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THE POTENTIAL OF DIGITAL GAME-BASED LEARNING FOR ENGLISH VOCABULARY ACQUISITION AMONG MALAYSIAN ADOLESCENTS

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Abstract:

English is one of the mandatory subjects in primary and secondary school. However, few young Malaysians are proficient in the language, especially those living in rural areas. This study investigates the potential of using a word-search puzzle game as an alternative learning tool for English vocabulary acquisition. A word-search puzzle game was designed and developed. Additional dictionary features, such as words' definitions, synonyms, antonyms, and pronunciation, are included in the word-search puzzle game. An online survey was conducted to evaluate the game experience (i.e. game flow and game challenge), perceived usefulness, and intention to use the game. The participants of this research comprised of a total of 30 adolescents recruited using convenient sampling among the contacts of the researchers. Participants were asked to install and play the word-search puzzle game before responding to the questionnaire. The findings indicate that the word-search puzzle game indeed has the potential to improve English vocabulary acquisition among adolescents.

Keywords:

Adolescent, Word-search, English, Game, Learning

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Introduction

English is a universal language that many people in most countries can understand. English is recognised as a primary communication medium in many domains, especially in education, business and tourism. Many countries, including Malaysia, have made English a compulsory subject in primary and secondary schools. However, despite the various efforts made to expose the students to the language, the level of English proficiency is still not up to the expected standard (Rahman et al., 2017).

For students learning English as a second language (ESL), a dictionary is one of the resources for learning unfamiliar words. Dictionaries in the form of printed books, websites like Google Dictionary or dictionary.com, or digital dictionary applications are among the resources that can help them improve their vocabulary skill. Unfortunately, even language learning requires students' motivation (Azar & Tanggaraju, 2020). Without motivation, regardless of how many resources are made available, learning activities will not take place.

Educational games are effective in influencing students' attitudes and motivation to learn. For example, Annamalai, Lee, and Abdul Aziz (2019) developed a mobile game for learning mathematics. The study shows that students actively participated in the learning activities while using the game application. The creative use of audio, video, text, image, and animation effectively enhanced the learning process. Similarly, Ibrahim, Ang, and Choong (2020) developed a casual game to encourage players to reuse waste materials. Indirectly, players learn how to sort waste materials for recycling as well as reuse the materials and turn them into crafts. Tuan Muda, Hamzah, Saad, Mohamed Saufi, and Wan Nasharuddin (2019) developed a speech therapy game specifically for toddlers. The content includes alphabet letters, counting, animal sounds, matching words, puzzles and short stories. The speech therapy game is acknowledged as beneficial for slow speech learners.

In addition, Milkova, Vymetalkova, and El-Hmoudova (2015) recommended using puzzles as a useful and innovative learning tool. Puzzles help the student to be engaged in the learning activities. There are several types of puzzles for educational purposes, such as Word-search, Crossword, Double-Puzzle, Caesar Cipher, Cryptogram, and Polybius Square (EN101 Author, 2019). These puzzles can be designed to reinforce the players' vocabulary through puzzle-solving.

Word-search puzzles are often used as an instructional tool in a classroom environment, especially in foreign language acquisition. The teachers, particularly those specialising in ESL, use puzzles in teaching, while the other teachers use them as a recreational activity for students. Hedri (2017) stated that players could learn English through puzzles, as it helps with the letter and word recognition, confidence, independent learning and creativity, and vocabulary building. Besides, word-search puzzles are more effective than crossword puzzles for English vocabulary acquisition (Hedri, 2017).

This paper aims to understand the potential of using word-search puzzles as an alternative tool in learning English vocabulary among Malaysian adolescents. The methods that drove the study are explained in the next section, followed by the findings and conclusions.

