i-SPiKE 2023

INTERNATIONAL EXHIBITION & SYMPOSIUM ON PRODUCTIVITY, INNOVATION, KNOWLEDGE & EDUCATION

"Optimizing Innovation in Knowledge, Education and Design"

EXTENDED ABSTRACT

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Assalamualaikum warahmatullahi wabarakatuh,

First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality . I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH

WELCOME MESSAGE (i-SPiKE 2023 CHAIR)

We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPiKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPiKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPiKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail
Chair
3rdInternational Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPiKE 2023)

INTRO TO STATS BOARD GAME©: A BOARD GAME TO UNDERSTAND STATISTICS

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ABSTRACT

This paper discusses the development, testing, and feedback analysis for an innovative board game that enables the players to understand basic Statistics which are regarding the understanding of measurement scale, type of variable, sample, population, sampling frame, sampling techniques, and data collection method with a given problem statement. Findings have shown that students interact and understand using the game better than the normal board and chalk method. *The game is ideal for those learning statistics for the first time and gauging their comprehension.* This board game differs from others in that the difficulty level varies depending on the colour of the question card. Preliminarytests were also conducted among some of the players to assess the usability level and their interest in using the board game. Results have shown 75 percent of the respondents supported better understanding while having fun with the use of the board game as part of the teaching and learning process.

Keywords: Basic Statistics, board game, fun learning approach

INTRODUCTION

The paper contributes to the theoretical (Board game) and empirical knowledge (respondents among Diploma students registered in the Statistics subject) on the use of board game among students. Stress and anxiety among students are not rare when they encounter Statistics and Mathematics subjects that eventually will deter them away from the field of STEM (Science, Technology, Engineering, and Mathematics) (Ali & Hassan, 2019; Puteh & Khalin, 2016). In fact, the most 'terrifying' subjects that induce strong feelings of worry among students will be statistics and mathematics (Cui et al., 2019; Kranzler & Anthony, 2022). In fact, using board games as a tool makes learning more interesting since the students/players feel that they are studying without being forced upon them (Rusli et al., 2022), also in a healthy competitive environment.

The Intro Stats Game© is played in a team or individually, to assess the understanding of players about measurement scales, types of variables, samples, populations, sampling frames,sampling techniques, and data collection methods by incorporating a given problem statement. Besides, students who do not grasp this knowledge will not be able to understand and interpret data effectively. Furthermore, most research findings ascertain that an individual must be able to

understand statistics to solve problems, critically think and make decisions based on the statistics outputs (Kesici et al., 2011). Therefore, this innovative game was developed with the intention that it can be a powerful tool to facilitate a deeper grasp of fundamental statistical concepts among learners of all levels by integrating instructionalcontent with fun gameplay.

OBJECTIVES

The main objectives of this study are:

i. to showcase a board game as an innovative game,
ii. to test the players understanding,
iii. to analyse the feedback of the players after playing the board game.

DESCRIPTION OF PRODUCT

The game is played individually or in a group. First step, a player rolls a dice and move the game piece according to the number that shows up. When the player land on a space, they must solve the question card according to the landed color. If he/she cannot answer the card,a penalty will be given according to the question card colour whereby: (1) if the player get a yellow card, he/she will lose a turn; (2) if the player get a green card, he/she will need to move back 1 space, and (3) if the player get an orange card, he/she will need to move back 2 spaces. The winner will be the first game piece that reaches the finish space. Figure 1 shows some of the items needed to play the game.

