

## Developing a Game-Based Learning Management Activities for Basic Passenger Assessment Training

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### Abstract

This research aimed to develop game-based learning activities for basic passenger risk assessment training and improve the learning achievement of immigration officers newly appointed to the Immigration Bureau. The researcher designed the learning activities by integrating pre- and post-learning tests with an interactive simulation game. The study population consisted of 116 police officers of immigration officers newly appointed to the Immigration Bureau in the 2025 fiscal year, selected using a purposive sampling method. Statistical analysis included percentage, mean, and standard deviation. The learning activity set and achievement test on Passenger assessment were created consisting of a passport security screening simulation game in the form of a matching game and a personal identity comparison in the form of a picture comparison game, as well as an achievement test on Passenger assessment in the form of a question-and-answer game within a specified time. Then, the created activity sets were examined for quality by experts and the results showed that the created learning activity set was appropriate in all aspects, with an IOC = 1, indicating that the activity set was consistent with the objectives and could be practically applied in training. From the evaluation results from experts, it was found that the created learning activity set was appropriate in all aspects, with an IOC value of 1, indicating that the activity set was consistent with the objectives and could be practically applied in training and the study found that out of 116 trainees, 23 persons (19.80%) scored more than 60% on the pre-test, while 111 persons (95.68%) scored more than 60% on the post-test. This indicates a statistically significant increase in learning achievement of 75.88% between the pre-test and post-tests. The average score of the trainees was 49.46 on the pre-test and 81.87 on the post-test. In conclusion, Game-based learning is an effective method for training frontline immigration officers who require specialized knowledge and skills to screen and assess the risk of passengers traveling into and out of the kingdom.

*Keywords:* basic passenger assessment, game-based learning, learning activities

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## Introduction

Currently, human trafficking and illegal cross-border travel are significant problems in many countries worldwide, including Southeast Asia, where Thailand is often seen as a transit hub to third countries. Considering Thailand's land and maritime borders, which are crucial connecting points and share borders with numerous countries, this results in a large influx of migrant workers. This is a major cause of transnational crime, such as call center scams and fraud. Analyzing the root causes of this problem, it is found that destination countries with low living costs, lax immigration screening systems, and widespread corruption are ideal locations for establishing centers for technology-related crime and illegal cross-border land and maritime travel. Furthermore, considering air borders, specifically travel through international airports in Thailand, these airports are found to be major connecting points for international travel. According to international flight statistics from Airports of Thailand Public Company Limited, the trend of increasing international flights in the post-COVID-19 pandemic has seen a continuous and exponential increase in international flights, making international airports in Thailand one of the most suitable transit points for illegal border crossings or onward travel to third countries such as the United States, Canada, Australia, and European countries. With the increase in travelers, one of the problems often encountered and which is important for illegal border crossings is the falsification of travel documents and other identification documents such as passports, visa stickers, border passes, national identity cards, work permits, and driver's licenses.

According to statistics on arrests for forged travel documents by the Investigation and Suppression Department, Immigration Division 2, the number of arrests for offenses related to forged travel documents from 2021 to 2024 has shown a significant upward trend. The main causes are often the global economic downturn following the COVID-19 pandemic, social violence such as terrorism, civil war, and separatism, or financial difficulties in households. These individuals often seek migration as a way to survive, and they frequently fall victim to human trafficking and transnational crime (Investigation and Suppression Department, Immigration Division 2. [2025]).

One of the key methods to prevent illegal border crossings and human trafficking is to educate and train immigration officers, who are crucial frontline personnel in document verification, to be efficient and accurate within tight deadlines. This is because the standard for screening passengers at passport control counters at Thai international airports requires completion within one minute, a very short timeframe for screening and classifying incoming travelers. Therefore, the researchers developed a game-based learning activity on initial passenger risk assessment for newly appointed to the Immigration Bureau.