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Method

This study employs the mGBL development stages (Zaibon & Shiratuddin, 2010), as depicted in Figure 1, to develop a word-search puzzle game called Hide and Seek. The four stages comprise Analysis, Game Design, Game Development, and Evaluation. In the first phase, ideas were brainstormed and categorised. Requirement analysis was conducted to identify the needs and requirements of the content, mobile technology, and end users. Due to the Covid19 pandemic, interviews were conducted using an online video-conferencing application. Three experienced users and three non-experienced users of vocabulary learning applications were interviewed to establish the requirements of the word search game. Concurrently, a comparative analysis review was conducted as secondary data gathering. Three existing applications, i.e. Word-search, Word-search-Free Word Game, and Words of Wonders: Search, were studied to identify the strengths and weaknesses of the existing applications.

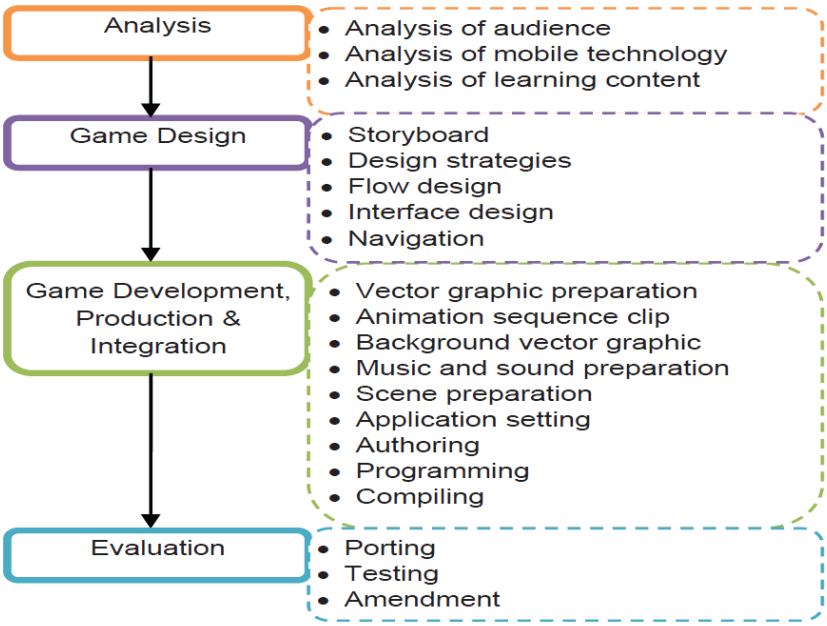

Figure 1: mGBL Development Stages

Source: (Zaibon and Shiratuddin (2010)

Once the requirements for the game were established, wireframes and storyboards were illustrated. The game flow, interface and navigation were drafted and designed (see Figure 2). Then, the game prototype was developed. What makes the game different from the usual digital word-search puzzle is that this game has built-in dictionary features into the game. While playing this word-search puzzle game, the player will be provided with the words' definitions, synonyms, antonyms, and pronunciation. With these additional features, the player could learn more about the word without having to pause/exit the game to look up the word in a dictionary. Finally, the beta version of the word-search puzzle game was tested for the gaming experience, perceived usefulness and intention to use.

The paper aims to understand the potential of using word-search puzzles as a learning tool for comprehending English vocabulary among Malaysian adolescents. For this purpose, this paper adapted perceived usefulness and intention to use from the Technology Acceptance Model (TAM) by Davis (1989). The TAM model has long been used to help predict users' acceptance of technology for various reasons (e.g. Kamal, Shafiq, & Kakria, 2020; Salloum, Alhamad,

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Al-Emran, Monem, & Shaalan, 2019; Yuen, Cai, Qi, & Wang, 2021). Several related studies employing TAM can be found in the literature from the perspective of mobile learning, including language learning. For example, Chavoshi and Hamidi (2019) investigated the factors influencing the acceptance of mobile learning in Iran. Similarly, Pindeh, Suki, and Suki, 2016) discussed the potential of mobile applications in preserving the Kadazandusun language, an ethnolect for an ethnic group in Sabah, Malaysia. Particularly, Abdul Ghani et al. (2019) conducted an empirical study to examine users' acceptance of learning Arabic Language using a mobile game. This justified the adaptation of TAM in this paper.

