcharts, distribution target setting, store performance monitoring, and troubleshooting, all of which are related to the seven core QSS elements: service, assortment, value, environment, quality, cleanliness, and quality management system.

However, during the COVID-19 epidemic, students experienced substantial disruptions owing to the suspension of in-store trainings options. As a result, there was a greater emphasis on online learning, which, while necessary, lacked the hands-on experience required for effective retail training. Without direct exposure to shop operations, customer service, and QSS software, students struggled to understand the complexity of retail management. Given these limitations, incorporating GBL and MDA frameworks into the curriculum provides a novel alternative. The "MyShop" board game is a practical extension of the professional management of stores course, allowing students to mimic retail scenarios, make strategic decisions, and face real-world repercussions in a safe, engaging learning environment. This technique not only improves students' grasp of QSS principles, but it also develops critical thinking, problem-solving, and decision-making abilities, making it an important alternative learning tool in retail management

Methodology

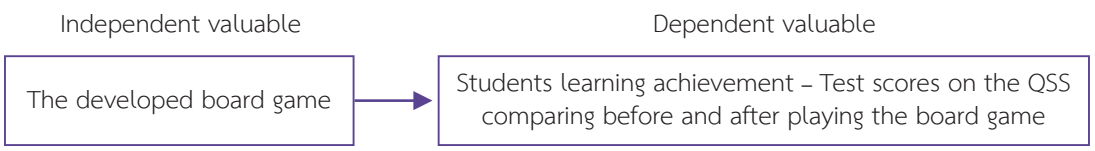
This study takes a research and development (R&D) approach, focusing on the design, development, and evaluation of a board game to help students comprehend the QSS in retail management. The design thinking framework guides the research and development process to build an effective instructional tool. The research employs both quantitative and qualitative approaches, allowing for a thorough examination of the board game's effectiveness in achieving the study objectives.

Research Conceptual Framework

The conceptual framework displays the relationship between the independent variable (the developed board game) and the dependent variable (student learning achievement). The influence of the developed board game is measured by the dependent variable, which is the student's learning achievement as evaluated by their QSS test results comparing before and after playing the board game, as illustrated in Figure 1.

Figure 1

Research Conceptual Framework



Population and Sample

Key informants in this research consisted of 30 professionals involved in the QSS implementation in modern convenience store chains. These key informants were chosen using purposive sampling, based on their willingness and interest in participating in the research. The group of informants is further divided as follows: 1) 10 QSS executives, who were in charge of setting and managing QSS at the organizational level, providing insights into effective implementation strategies; 2) 10 QSS auditors, who were experts in inspecting and evaluating QSS compliance, identifying challenges in

practical application; and 3) 10 retail store managers, who were in charge of implementing QSS and training staff, assessing the board game's effectiveness in improving understanding and compliance. To ensure a well-rounded perspective from all levels of QSS operations, 30 informants were selected using a qualitative research approach in learning media studies (Guest et al., 2006).

This study's population is made up of 879 first-year undergraduate students enrolled in the Modern Trade Business Management Program at Panyapiwat Institute of Management's Faculty of Business Administration during the first semester of the academic year 2023. The study included 278 first-year undergraduate students who were evaluated for the usefulness of the "MyShop" board game. The Krejcie and Morgan sample size determination formula was used to choose these students from Panyapiwat Institute of Management's Modern Trade Business Management Program for the 2023 academic year. The data was acquired using a cluster random sampling method, with 17 class groups selected at random. On average, each class group contains 50 students.

Research Process

This research, using an R&D strategy, merged the five elements of design thinking into four major stages, as explained below and represented in Figure 2:

Stage 1: Studying the QSS (Empathize)

The study of empathize QSS in retail management involved reviewing literature, conducting in-depth interviews and focus group discussions with key informants, including QSS management and operational staff. Examples of questions include the significance and benefits of QSS, store management guidelines, implementation issues, SAVEQC principles, SAVEQC application, how to use the checklist tool, checklist results, guidelines for implementing QSS, learning resources for understanding QSS and measuring knowledge of QSS. This phase provided insights into user perspectives and difficulties, which were then categorized for the board game development, laying the foundation for the QSS implementation.

