

REPORT OF RESEARCH RESULTS

Title: The Board Game Development for Enhancing Traffic Safety Learning in Youth and Adolescent

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Summary:

The research project of “The Board Game Development for Enhancing Traffic Safety Learning in Youth and Adolescent” aims to develop boardgames for improving traffic safety, and raise awareness and enhance learning on traffic safety among youths through the board game. This project is applied research as Research and Development (R&D) which is mainly focus on youth and adolescent, as well as commuters. The main tool of the research is a boardgame called “Dee-Riders”, role play of delivery rider/driver, and card game of traffic signs are included. These tools were developed from the field observation and interviews, with the concept of transportation and traffic accident, the concept of safety culture, the concept of safety awareness, and the concept of KAP (Knowledge-Attitude-Practice) model. The research result shows a significantly better understanding after playing these games at the significant level, with the value of 0.05, and the game was highly effective in building awareness of road traffic safety, with the average score of 4.35 (S.D. = 0.727). However, the result explores the significant fundamental factor to drive traffic road safety attitudes and behaviours which is a lack of information on and general understanding of road safety and traffic signals. Therefore, to raise awareness and enhance learning on traffic safety should drive in 3 levels: 1) in family level, to instill conscience of the road safety concept, 2) in educational level, providing knowledge, skill development, and training, as well as using boardgame as learning tools which is appropriate to the age, and 3) in the community/society level, the social structure should be adjusted to ensure fair implementation of laws and collaboration from all sectors regarding traffic management.

Aim of Research: This research objectives are to 1) develop boardgames for improving traffic safety, and 2) raise awareness and enhance learning on traffic safety among youths through the boardgame.

Method of Research & Progression: This is regarded as research and development (R&D) project, which develops knowledge into a learning process for road traffic safety. The concepts of transportation and traffic accident, safety culture, safety awareness and the KAP model were applied to question the commuters in traffic road safety situation and, also, to develop the boardgame. It is divided into two phases:

1. The first phase is qualitative research. The phase includes a field study and interviews with road users from various sectors, including pedestrians, street vendors, motorcycle riders, motorcycle taxis, taxi drivers, traffic police, and security guards. The objective is to review significant causes of road accidents and perception on driving behaviour.
2. The second phase is design and development of a board game.
 - 2.1. Once causes of road accidents were gathered, the researchers were brainstorming to develop a boardgame. Our setup included:
 - 1) The objective of the board game: To foster awareness and learning of road safety

- 2) The significance of the board game: Challenges of greed. Players need to save money to achieve the goal set by the rule (40 coins). This is analogous to a real-life situation: income earning—or an economic factor—and the 'choice' to obey traffic rules
- 3) The targeted players: The primary target group is adolescents. The secondary target group is road users.
- 4) The type of the board game: Strategy game. Players have control over their play and path to the goal, under the condition that, if they break traffic rules, they must face punishment which will be decided by a dice.
- 5) The intended message: Players have to play the role of a delivery rider. Each square in the game contains a traffic rule. Players may design their play as they wish under the condition that they must complete the task within the time limit. (This is analogous to social pressure or the rules of a company with which people must comply, or else they will get fined.) However, if players break a traffic rule, they must take a risk of receiving punished and, if so, how heavy punishment will be. This is analogous to real-life scenarios, in which people also have to risk lives and possessions, both of theirs and of others. The traffic rules in the game were adapted from major causes of breaking traffic rules.

2.2. The board game was tested with a small group of the target groups which were divided into two groups: three people who had experience with board games and three who did not. The comments on preliminary development of the board game indicate that the game was complex, the instruction was unclear, and the game lacked interaction among players, thus making the game too independent and unappealing. Also, the game consisted of rather numerous components, which should be reduced in order to shift the focus of the game to planning, rather than the game's components.

2.3. After remodeling the prototype, the researchers hosted a board game competition. Before the competition, training was hosted to ensure parity between people with experience in boardgames and people without such experience. There were 40 participants for the purpose of analyzing the effects of and satisfaction from the board game to enhance awareness of road safety in adolescents. A card game was also developed so that the participant group could reflect their awareness of traffic rules and signs.

Results of Research: There are 2 main parts of the research results as follows.

1. Field study and interviews to reconfirm the causes of traffic accidents in Bangkok

From the field study, the commuters and relevant stakeholders were asked for opinions on major causes of traffic problems. Most answers point to behavior of commuters and lawlessness of both car and motorcycle drivers, primarily exceeding the speed limit. Other mentioned issues include jumping red lights, ignoring traffic signs, disobeying traffic signs, driving on the wrong side of the road, pulling over, driving under the influence of alcohol, using mobile phones while driving, and parking in no-parking zones. When questioning about the reasons behind this action, it shows that economic factor, income, is one of the factors affecting driving behaviour, especially violating of the red light and riding against the flow of the traffic. There is an interesting viewpoint from riders that these behaviours including parking along the roadside even there is red-white strip on the footpath because if they are close to the shop or the restaurant, they can get more orders, which means they are likely to earn more income. This reflects the competitive situation among riders.