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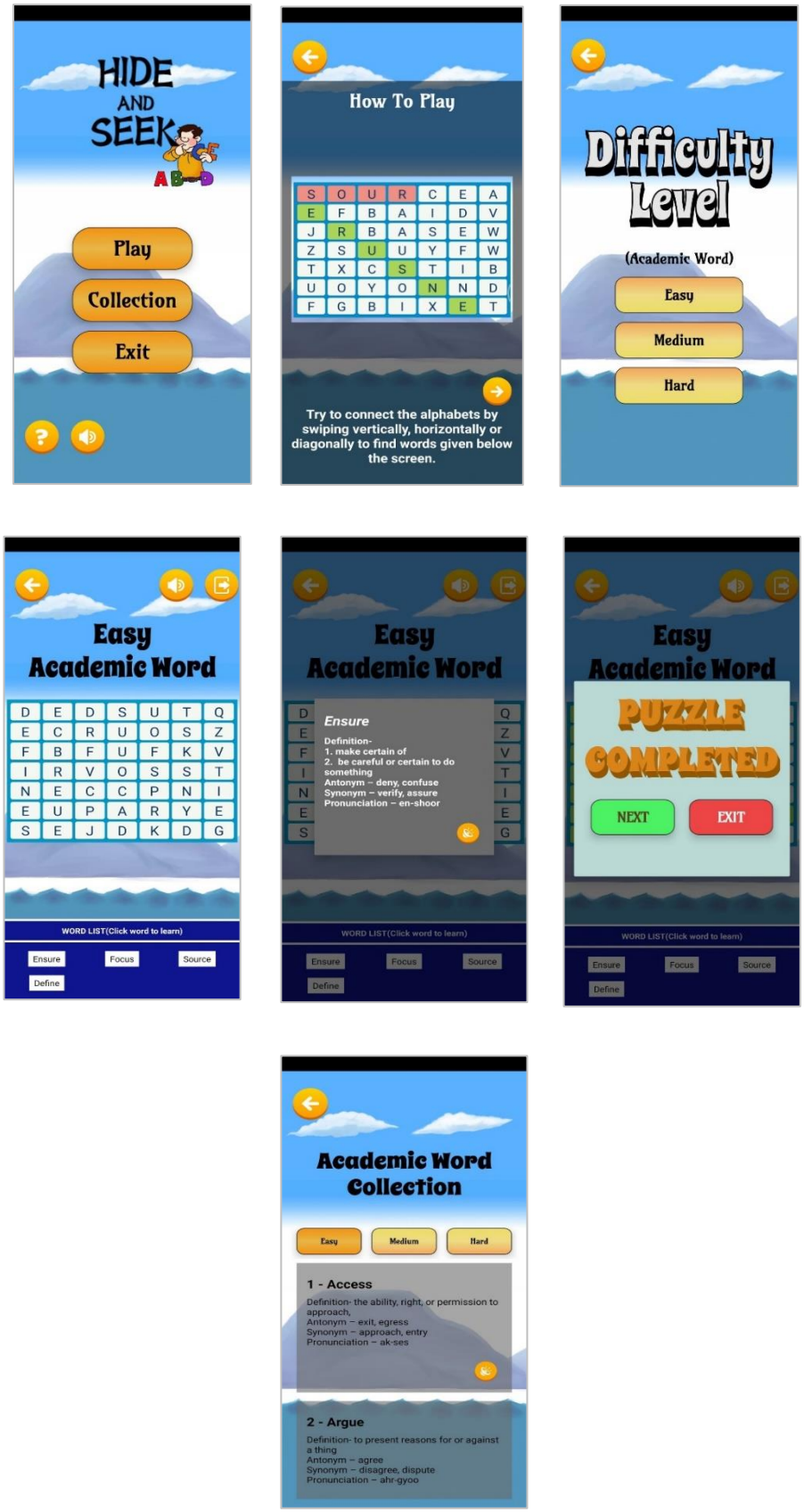

Figure 2: The Designs of Hide and Seek Word-Search Puzzle Game

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The Hide and Seek game is a word search puzzle that lacks the characteristics of a serious game. Hence, only the perceptions of game flow and game challenge of game experience's instruments from IJsselsteijn, de Kort, and Poels (2013) are adopted in this research. For this purpose, an online survey was conducted due to Covid19 pandemic and the Movement Control Order (MCO). Thirty participants, recruited using convenient sampling, voluntarily took part in the survey. According to Hogg, Tanis, and Zimmerman (2015), a sample of 30 is sufficient in most studies. Besides, Louangrath (2017) calculated the minimum sample size based on the type of response scale used in surveys. The author found that the minimum sample of thirty for a five-scale survey is adequate.