Stage 2: Board Game Development (Define and Ideate)

The Define phase involved analyzing data to identify learning objectives and problems in teaching QSS principles. The researcher set goals for the board game, aiming to enhance knowledge retention and critical thinking. The Ideate phase involved developing various game concepts and choosing the most impactful one.

Stage 3: Expert Review (Prototype)

The researcher developed multiple versions of a board game (Prototype 1), focusing on key components like game format, mechanics, and QSS-related activities. Feedback from QSS management and operational staff improved the game's components, leading to an improved version (Prototype 2). Prototype 2 was evaluated by three specialists in content and educational game development, refining Prototype 3 based on their expertise.

Stage 4: Testing the Game with Participants (Test)

The test phase involved distributing prototype 3 to 278 first-year undergraduate students. The game's effectiveness as a teaching tool was evaluated by comparing pretest and posttest scores using a paired sample t-test.

Research Instruments

The study used a range of tools to assess the efficiency of the "MyShop" board game as a teaching tool for QSS principles.

1. Questions to be used as tools for in-depth interviews and group discussions

2. A board game prototype includes cards (Situation, Product, Customer, Event, and QSS), tokens, and game boards.

3. 35 multiple-choice questions were used to examine the impact on learning achievements, pretest and posttest assessments.

Research Instruments (Development and Validation)

1. Questions to be used as tools for in-depth interviews and group discussions: The researcher conducted an informal interview by pre-planning the interview questions, which are flexible and simple to complete. There is a flow of queries. Setting the primary questions in advance in a broad manner to have a point and issues to be interviewed about. There is no set order or structure to open-ended inquiries, but it is a natural discourse that does not make the person being questioned uncomfortable. This question serves as a framework for in-depth interviews and group discussions. Examples of questions include the importance and benefits of QSS, store management guidelines, implementation issues, SAVEQC principles, SAVEQC application, how to use the checklist tool, checklist results, guidelines for implementing QSS, learning resources for understanding QSS, and measuring QSS knowledge. Which has been content validated by experts.

2. Board game prototype: This study used a board game prototype to gather data on the effectiveness of QSS in retail management. The prototype was developed using the Design Thinking approach. The Empathize phase involved interviews and observations with QSS executives, operational staffs, and store managers to understand real-world difficulties and user requirements. The Define phase assessed data to identify gaps in students' understanding of QSS principles and develop learning objectives aligned with the curriculum. Figure 2 depicts the stages involved in developing and validating the board game.

The game development technique involved brainstorming, prototyping, testing, and finalizing. The Ideate phase involved brainstorming ideas, while the Prototype phase focused on building early versions of the game. The Test phase involved testing with students and professionals, gathering feedback, and continuously developing the game to ensure it met instructional objectives and provided a compelling learning experience.

The game evaluation form was designed to give a thorough review of the board game's quality and compatibility with learning objectives. To strengthen the trustworthiness of the instruments, they were rigorously validated using expert judgment and systematic testing. The 25-item evaluation form for measuring the quality of the "MyShop" board game was developed to cover five major areas: game format, game mechanics, materials and equipment, graphic design, and other essential factors, with five items for each (Nganlasom, 2021). The board game's suitability was assessed using a 5-point Likert scale, with results ranging from 1 (least appropriate) to 5 (extremely appropriate). The average scores were interpreted as follows: scores between 4.51 and 5.00 suggested that the board game was very appropriate, while scores between 3.51 and 4.50 were considered appropriate. Scores between 2.51 and 3.50 were classified as moderate, while scores between 1.51 and 2.50 were regarded mildly appropriate. Finally, ratings in the 1.00 to 1.50 range were considered as least acceptable. Three specialists in educational game production and retail management confirmed this form's content validity using the item-objective congruence (IOC) index. The IOC ratings ranged from 0.67 to 1.00, indicating that each question was properly linked with the research objectives. The experts' feedback was used to develop the instrument, making it more clear and relevant.

