

## ANALYSIS OF FLOOD DISASTER BOARD GAMES

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### ABSTRACT

This purpose of this study was to analyze and compare flood disaster board games. Secondary data were used for data analysis. Key words used to search for the information on the search engine were limited to “flood risk awareness board games”, “board game about flood, flood board game”, and “flood disaster board games.” This study also considered the feasibility of data analysis based on information retrieved on the Internet. Results found five board games about flood disaster preparedness. Nevertheless, three of them had adequate information to conduct the further analysis, which included Flood Resilience, Game of Floods, and Flood Risk Awareness Game. These three board games were analyzed using Taxonomy of Promsri (2016, 2019b). Results of comparative analysis showed that Flood Resilience and Game of Floods were appropriate for individuals in the advanced level of understanding of flood while Flood Risk Awareness Game was suitable for a beginner. The best part of these three games was available for free for non-commercial purposes.

**Key Words:** Board game, Serious games, Flood, Flood game.

### INTRODUCTION

Natural disaster has increasingly become a frequent occurrence that has a massive impact on people live. To mitigate the effect of natural disaster, individuals need to be educated how to prepare and deal with disasters. Preparedness in catastrophic incidents is a vital key for effective reaction to the increasing trends of disasters (Ejeta, 2018). Disaster preparedness is a continuous process based on the consequence of numerous risk reduction activities (The International Federation of Red Cross and Red Crescent Societies, 2019). However, the lack of innovative tool to teach communities about disaster preparedness is problematic for ensuring their awareness, readiness, and response while encountering disastrous incidents (Seráfica, 2016).

Flood is a natural incident that causes enormous loss of people live and properties. Flood is viewed as the most common event that has an impact on more people than other natural disaster (The International Charter Space and Major Disasters, 2019). The alleviation of flood events can be established through education and training about flood disaster preparedness to help individuals better protect themselves and others. Various education and training approaches have been utilized to educate individuals to be aware and prepared for flood disaster, which no method is one best way practice (Torani, Majd, Maroufi, Dowlati, Sheikhi, 2019). However, a board game is considered as a vital tool used to increase community members flood disaster awareness and preparedness (Promsri, 2016; Marome, Pholcharoen, & Wongpen, 2017).

Encouraging individuals to learn through a board game is not a new idea and the use of board games as an educational tool to develop essential skills of learners deems very useful for educators (Crews, 2011). A serious game is considered as an instructional approach that helps an individual to engage in a full of fun interaction with specific rules (Fitzgerald, 1997). Using game-based approaches as part of learning process can motivate self-conducted learning and help reduce discouraging factors of learners leading to the better understanding in that topic (Taspinar, Schmidta, &Schuhbauerb, 2016). In addition, people can communicate multifaceted realities and learn their mistakes without taking risk (Keating, 2016).

Serious board games about disasters as part of preparedness development have extensively been developed and paid more attention in the past decades (Solinska-Nowak et al., 2018). In particular, the design and development of flood disaster board games have increasingly been placed more emphasis. Numerous flood disaster preparedness board games have been conducted in the past years such as SimBethel (Hasman et al., 2013), Inundo (Philipp, 2013), Game of Floods (Marin County Community Development Agency, 2015), Flood Resilience (International Institute for Applied System Analysis, 2017), and Flood Risk Awareness Game (FRAG) (Promsri, 2019a). Despite the popularity of flood disaster board games has increased, no studies have attempted to analyze and compare the strengths and weaknesses of these board games. Hence, this present study aimed to analyze and compare these flood disaster preparedness board games to be used as a fundamental for decision-making to carry out these board games as part of developing flood disaster knowledge and preparedness.

## METHODOLOGY

This study is a document analysis. The secondary data were used for data analysis. As this study predominantly focused on flood disaster board games, key words used to search for the information on the search engine were limited to flood risk awareness board games, board game about flood, flood board game, and flood disaster board games. This study also considered the feasibility of data analysis based on information retrieved on the Internet. As some flood disaster board games did not provide any information about game objectives, rules and mechanics, the researcher decided to remove these board games from the final analysis. The taxonomy of Promsri (2016; 2019b) was utilized to analyze each flood disaster board game and compare the strengths and weaknesses. There were totally eight criteria including name of game, company/producer, level of age/ target group, playing time, purposes of game, type of game, description, and materials.

## FINDINGS

Based on the secondary data analysis, results found five different board games about flood disaster. Among these games, three of them including Game of Floods (Marin County Community Development Agency, 2015), Flood Resilience (International Institute for Applied System Analysis, 2017), and Flood Risk Awareness Game (FRAG) had sufficient information to do the analysis in accordance with Promsri (2019b)'s taxonomy. The comparison and assessment for appropriateness to implement these flood board games to enhance community members and individuals' knowledge and preparedness were also conducted. Table 1 displayed the analysis of three flood disaster board games.