Under the constraints of the time required for immigration officers to screen foreign nationals entering the Kingdom, the researchers believe that game-based learning is a suitable approach for developing passenger risk assessment skills. Game-based learning simulates independent decision-making under time constraints, helps create motivation and enjoyment, increases learner participation, and provides immediate results from the activity. It helps learners learn about their weaknesses and also enables learners to have a deeper, more sustainable learning experience than simply reading or listening. Therefore, considering the national security situation and the increasing trend of transnational crime, as well as the working conditions of frontline officers who have to make decisions under tight time constraints and the limitations of traditional training which is often one-way communication, the researchers developed a set of learning activities on initial passenger risk assessment using game-based learning and

applied them to enhance decision-making skills under tight time constraints, so that immigration officers are prepared and can perform their duties effectively and in accordance with current national security standards.

### Objectives

1. Develop game-based learning activities for basic passenger risk assessment training.
2. Improve the learning achievement of immigration officers newly appointed to the Immigration Bureau.

## Literature Review

### Basic Passengers Assessment

The definition of Passport is an official document issued by a government agency to certify the identity of its holder and grant the right to travel in and out of various countries. Passports are typically small books, either hard or softcover, with various security features. They contain personal information of the holder, details about the issuing country and agency, visas, entry/exit stamps, and other relevant information. Passports from different countries often vary in how they store holder information, such as embedding photos and data in microchips or using Machine Readable Zone (MRZ) data strips. and a document issued by each country's government to its citizens to certify their nationality and provide diplomatic protection.

According to The Immigration Act B.E. 2522 (1979), Section 12, states that foreign nationals with any of the following characteristics are prohibited from entering the Kingdom: lacking a valid and complete passport or equivalent travel document, or possessing one but without a valid visa issued by a Thai embassy or consulate abroad, except for special cases where no visa is required for certain types of foreign nationals.

The elaborates on the details of passport inspection and identity verification of the passport holder:

1. The passport cover should be smooth and flat, without folds, cuts on the spine, wrinkles from re-cutting or re-gluing, or excessive glue stains.
2. Passport pages must have security features within the paper itself, such as embossed printing and examination under ultraviolet light.
3. The quality of printed characters must be sharp, with consistent spacing and font size.
4. The number of pages and page numbers must be consistent throughout the booklet, with no signs of alteration or change of numbers.
5. Examine the perforations and quality of the punched numbers in the passport.

Initial identity verification of the passport holder:

1. Verify the facial features and distinguishing marks of the passport holder against the photo in the passport and other documents.  
This involves checking the shape of the face, eyes, ears, nose, mouth, chin, and any facial marks such as moles, birthmarks, or scars. When examining facial features, one should consider changes due to age, weight, makeup, and cosmetic surgery.
2. Check the passport holder's fingerprints against the database.  
The outlines principles for initial travel information inquiries: Brief inquiries about travel information or plans can help in initial passenger risk assessment. During the interview, the interviewer should maintain eye contact with the interviewee, ask general

questions (e.g., about their general feelings after a long journey, travel plans, and accommodation). They should avoid disturbing or rushing the interviewee for answers, use polite and friendly language to make the interviewee feel relaxed, and avoid judging them based on appearance. Throughout the interview, observe the interviewee's body language for any unusual signs, such as trembling, constantly clenching hands, avoiding eye contact, excessive sweating, or rambling speech.

## **Game-Based Learning**

Game-based learning (GBL) refers to a learning management approach that uses “games” or “game mechanics” as tools to promote learning, using fun, challenge, decision-making, and immediate feedback as motivators for effective learning. Hamari et al. (2016) describe GBL as a process that integrates games into lessons to increase student engagement, create a state of focus, and enable deeper learning than typical lectures.

Li and Tsai (2013) further define that Game-based learning is a learning process that uses game structures such as rules, difficulty levels, scoring systems, and simulations to promote students’ knowledge construction through interaction between students and the game environment, enabling students to practice problem-solving, analytical, and decision-making skills. In addition, Zhao et al. (2022) state that Game-based learning is a tool that improves learning outcomes, especially in complex subjects or content requiring practice, as games engage students actively and motivate them through the fun of the game.

In short, Game-based learning is a learning model that uses “games” as the primary motivator. Game-based learning promotes interaction, develops skills, and enables learners to learn through experimentation and decision-making within simulated environments.

In summary, numerous studies confirm that game-based learning can effectively improve academic achievement, enhance analytical thinking skills, and stimulate student motivation.