3. The 35-item learning achievement test for the QSS was developed using a structured process. The exam was developed to assess students' learning achievements before and after playing the board game, and it was based on a review of relevant literature and in-depth interviews with key informants. The test consisted of multiple-choice questions, each with four options, and was supposed to be completed in 30 minutes. To verify content validity, three experts examined the test using the IOC method, yielding scores ranging from 0.67 to 1.00.

Following adjustments based on expert feedback, the test was piloted with 30 first-year students who were not part of the main study. Difficulty indices ranged from 0.36 to 0.78, whereas discrimination indices ranged from 0.20 to 0.46, indicating acceptable dependability. The test's dependability was further confirmed using the KR-20 formula, which produced a coefficient of 0.659. To avoid recollection bias, the final test, presented as pretests and posttests to the experimental group, had jumbled question orders. This thorough approach to instrument development and validation emphasizes the study's rigor, ensuring that the data produced is reliable and accurate.

Data Collection Process

The data collection process for this research was conducted in two main stages: in-depth interviews/focus group discussions and board game testing. Each stage aimed to gather comprehensive insights and empirical evidence to assess and refine the effectiveness of the board game in enhancing learning achievements for QSS principles.

1. In-depth interviews and focus group discussion: During the initial stage of the research, 30 key informants, including QSS executives, operational staff, and convenience store managers, participated in in-depth interviews and focus group discussions. The researcher chose the approach (individual interviews or focus group) based on the most convenient time and location for the participants. These exchanges attempted to uncover real-world obstacles and requirements for effective QSS implementation. A semi-structured style was utilized to discuss subjects such as the challenges of explaining QSS principles, practical issues in retail management, and expectations for instructional tools such as board games.

2. Board game testing: The final stage involved testing the board game with 278 first-year undergraduate students enrolled in the Modern Trade Business Management Program. The testing process included the following steps:

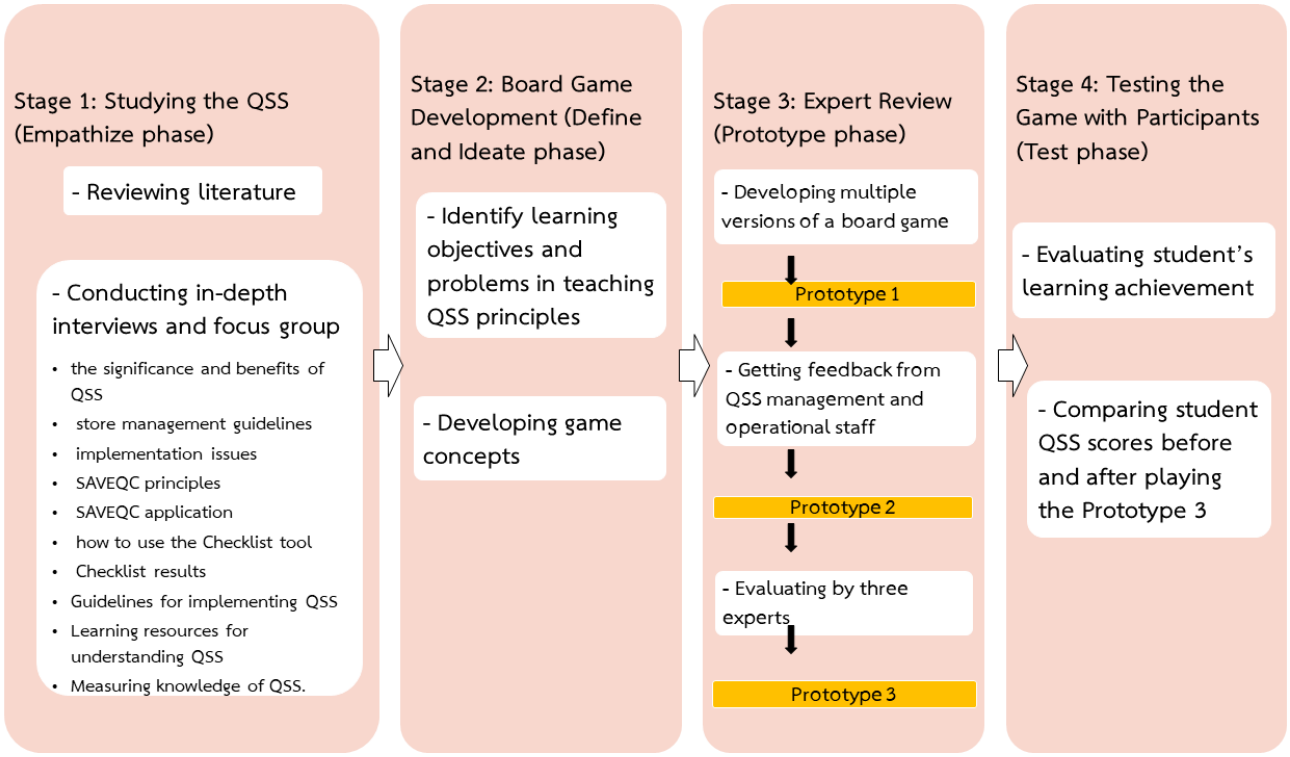
Pretest: Students completed a pretest consisting of 35 multiple-choice questions to measure their baseline knowledge of QSS principles.