2. Board game and card game development to enhance awareness and learning of road safety

The board game 'Dee-Riders' was developed as the main tool for the present research, along with a card game about traffic signs for players to reflect their understanding and awareness of road safety during the game. A pro-test and a post-test were also included in this step. Examples and tentative details of the game are given below.



(Examples of the board game, the instruction, and the game's components in the instruction)



(Example of traffic signs in the card game to test awareness and understanding of traffic signs)

Moreover, the researchers also devised a pre-test and a post-test on understanding and awareness of traffic rules, consisting of ten four-choice questions. Before the trial game, we also hosted an informative session on road accident scenarios, causes of road accidents, and traffic rules. There was also an evaluation form for the board game.

2.1 On Understandings of Traffic Rules

After hosting the competition of the board game 'Dee-Riders' and its card game, the result demonstrates that most players gained significantly better understanding of traffic rules, with the score of 0.05. The average score of players' understandings before the game is 3.68 (S.D. = 2.048), which is at the low level. After the game, the average score rose to 8.95 (S.D. = 1.165), which is at the highest level. The findings show that adolescents and juveniles still lack information as well as awareness and do not understand meanings of traffic signals, signs, and basic traffic rules. These qualities are fundamental to road safety. They were unsure of meanings of signs, such as the no-parking sign, red-white or yellow-white stripes, and the no-overtaking sign. Some claimed that they had never seen or noticed certain signs or that they had encountered imprecise enforcement by police traffic. Enforcement by officials also plays an important role in real-life driving behaviour, For example, some disobey traffic lights or drive on the wrong side of the road yet are neither warned nor legally punished by officials. Such scenarios imply a lack of standards as well as a lack of equal and effective law enforcement.

2.2 On Enhancing Awareness of Road Safety Learning

Considering the evaluation form on enhancing awareness of road safety, the result shows that the game is efficient in fostering awareness of driving safety (The score of 4.35, S.D. = 0.727). This is owing to the multi-player nature of the game, which allows players to see tactics of co-players and thus enables them to review thinking and decision-making processes in driving. Moreover, the rules of the game allow players to decide if they will break a traffic rule. Should players choose to break a rule, they need to take a risk of receiving punishment — which may cause them to pause or lose the game — or getting away with breaking the rule. This is analogous to real life scenarios, in which drivers also need to take a risk of getting arrested, having an accident, or facing a life-threatening situation each time they break a traffic rule.

However, when investigating the choice to break a traffic rule in the game, most of players chose not to make that choice unless necessary (The score of 4.05, S.D. = 1.046). Interestingly, through observing and interviewing the players, we found that making the choice to break a rule stemmed from two major factors. The first factor was an economic factor. In other words, players who wished to win by saving money to the amount set by the game had a stronger tendency to break traffic rules than to obey them. The second factor was pressure from the rules of the game. For example, when the time limit or the turn limit was about to run out, players were more likely to disobey traffic rules, such as jumping red lights and exceeding the speed limit. This corresponds to the real-

life context of Thai society, where the economic factor plays an important role in driving behavior. However, this board game may not be able to effect behavioral changes since it only reflects on thinking and decision-making processes and fosters awareness.

2.3 Knowledge Management (KM) to Raise an Awareness and Enhance Traffic Safety Learning

The participants reflects that this boardgame is more suitable for higher education level. Playing with children or young players, with poor judgment, may allow them to think that breaking traffic laws is acceptable and depended on their luck rather than instill traffic law discipline. Moreover, social norm sometimes confuse children in interpretation and application of traffic signs. Therefore, it is required that the correct traffic signs and traffic safety laws should be provided in the children and youths as a basis.

2.4 To Change Driving Behaviour to Support Traffic Safety

Road safety education should be simultaneously delivered in three levels. Firstly, consciousness of road safety should be instilled since the family level to “internalize” appropriate attitude in traffic safety. Secondly, in the school level, awareness should be fostered through knowledge development, skill development, and training included in curriculum. It is also better to conduct school context to support traffic safety learning as well as get support from different sectors through different channels. This is to ensure accessibility of diverse information. Third, in the community/society level, the social structure should be adjusted to ensure fair implementation of laws as “standardisation” and collaboration from all sectors regarding traffic management.

Future Areas to Take Note of, and Going Forward

For future studies, the plan is as follows:

1. The board game is to be tested with high school students from schools in Bangkok to study if it is a appropriate medium for teaching road traffic safety.
2. The boardgame is to be adapted into a simplified version because participants in the present study noted that the game was not appropriate for small children because it was complex and, for strategic planning, largely required thinking, logic, and discretion to play.
3. The result reflects a notable lack of information and understandings of traffic rules. Consequently, the researchers plan to further enhance awareness and access to correct information by using a simplistic medium to teach road safety in bigger circles and among various groups of people. This course of action will lead to availability of correct information as well as fostering understandings and consciousness of road safety from a young age.

Means of Official Announcement of Research Results

I already submitted to Social Research Journal with the article entitled “Boardgame Development to Enhance an Awareness in Traffic Road Safety Learning in Adolescents” (in Thai version), I also attached the cover and abstract pages as follows. However, the article is still in the process of review.