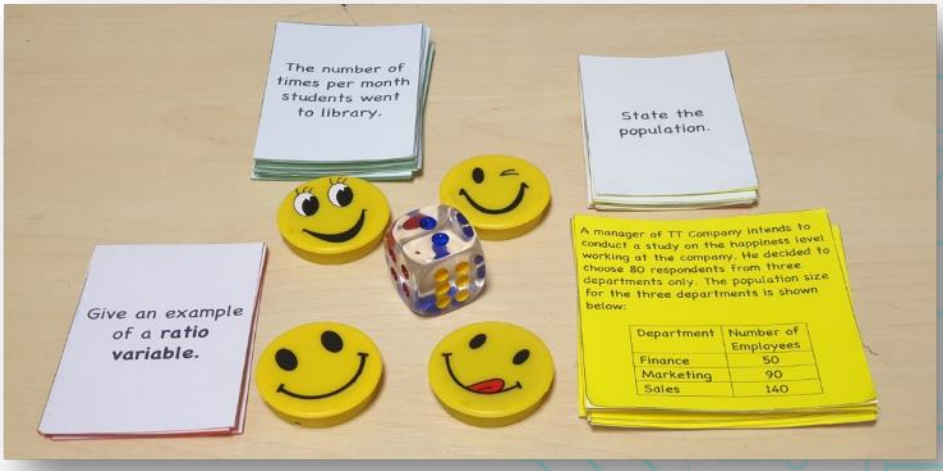

Figure 1. Image of game pieces, dice, and question cards.

FEEDBACK FROM RESPONDENTS

Figures on the next page show the feedback obtained from students after the board game was played among 49 undergraduate students. A 5-point Likert scale survey of questions included understanding and knowledge of the subject, an enjoyable and exciting game, and overall feedback distributed after the players finished the game. This Likert scale used ranged from (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree.

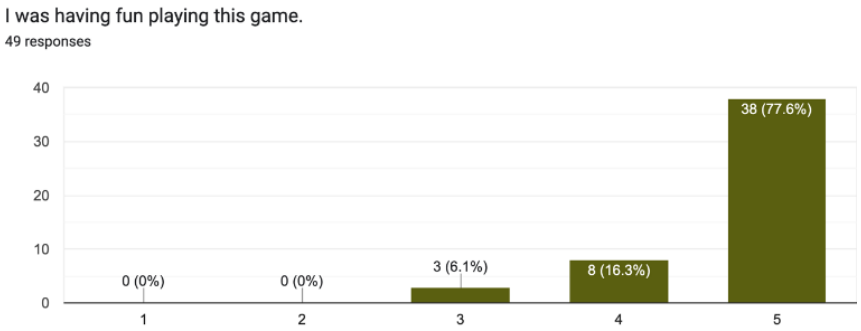

Figure 2. Survey results of the players after playing the game (fun).

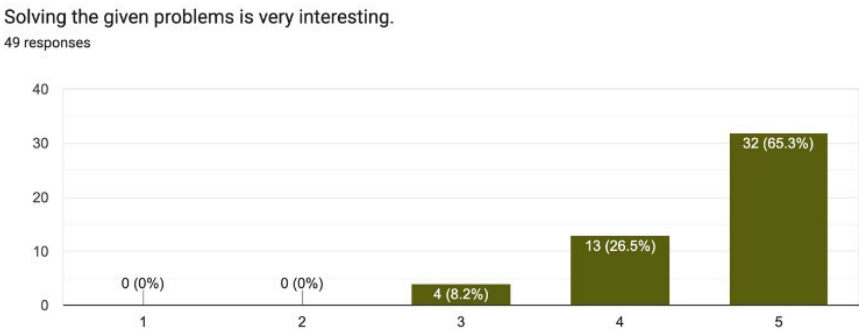

Figure 3. Survey results of the players after playing the game (interesting).

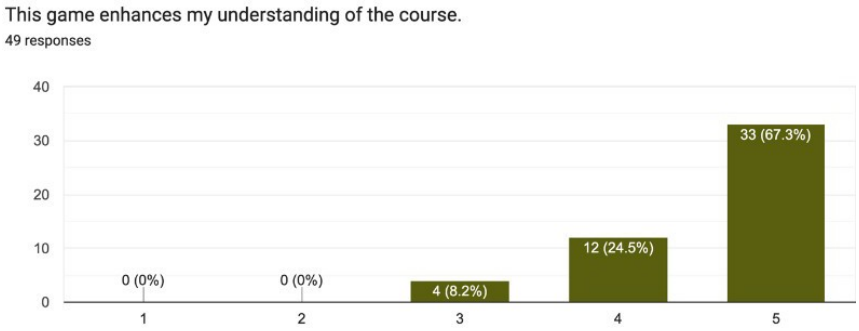

Figure 4. Survey results of the players after playing the game (able to understand).