Gameplay sessions: Students participated in two gameplay sessions, each lasting 60-90 minutes. The sessions were observed by research assistants who recorded player behavior, engagement levels, and interactions.

Posttest: After two rounds of gameplay, students took a posttest identical to the pretest to evaluate improvements in learning achievements.

Figure 2

Research Process



Data Analysis

The data analysis for this research is divided into two parts:

Qualitative data analysis: In-depth interviews and focus groups were conducted with 30 key informants, including QSS executives, operational staff, and store managers, to collect qualitative data. The qualitative input was examined using content analysis to find reoccurring themes and improve the game's components.

Quantitative data analysis: A sample of 278 first-year students was given pretests and posttests to obtain quantitative data. These exams assessed students' knowledge of QSS across seven dimensions—service, assortment, value, environment, quality, cleanliness, and quality management system—both before and after playing the game. The dependent t-test was used to determine the statistical significance of the learning achievements, giving empirical evidence of the game's effectiveness.

Results

The results were divided into two parts as follows:

1. Design and Development of the QSS Board Game

During the Empathize phase, qualitative data was collected through in-depth interviews and focus group discussions with key stakeholders. This phase allows for a deeper grasp of the real-world challenges of implementing the QSS, as well as practical concerns in retail operations. The inquiry revealed numerous significant challenges, including low engagement with QSS training materials due to their complexity, the need for more interactive learning tools, and the difficulty of maintaining consistent standards across multiple retail locations. These findings informed the board game's essential learning objectives and focal points, ensuring that it addressed real-life scenarios that employees and students would face. This process helped to discover knowledge gaps and highlighted the importance of hands-on, experience-based learning as a solution to these difficulties.

The define phase uses data from the empathize phase to determine students' individual educational issues and learning goals. The main concerns raised were the difficulty of QSS concepts, students' difficulties applying these concepts to real-world circumstances, and the necessity for a learning tool that might make abstract QSS principles more tangible and intelligible. Based on this, the board game's aims were specifically defined: improve students' comprehension of QSS, promote critical thinking and decision-making skills, and replicate real-world challenges in a structured and engaging manner.

During the Ideate phase, subject matter experts participated in brainstorming meetings to build a variety of game concepts. The concepts were evaluated according to their feasibility, instructional value, and engagement potential. Detailed data from these sessions revealed

which game mechanics could best represent QSS components, such as using cards to simulate different store management scenarios (e.g., staffing, product selection, and customer service). The chosen strategy featured interactive decision-making to reflect the dynamic nature of retail operations while ensuring alignment with the primary concerns stated during the Define phase. The board game, "MyShop," was conceived and developed using Hunicke et al.'s (2004) MDA framework. Table 1 describes the various MDA components in detail.