**Table 1: Analysis of Three Flood Disaster Board Games**

Name	Company	Target/Number of Players	Playing Time	Purposes	Type of Game	Description	Materials
Flood Resilience	International Institute for Applied System Analysis (2017) with funding from Zurich Flood Resilience Alliance	Aid workers, Public administration, Local communities, NGOs, Policy makers, Youth, Insurers/ 2-10 players/ 1 moderator	2 hours and more	This game is designed to help players, especially NGO staffs, generate new policies and strategies that develop flood resilience	Educational Game	This game helps players learn about flood risk and disaster, and resilience of communities in river valleys. Players are required to take roles of different community members and need to interact with other players through discussion to make conclusions and responses. This part of game helps players to gain better understanding and knowledge of interdependencies for working with others.	Pawns, Markers, Tokens Map Playerboard Materials available in paper include Infrastructure House, Asset, Contract, Action citizens, Action WB, Strike, Accident, Loan, Others, Instruction
Game of Floods	Marin County Community	Public administration, Local community	1-2 hours	This game provides players	Resource management game/ Strategy	The major task of players who play this	Tabletop Game Board Game

	<p>Development Agency (2015)</p>	<p>es, Policy makers/ 2-10 players/ 1 moderator to read the scenario of Marin Island</p>		<p>the opportunities to learn the impacts of climate and adaptation options. Players are motivated to engage with other players through discussion during game play in order to learn some ideas and thoughts relating to flood preparedness through trading off adaptation measures. Players learn how to plan and formulate strategies to deal with</p>	<p>game</p>	<p>game is to escape the flood. Conflicts between players will arise and they need to discuss to find the agreement. Otherwise, they have to confront disaster alone. In this game, players will learn their responsibilities, and extend their knowledge and awareness of flood preparedness</p>	<p>Piece Key Handout (1 per person) Game Pieces Facilitator Script/Blank labels Planning Commission Worksheets (1 per person) Scenario Cards (1 per person) Sticky Arrows Easel Large Notepad Markers Dice</p>
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				disaster.			
Flood Risk Awareness Game	Promsri (2019)	Ages 12 and up/ 4 players	40 minutes	To enhance flood risk awareness and preparedness	Family game/ Strategy game	This game helps players understand the consequence of flood disaster and learn how to prepare during the flood events.	1 gameboard 4 markers 1 dice 4 different types of game cards including question cards, threat cards, flood kits cards, and flood cards

Table 2 demonstrated strengths and weaknesses of three flood disaster board games. As shown, Flood Resilience and Game of Floods are available in English whereas Flood Risk Awareness Board Game is available in Thai version only. Besides, Flood Risk Awareness Game limits the number of players up to 4 players while the rest two games allow players up to 10. However, Flood Resilience and Game of Floods take more time to play and require the moderator to facilitate the game. The best part of these three games was available for free for non-commercial purposes.

**Table 2 Strengths and Weaknesses of Three Flood Disaster Board Games**

Name of Game	Strengths	Weaknesses
Flood Resilience	1. This game is available in English version, which allows more people around the world to play this game. 2. This game encourages group discussion between players, which helps improve understanding of interdependence for working together during crisis.	1. Multiplayers are required for the game benefits. 2. Playing time is taken too long, which is 2 hours and more. 3. Conflicts between players may lead to lessen the accomplishment of game purposes if the moderator is not sensible enough to

	3. This game is appropriate for anyone and specific groups of people who are related to flooding program and flood disaster preparedness.	manage the game environment.
Game of Floods	<ol style="list-style-type: none"> <li>1. This game is available in English version, which allows more people around the world to play this game.</li> <li>2. This game encourages group discussion between players, which helps improve understanding of interdependence for working together during crisis.</li> <li>3. This game is proper for those who want to gain novel knowledge to formulate strategies to deal with flood disaster events.</li> </ol>	<ol style="list-style-type: none"> <li>1. Multiplayers are required for the game benefits.</li> <li>2. Playing time is taken too long, which is 2 hours and more.</li> <li>3. Conflicts between players may lead to lessen the accomplishment of game purposes if the moderator is not sensible enough to manage the game environment.</li> </ol>
Flood Risk Awareness Game	<ol style="list-style-type: none"> <li>1. This game is suitable for children to learn the basic knowledge and preparation of flood disaster</li> <li>2. This game is taken in a short time, which reduce the demotivating factors like boring of players.</li> <li>3. Multiplayers are not required for the game benefits.</li> </ol>	<ol style="list-style-type: none"> <li>1. This game is available in Thai language only.</li> <li>2. The number of players is limited to 4 players.</li> <li>3. No discussion is required during the game play as the game mechanics get the players to the finished point, which decreases the opportunity to learn from each other.</li> </ol>

**CONCLUSION, DISCUSSIONS, AND RECOMMENDATIONS**

This present study sought to analyze and compare flood disaster board games. Secondary data were used for data analysis. Five board games about flood disaster preparedness were found, according to the search on the Internet. Nonetheless, three of them had enough information to conduct the further analysis, which included Flood Resilience, Game of Floods, and Flood Risk Awareness Game. These three board games were analyzed using Taxonomy of Promsri (2016, 2019b). Results of comparative analysis showed that Flood Resilience and Game of Floods were

appropriate for individuals in the advanced level of understanding of flood while Flood Risk Awareness Game was suitable for a beginner.

Although this present study attempted to compare flood disaster board game, the missing piece of related games found on the Internet was seen as the limitation of this paper. Besides, the real experience of playing these games were not taken as the researcher used only information on the Internet to conduct the analysis. The recommendation for the next study is for the researcher to play these games first to gain the real experience of gameplay prior to doing the analysis. Other commercial board games about flood should be reviewed and analyzed for further studies as well.

The institutions, organizations, and individuals who are engaged to flooding disaster preparedness and awareness development program should take the benefits of this study by utilizing analysis for creating new flood disaster board games for their community.

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