The participants were asked to fill out the demographic section during the survey. Then the participants downloaded and installed the game on their mobile phones. After they played the game, they were required to fill up the questionnaire to state their perceptions of the game. Five Points Likert Scale was used to measure the respondent's agreement with the statement given in the questionnaire. A comment box was provided at the end of the questionnaire to get additional feedback from the respondents.

Findings

The participants encompass 53% females and 47% males. About 47% of participants were between 13 and 17 years old, and another 43% were aged between 18 and 19. Most of the respondents (67%) acknowledge that they are casual gamers who play games to have fun and socialise. In comparison, the rest (33%) are intentional learning gamers who are conscious of learning when playing a game. Figure 3 shows the visual representations of the demographic data.

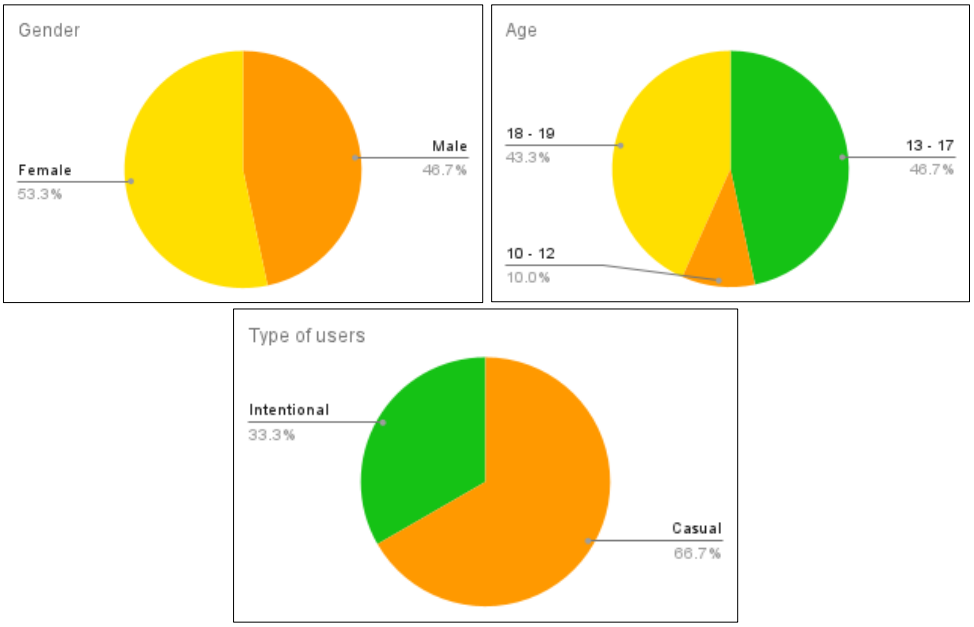

Figure 3: Demographic Data of Research Participants.

Most participants (77%) have experience playing word-search games, while 23% had never played the game before. Among the experienced participants, 22% of participants play the game occasionally, 35% of participants play it sometimes, 13% of participants often play it,

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and 30% always play the game. Approximately 64% of participants agreed that word-search games help them learn English, while only 3% disagreed. The remaining participants (33%) did not have a clear answer to this statement. Figure 4 shows the visual representations of the participants' former experiences with similar games.