During the Prototype phase, early versions of the "MyShop" board game were created. The prototypes were reviewed in several phases, first by the research team and then by professionals in educational game creation and store management. Feedback was collected on a variety of topics, including the clarity of the rules, the alignment of game mechanics with QSS concepts, and overall user experience. The investigation revealed that, while the concept was appealing, changes were required to simplify game rules and improve the visual design for greater user interaction. Iterative adjustments were made, resulting in improved prototypes that more accurately mirrored the learning objectives. After developing the MyShop board game prototype, the researcher invited three specialists to assess its quality. The expert examination of the "MyShop" board game prototype looked at six major dimensions. The materials dimension obtained the highest average score of 4.67 (*SD* = 0.49), suggesting great durability, usefulness, and learning appropriateness, while the overall quality also received a 4.67 (*SD* = 0.58), confirming its suitability for first-year students. The game format, which addressed rule clarity and flexibility, was evaluated 4.58 (*SD* = 0.51) as "very appropriate," indicating that the framework promotes an interesting learning experience. The graphic design received a rating of 4.47 (*SD* = 0.74), indicating that it is "highly appropriate," with minimal suggestions for improvement. The content, which reflected the incorporation of QSS principles, obtained a rating of 4.25 (*SD* = 0.44), indicating that while the information was relevant and well-structured, modest changes may improve clarity. The game mechanics, which regulate rules and interactions, had the lowest grade of 4.00 (*SD* = 0.38), but were nevertheless deemed "highly appropriate," with suggestions for improving flow and engagement. Overall, the board game prototype was regarded as a high-quality and well-structured instructional tool, with changes made based on expert feedback to improve its pedagogical effectiveness and engagement.

During the Test phase, 278 first-year undergraduate students from the Modern Trade Business Management program tested the revised prototype (Prototype 3). To assess the learning achievements, a rigorous quantitative analysis was performed using pretest and posttest results that represent the quality of the board game.

Table 1

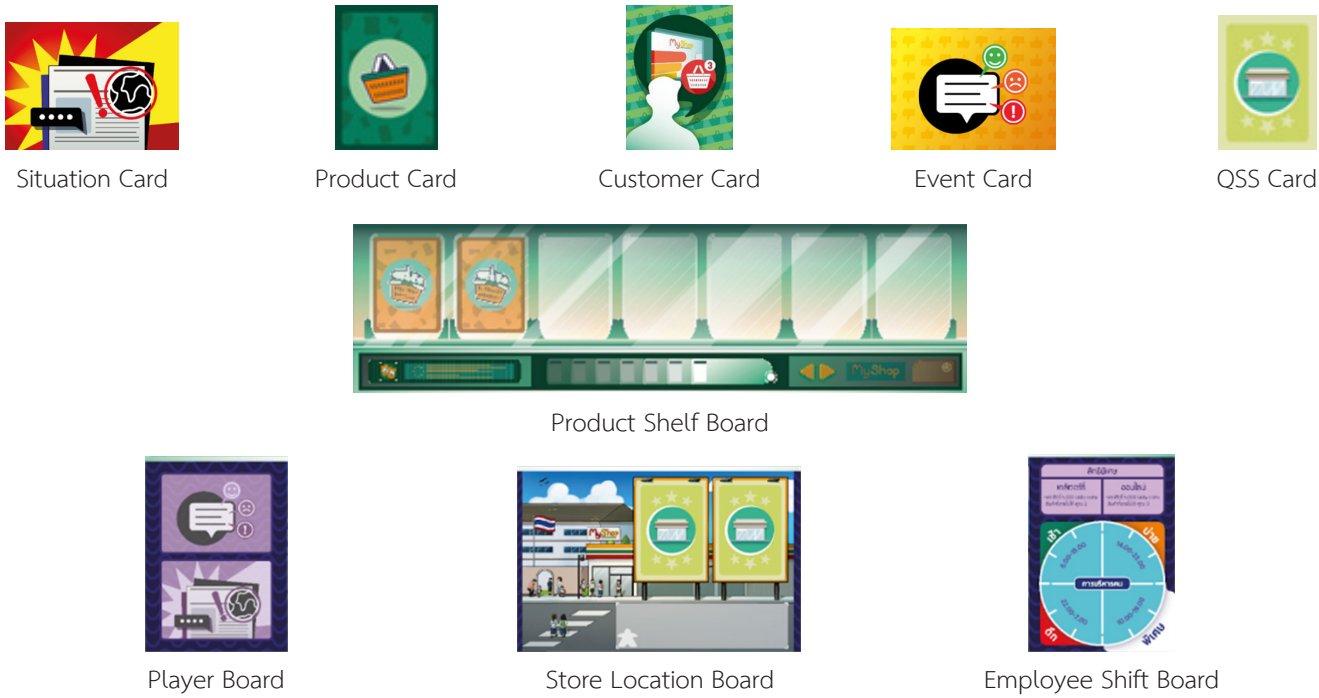
The Mechanics, Dynamics, Aesthetics and Components of "MyShop" Board Game