## **Learning Activities**

Learning activities refer to processes or sets of experiences designed by instructors to promote meaningful learning among learners through participation, critical thinking, hands-on practice, and reflection. Learning activities act as a “mediator” that links learning outcomes, content, and evaluation into a unified system. This concept aligns with the principles of active learning, which indicates that learners should construct knowledge themselves through thinking and doing, not merely passively receiving information.

### ***Types of Learning Activities in Research and Design Guides***

Teaching is classified into several forms depending on the subject matter, learning goals, and the nature of the learners.

Examples of important forms include:

1. Active Learning Activities such as small group explanations, problem solving, questioning, demonstrations.
2. Hands-on/Procedural Activities such as experiments, practice, and simulations.
3. Collaborative Learning Activities such as cooperative learning and project work.

4. Reflective Activities such as diary writing, knowledge summarization, and lesson reflection.
5. Media/Technology-Based Activities (Technology-supported Learning Activities) such as the use of digital media, learning games, or online platforms in conjunction with real-time assessment.

The selection of activities must always be based on an analysis of learning outcomes first, so that the activities serve as “evidence of learning” and help learners clearly demonstrate the required knowledge and skills.

“Learning activities” are central to modern teaching and learning. Effective learning activities should be designed to align with learning goals, encourage student participation, foster hands-on experience, and promote reflective learning through rational thinking. This enhances motivation, achievement, and in-depth understanding of the content. Simultaneously, the success of learning activities depends on the quality of their design, appropriate feedback, and the creation of a safe and conducive learning environment for knowledge exchange.

### **Methodology**

Data on preliminary passenger risk assessment was studied and analyzed from documents, textbooks, and training courses related to passenger risk assessment. This data was then used to determine guidelines, develop learning activities, and review relevant documents and research on game-based learning.

Two sets of learning activities on preliminary passenger risk assessment were designed using game-based learning. These included:

- 1) A 10-item simulation of passport security checks, where participants match passport inspection methods with different types of security checks in passports.
- 2) A 5-item personal identification comparison, where participants compare facial features.

A 15-item achievement test on preliminary passenger risk assessment was designed as a multiple-choice test in a question-and-answer format within a time limit.

The learning activities and achievement test were evaluated by three experts. The evaluation yielded an IOC value of 1, indicating the effectiveness of the developed learning activities and achievement test. Appropriate and aligned with the research objectives.

Implement improvements and development based on expert recommendations.

Implement the created learning activities and achievement assessment tools.

Evaluate the learning achievement of the sample group.

### **Research Tools**

Learning activity sets on passenger risk assessment, consisting of 2 sets in game format, including:

- 1) A simulation of passport security checks, consisting of 10 questions, where trainees match passport inspection methods with different types of security checks in passports.

- 2) A comparison of personal identity, consisting of 5 questions, where trainees compare facial features of individuals.

A subjective learning achievement test on passenger risk assessment in the form of a question-and-answer game with a time limit, consisting of 15 questions.

The population consists of 116 police officers appointed and transferred to the Immigration Bureau in the 2025 fiscal year, selected using purposive sampling.

Statistical methods used in the research include mean, percentage, and standard deviation.

## Result

The researchers collected research data in two parts: Part 1 involved analyzing the Index of Content Validity (IOC) of the learning activity set from three experts, and Part 2 involved the scores from the achievement test on passenger risk assessment using a game-based learning approach for 116 police officers appointed and transferred to the Immigration Bureau in the 2025 fiscal year. The learning outcomes were then analyzed using basic statistics, compared against established criteria, and the research findings are summarized as follows:

Table 1 shows the results of the quality assessment of the developed learning activity set on basic passenger risk assessment using a game-based learning model, as evaluated by three experts:

**Table 1**

*The Results of the Quality Assessment of the Developed Learning Activity Set*

No.	Item	Experts			Total	IOC score	Result
		1	2	3			
1	The content of the activity package covers key aspects of passenger risk assessment.	+1	+1	+1	3	1.00	Qualify
2	The accuracy of the information is consistent with passport verification and identity verification principles.	+1	+1	+1	3	1.00	Qualify
No.	Item	Experts			Total	IOC score	Result
3	The sequence of activities is appropriate for learning.	+1	+1	+1	3	1.00	Qualify
4	The created activities stimulate the interest of the trainees.	+1	+1	+1	3	1.00	Qualify
5	The created activities are suitable for the trainees.	+1	+1	+1	3	1.00	Qualify

Table 1 shows that the Analysis of the Index of Consistency (IOC) of the learning activity set indicates that it is suitable for use in teaching. The IOC score is 1 in all categories, demonstrating suitability and consistency with the established standards. The activity set can be used in practice.