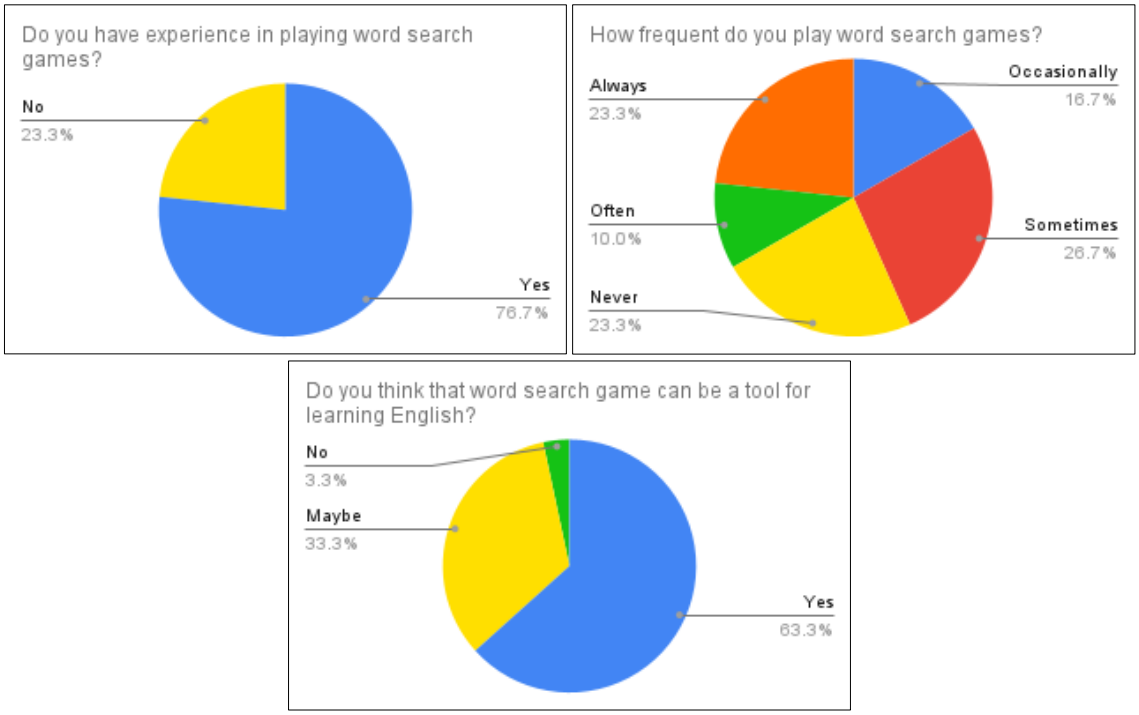

Figure 4: Former Experience with Similar Games.

Perceived Game Flow Experience

Figure 5 shows the descriptive statistics of the perceived game flow experience. Most participants either agreed or strongly agreed that they were fully occupied with the game. None of the participants disagreed with this statement. Similarly, 67% of participants agreed or strongly agreed that they concentrated deeply on the game. While other instruments also showed positive feedback to the statement, however, the number of disagreement or neutral responses increased. For example, 23% of participants disagreed that they forgot everything around them when playing the game, while another 27% were neutral. Likewise, 27% of participants disagreed or strongly disagreed that they lost track of time when playing the game. Another 33% of the participants neither agreed nor disagreed with the statement. For the statement 'I lost connection with the outside world', 7% of the participants strongly disagreed, 20% disagreed, 30% were neutral, another 30% agreed, and 13% strongly agreed. Overall, participants perceived a positive game flow experience with the Hide and Seek word-search puzzle game.

Perceived Challenges of Game

Referring to Figure 6, most participants (97%) either disagreed or strongly disagreed that they felt pressured when playing the game, and only one participant was neutral. About 33% of the participants disagreed that the game was challenging. Another 30% of the participants are neutral, while the rest think the game was challenging. Notably, all young adolescents (between 10-12 years old) think that the game is challenging, indicating that they are less proficient in English vocabulary and thus find the game more challenging. Most participants (83%) either

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disagreed or strongly disagreed that they felt time pressure when playing the game, while the rest were neutral. Similarly, 73% of the participants disagreed or strongly disagreed that they had to put much effort into the game. None of the participants agreed with the statement. In conclusion, the game is perceived as less challenging.