Application of MDA Framework in designing the "MyShop" board game
The Mechanics (or rules) of the game: The game consists of five rounds, each played by one team at a time and cycling among all five teams. The player who rolls the highest number on the dice is the first to play and draw a Situation Card, which affects all teams for that round. They pull three Product Cards and choose one to display on the store shelf based on its position. They pull three Customer Cards to determine whether the selected product fulfills customer demand. The Customer Card specifies if the product is a "Regular Customer" or "One-Time Customer." The Daily Coin score is determined using the Customer Card criteria, while the Situation Card influences earnings. Each store must meet the Event Card and QSS Card standards. Employee salaries are determined and subtracted by multiplying the number of employee tokens in the store by 100 Daily Coins. The next team to play is the one with the second-highest score, and this process is repeated for all five rounds.
The Dynamics of the game: The game simulates shop management scenarios to help players better grasp the QSS implementation in modern convenience store chains. Players compete against one another to produce the best business results, encouraging engagement and active participation in the learning process. The challenging part entails rolling dice, with those who get the highest numbers getting to choose first. Competence components necessitate that players have fundamental store management skills, such as selecting acceptable merchandise based on store location and managing workers during each shift. The entertaining part involves emergency scenarios in convenience stores, with Situation Cards affecting all players during each game. The social interactions feature includes cooperative gameplay within the same team as well as competitive gameplay between teams, challenging players to overcome constraints and difficulties to meet performance goals and emerge victorious.

Table 1
(continued)

Application of MDA Framework in designing the "MyShop" board game
The Aesthetics of the game: The MyShop board game is designed to simulate the management of a convenience store, focusing on product and employee management. During the game, players assume various roles and responsibilities within the store, encountering real-life scenarios throughout gameplay. Store management tasks include selecting a suitable location, choosing products that match the target market in that area, adjusting the number of employees for each shift, and handling situations that impact the QSS score. Players also collect Regular Customer Cards and face inevitable scenarios that require critical thinking and decision-making to gain a competitive advantage over stores in other locations. The primary objective is to accumulate the highest number of Daily Coins to win the game. In addition to delivering educational value and fostering social interactions, the game creates an engaging and enjoyable atmosphere for players throughout the session.
Game components: The game set includes one game box, which consists of the following components: 23 game boards, including 9 location boards, 5 product shelf boards, 5 employee shift boards, and 5 player boards, supporting a maximum of 5 players or 5 groups, with 3 players per group. The game includes 120 Daily Coin tokens in various denominations: 30 tokens of 100 Daily Coin, 20 tokens of 200 Daily Coin, 10 tokens of 500 Daily Coin, 30 tokens of 1,000 Daily Coin, 20 tokens of 2,000 Daily Coin, and 10 tokens of 5,000 Daily Coin. Additionally, there are 115 character pieces, comprising 90 employee pieces (30 green for the morning shift, 30 orange for the afternoon shift, and 30 red for the night shift) and 25 regular customer pieces. The game also includes 5 decks of cards: 75 Top 1-300 Product Cards, 75 Customer Cards, 56 Event Cards, 100 Quality Store Standard Cards, and 10 Situation Cards.