Table 2 shows a comparison of scores from the achievement test, measuring pre-test and post-test scores. Participants were required to have a post-test score at least 60% higher than their pre-test score.

**Table 2**

*A Comparison of Scores From the Achievement Test*

Test type	Number of participants	Number of Passers (Scoring above 60%)	Percentage
Pre-test	116	23	19.80
Post-test	116	111	95.68
increasing		88	75.88

Table 2 shows the number of participants who passed the pre-test achievement test. It was found that 23 out of 116 participants passed the test (scoring above 60%), representing 19.80%. This compares to 111 out of 116 participants who passed the post-test, representing 95.68%. This represents an increase of 88 participants, or 75.88%.

Table 3 shows the mean and standard deviation scores of the pre-test and post-test results of the participants:

**Table 3**

*The Mean and Standard Deviation Scores of the Pre-test and Post-test Results*

Test type	Average	Standard deviation
Pre-test	49.46	23.71
Post-test	81.87	11.19

Table 3 shows the mean and standard deviation scores of the pre-test and post-test results for 15 items, considering the passing criterion of 60%. It was found that the mean score of the pre-test for 116 trainees was 49.46 points, and the mean score of the post-test for the trainees was 81.87.

From the application of the created learning activities to the trainees, it was found that the trainees were able to apply the acquired experience to real-life situations, and a report of the arrest of a counterfeit passport was received from one trainee. This demonstrates that the use of the created learning activities in teaching enabled trainees to apply the knowledge in real-life situations.

## Conclusion

This research focuses on developing a learning activity set on preliminary passenger risk assessment using a game-based learning approach. The aim is to effectively train newly appointed and transferred personnel within the Immigration Bureau, ensuring compliance with established standards. The results of the Index of Content Validity (IOC) evaluation of the learning activity set, as presented by experts, are shown in Table 1.

The research results clearly demonstrate that the use of game-based learning activities significantly improved the learning achievement of trainees in passenger risk assessment. A clear difference of 75.88% was observed between the pre-test score (19.80%) and the post-test score (95.68%). Furthermore, the average pre-test score was 49.46, while the average post-test

score was 81.87. This underscores the crucial role of game-based learning in training personnel within the Immigration Bureau, who are key frontline staff responsible for screening foreign nationals entering and exiting the Kingdom. This experiment strongly aligns with the theoretical foundations of game-based learning.

Research by Lapat Chanruangsaeng (2009) mentioned one training need for immigration officers at Suvarnabhumi Airport on the principles of detecting counterfeit passports. Zhao et al. (2022) identified educational games as an effective mechanism for increasing student motivation and engagement, improving learning efficiency, and creating a better experience. This aligns with the research by Hussein et al. (2019) which stated that playing games can promote students' critical thinking abilities in science. The interactive nature of the developed games, which provide immediate feedback and require active decision-making, creates a learning environment where participants are not passive recipients of information but active contributors of knowledge. This perfectly aligns with the principles of constructive learning, where learners construct understanding through experience and reflection. In this study, simulations within learning activities and quizzes allowed immigration officers to practice complex passenger assessment and critical decision-making in a safe and controlled environment. This experiential learning opportunity was invaluable in developing the analytical and decision-making skills necessary for the job. In particular, practicing under time pressure at real immigration checkpoints and learning from mistakes within the game is crucial for enhancing the expertise of frontline officers.

## **Suggestions**

### ***Suggestions for Applying Research Findings***

The developed activity set should be used for knowledge review among staff members to regularly refresh their knowledge and verification methods.

### ***Suggestions for Future Research***

The activity set should be developed to incorporate other skills such as observation, investigation, and analytical thinking. Therefore, the development of various skills should be integrated, and regular knowledge reviews should be provided to staff members.

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