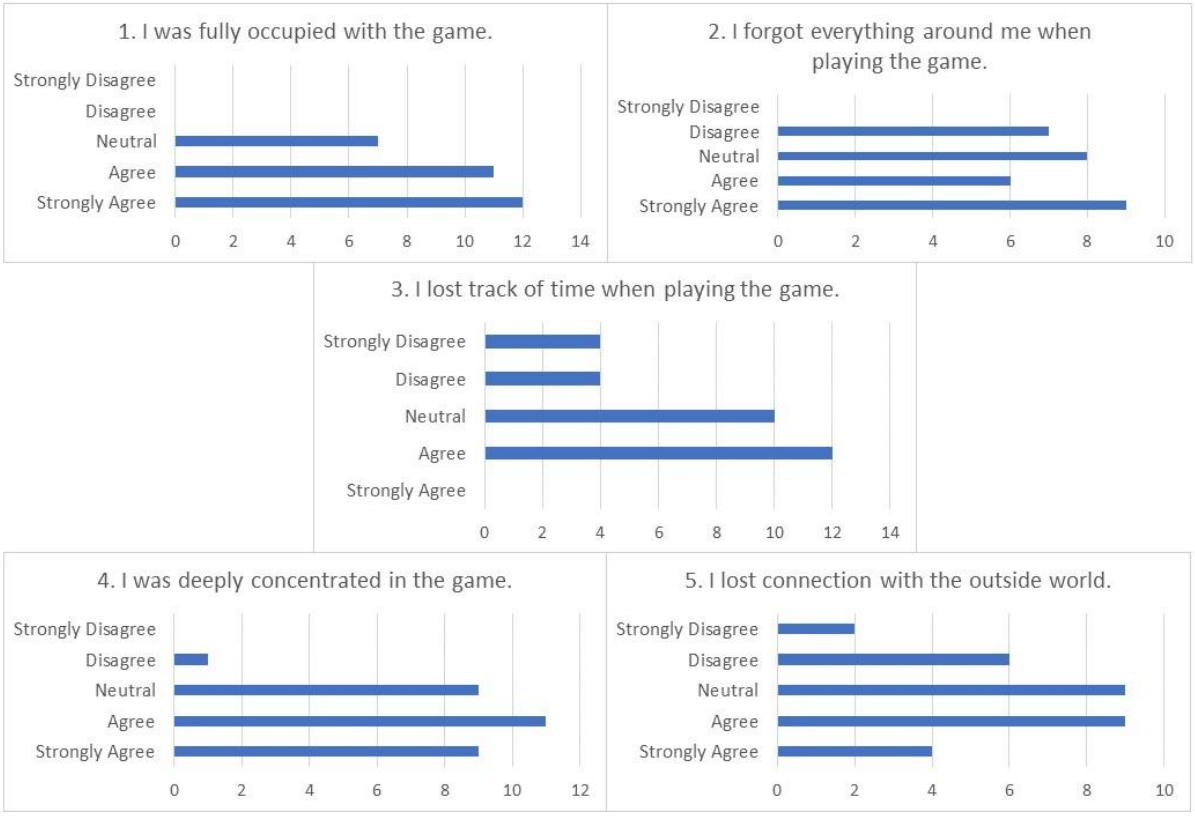

Figure 5: Descriptive Statistics of Perceived Game Flow Experience

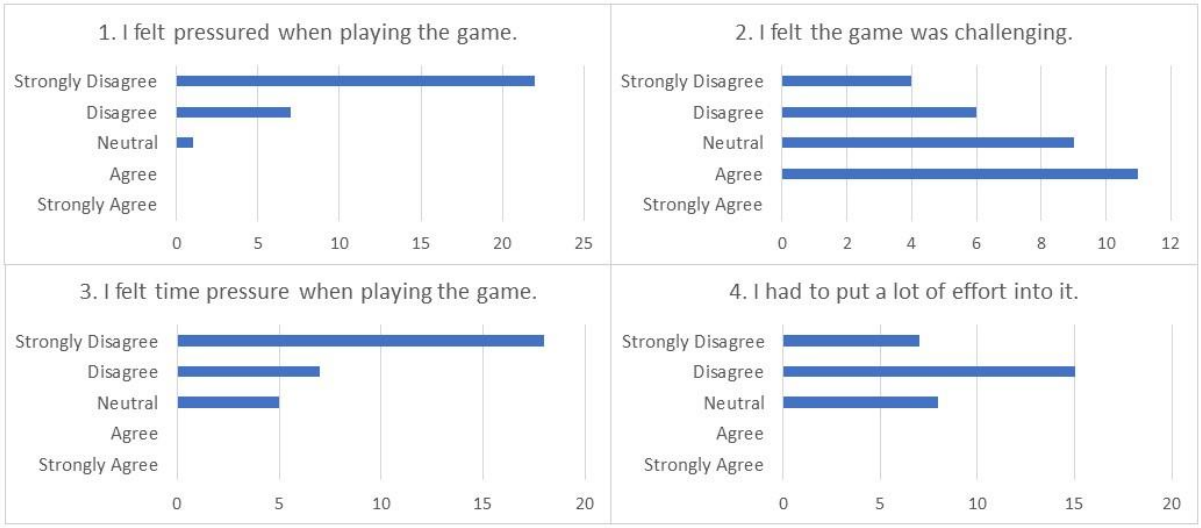

Figure 6: Descriptive Statistics of Perceived Challenges of The Game

Perceived Usefulness

Overall, descriptive statistics show positive feedback on the perceived usefulness of the Hide and Seek word-search puzzle game (see Figure 7). None of the participants recorded

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disagreement over the statements related to the dimension of perceived usefulness. A minority of 11% of the participants were neutral. Hence, the game is perceived as useful for learning English.