Figure 3
Components of the "MyShop" Board Game



The board game components are organized as illustrated in Figure 3. Five card piles are arranged in the center of the playing circle. From left to right, pick up cards in the following order: Situation Card, Product Card, Customer Card, Event Card, and QSS Card. The four game boards, which include the Store Location Board, Product Shelf Board, Employee Shift Board, and Player Board, are set in front of each players.

2. Evaluation of the Board Game's Effectiveness

The pretest and posttest results of first-year undergraduate students were compared before and after they played the MyShop board game. The sample included 278 students, with 80 males (28.8%) and 198 females (71.2%). The researcher used a multiple-choice

test with 35 questions and four alternatives to evaluate QSS-related learning achievements. The test included five questions for each of the seven QSS components: service, assortment, value, quality, cleanliness, and QMS. Table 2 compares students' understanding of QSS before and after playing the MyShop board game twice.

Table 2

The Mean, Standard Deviation, t-value, and Statistical Significance of the Comparison Between Pretest and Posttest Scores

(n = 278)

Test	*M*	*SD*	*t*	*p*	*df*
pretest	18.83	5.058	29.335	< .001	277
posttest	26.54	3.554			

*p < .05

Table 2 shows that the average pretest score was 18.83, while the average posttest score climbed to 26.54. A comparison of results before and after playing the MyShop board game revealed that posttest scores were considerably higher than pretest levels at the .05 level of statistical significance (t = 29.335). This suggests that the MyShop board game improves students' achievement in understanding QSS. Table 3 shows a more detailed examination of the posttest average scores, which are divided into seven SAVEQC and QMS components, each with a total score of 5 points.

Table 3

The results of the analysis of the mean pretest and posttest by individual components, including SAVEQC and QMS

Dimension	Pretest		Posttest		Interpret result
	M	*SD*	*M*	*SD*	
Service	3.13	0.93	4.51	0.62	increase
Assortment	2.75	1.13	4.04	0.95	increase
Value	2.62	1.17	3.77	0.92	increase
Environment	2.65	1.08	3.69	0.92	increase
Quality	2.61	1.14	3.68	0.94	increase
Cleanliness	2.91	1.12	3.68	1.08	increase
QMS	2.15	1.15	3.18	1.02	increase
Average	2.69	0.73	3.79	0.51	increase

Table 3 shows that posttest results were higher in all seven dimensions. For example, the average posttest score for the Service dimension (M = 4.51) outperformed the pretest score (M = 3.13). Similar gains were noted in the areas of assortment, value, environment, quality, cleanliness, and QMS. These findings imply that the MyShop board game improves students' QSS learning achievement across all assessed categories. The posttest findings indicate that the three components with the highest post-learning scores were service (M = 4.51), assortment (M = 4.04), and value (M = 3.77). These findings suggest that playing the MyShop board game resulted in the greatest growth and acquisition of knowledge or abilities.

This research has received ethical approval for human research: project number pim016/2023.

Discussion

The results revealed that the MyShop board game received high to extremely high ratings for quality and appropriateness. The game was shown to be effective in helping first-year students understand the QSS. This outcome emphasizes the use of GBL as a strategy to improve information retention and engagement, which aligns with active learning strategies in education.

A comparison of the results revealed that the posttest scores were considerably higher than the pretest levels at the .05 level of statistical significance, supporting the research hypothesis. This result can be attributed to the use of GBL to teach the QSS through board games, which is a popular method of active learning. The researcher employed the concept of GBL to engage learners by incorporating course content into the game, which made learning both educational and enjoyable.

Therefore, to ensure the board game's effectiveness, the researcher conducted six rounds of playtesting with key informants, tweaking the game in response to identified issues and feedback. This iterative design process ensured the successful implementation of GBL principles, as the game evolved to balance engagement and educational value.