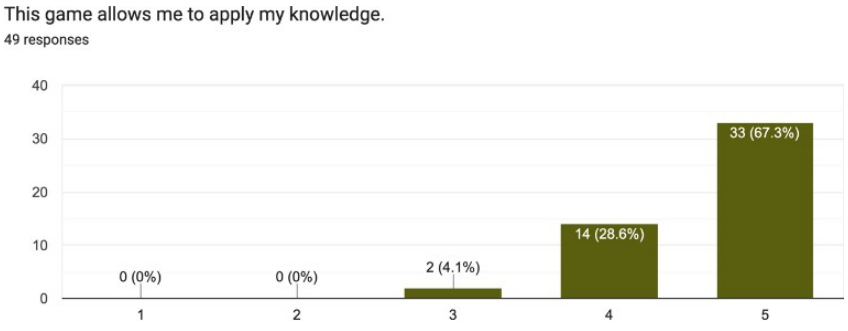

Figure 5. Survey results of the players after playing the game (able to apply the knowledge).

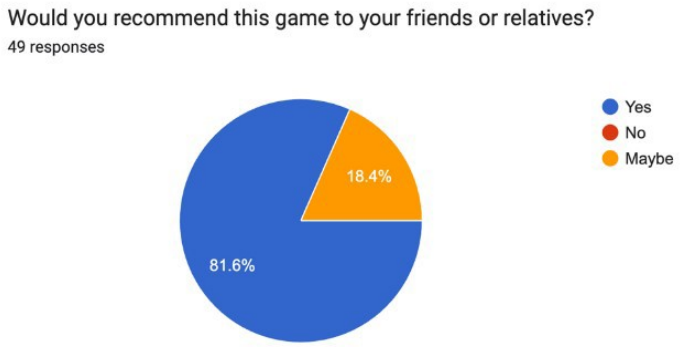

Figure 6. Game recommendation pie chart.

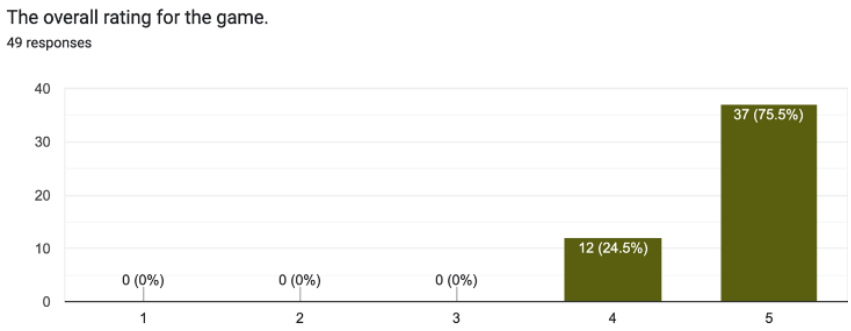

Figure 7. Bar chart of the overall perception of the game.

All the respondents answered positively after playing the board game, as shown in Figures 2 - 7. Most of the respondents agree that the game is fun (94%), attractive (92%), helps them understand more about the basic statistics (92%), and able to apply their knowledge (94%). Furthermore, the players will also recommend the game to their friends and relatives (82%). All the players agreed (25%) and strongly agreed (76%) with the game, which is a good sign that the game should be continued for others to play.

CONCLUSION

The Intro Stats Game© is beneficial to all students taking Introduction to Statistics subject, which is also applicable in other areas such as research analysis and decision-making processes. This innovation is also novel as it also adds to the scarcely researched but crucial Statistics subject. Furthermore, the exciting feature of having fun while playing the board game reduces the problem of anxiety among the students in their understanding of theStatistics course.

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