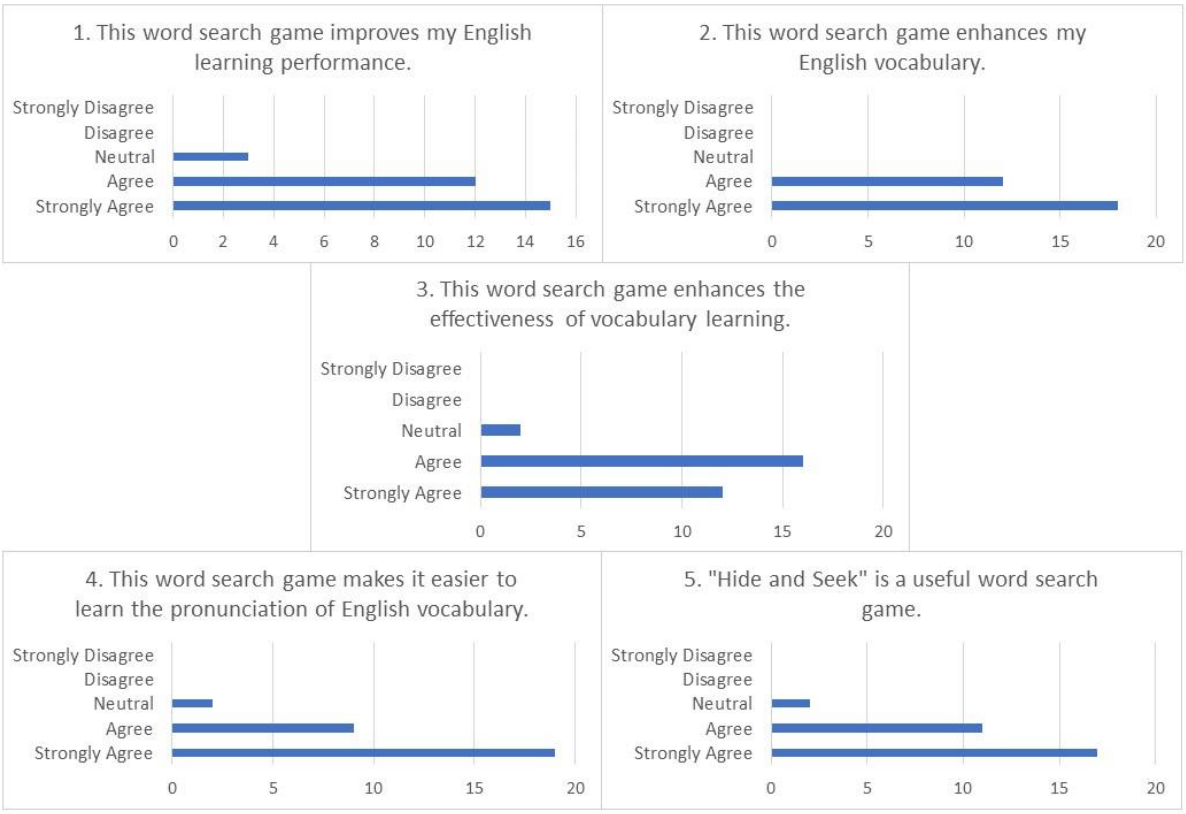

Figure 7: Descriptive Statistics of Perceived Usefulness

Intention to Use

Referring to Figure 8, 80% of the participants agree that they intend to use Hide and Seek frequently and repetitively, while the remaining participants stand neutral. Similarly, 63% of the participants intend to keep playing the game Hide and Seek both now and in the future. Most participants (90%) intend to share the game with their friends. None of the participants disagreed with the statements related to the dimension of intention to use. In conclusion, participants show that they intend to use the word-search puzzle game in the future.

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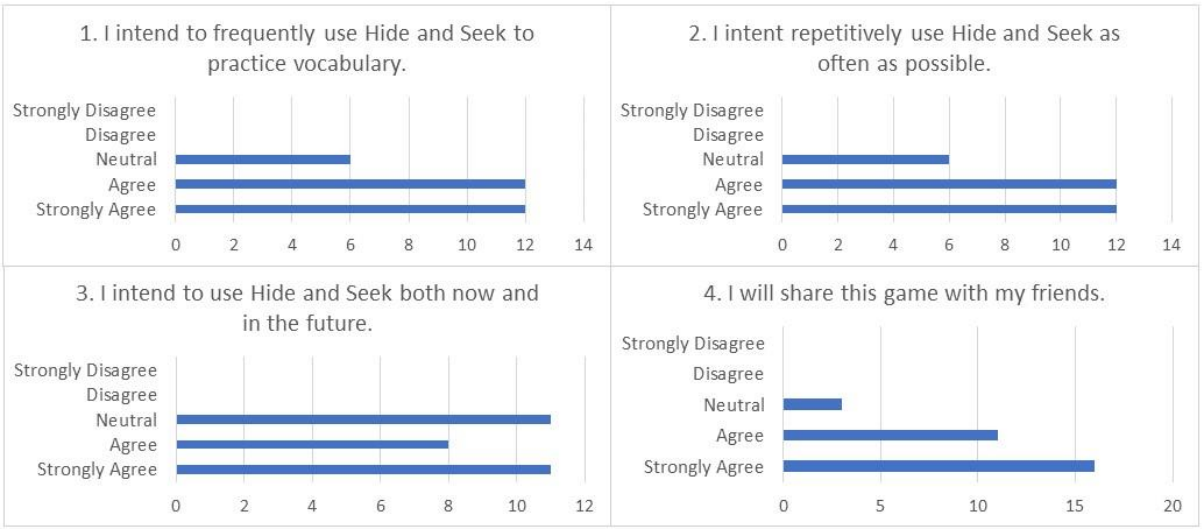

Figure 8: Descriptive Statistics of Intention to Use

Conclusion

Hide and Seek is a game-based learning application that aims to help adolescents learn English vocabulary. This game has value-added elements that make the learning process fun and engaging. Concisely, the overall result of the game evaluation shows positive feedback on the perceived game flow experience, perceived usefulness and intention to use. However, the word difficulty in the game should be designed above the level of language proficiency of the target players. In this way, the learning achievement of the players will be more noteworthy. In conclusion, word-search puzzle games can potentially improve English acquisition, especially among young students.

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