The MyShop board game was designed as a family game because of its simple rules, which make it simple for novice players to comprehend and play. This simplicity ensures that the game is engaging without becoming boring. The game can be used as a teaching tool in the classroom and does not place a strong emphasis on strategy. Instead, it promotes player involvement by encouraging conversation, negotiation, and analytical thinking rather than emphasizing complex strategies. By creating a collaborative and interactive learning environment, the game promotes critical thinking and teamwork—core principles of GBL. Players experience dynamic retail scenarios, such as managing resources, selecting products, and adhering to QSS, fostering an experiential understanding of retail management concepts.

Treher (2011), who studied learning through board games, found that well-designed board games give significant educational benefits and are extremely effective when targeted to specific learning objectives. Furthermore, Kirikkaya et al. (2010) studied a board game on space and the solar system for elementary students and found that board games can be used to effectively assess students' understanding of these topics. Based on these findings, it can be concluded that the MyShop board game significantly enhanced first-year students' learning achievements, as seen by higher posttest scores than pretest scores at a statistical significance level of .05.

The MyShop board game is a teaching tool that combines course content with rules, transforming abstract QSS principles into relatable experiences. It involves interactive problem-solving activities to help students understand industry-relevant concepts like service, assortment, and value. This engagement improves cognitive memory and provides practical skills for current retail management. The game's findings suggest its applicability beyond contemporary commerce and business management. Given the trend towards interactive and GBL in education, the MyShop board game could be expanded and adapted to operate with various retail management systems, providing a dynamic learning experience that models real-world situations. This aligns with active learning and competency-based education methodologies, prioritizing student engagement, critical thinking, and practical skill development.

Alipova et al. (2024), Vita-Barrull et al. (2023), Thammabut et al. (2022), Gkogkidis and Dacre (2020), Freeman et al. (2014) and Yusof et al. (2016) have all highlighted the importance of incorporating GBL tools like MyShop into curriculum design to enhance knowledge retention and application. Active learning environments, such as simulations and games, can improve students' problem-solving skills and provide a deeper understanding of industry-relevant concepts. As retail companies adopt digital transformation and complex supply chain management approaches, incorporating these technologies into educational programs can better prepare students for modern retail management. This type of learning can also be extended to professional training environments, equipping current employees with the skills needed to adapt to changing retail landscapes. Tools like MyShop bridge the gap between theoretical knowledge and real-world applications, benefiting students, professionals, and the retail industry at large.

Conclusions

This study had two main goals: 1) to create a board game to improve learning achievement in QSS for first-year undergraduate students in the Modern Trade Business Management Program at the Faculty of Business Administration, Panyapiwat Institute of Management, and 2) to evaluate students' learning achievements in QSS after playing the developed board game.

To achieve the first goal, the MyShop board game was created utilizing the design thinking process, which included GBL and MDA framework. The game was created to imitate real-world retail management scenarios, allowing players to choose products based on store location and consumer preferences, manage staff shifts, and do quality checks. The board game may accommodate 1 to 15 players and lasts 60 to 90 minutes. It was designed to strike a balance between ease of learning and gameplay complexity, encouraging decision-making and problem-solving. The final version of the game was assessed and adjusted based on expert feedback to verify its quality and suitability for educational purposes.

A pretest and posttest were administered to 278 first-year undergraduate students to assess the board game's usefulness in boosting learning achievement in QSS. The data demonstrated a substantial rise in students' test scores after playing the game, demonstrating a better

understanding of QSS principles. The evaluation results revealed that experts considered the board game "very appropriate" for use in retail management education.

This study successfully created and validated an interactive learning tool that improves students' comprehension of QSS through active participation. Future studies could look into creating an online or mobile-based board game that allows for comparison analysis of learning results across various game formats and platforms.

The Department of Intellectual Property has protected MyShop's board game with copyright and is currently considering patent and trademark applications.

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Author Contributions

Tanya Supornpraditchai: Conceptualization, Investigation, Formal analysis, Writing – original draft, Writing – review & editing. **Kittibhop Tansuwan:** Investigation, Conduct data collection.

Declaration of Competing Interest

The author declares no conflicts of interest related to the conduct of this research.

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