

A Gamification Approach to Teaching and Learning for Pupils with Special Needs in Primary Schools

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Abstract: This concept paper discusses the gamification approach used by special education teachers in teaching and learning for students with special needs in primary schools. Gamification is a game-based learning consisting of rewards, points and achievement badges that help teachers create a fun learning environment. The main focus of this concept paper is to break down barriers faced by special education teachers in applying gamification approaches. Time factors and burden of work, training, perceptions and attitudes of teachers and facilities as well as support are obstacles identified in the application of gamification approaches to students with special needs. In addition, this concept paper also discusses the effects of using a gamification approach in teaching and learning for students with special needs. Suggestions were also made to increase the use of gamification approaches so that students with special need benefit from teacher teaching.

Keywords: gamification, teaching and learning, students with special needs

INTRODUCTION

The effective and affective teaching and learning process depends on the approach used by the teacher. This is because, systematic and effective teaching and learning processes can produce creative, innovative, knowledgeable, scientific and potential individuals (Normah, 2016). Thus, the aspiration of the National Philosophy of Education to produce people who are skilled, capable and contributing to the development of the country can be achieved. In the current learning process, teachers no longer teach knowledge and provide students with answers to examination questions (King, 2010) but teachers act as guides to students so that students can build on their own knowledge with the skills provided (Joyce, 1978). Therefore, Tomlinson et al. (2013), states that teachers' wisdom in choosing appropriate teaching strategies can create effective learning that enhances student motivation.

Accordingly, teachers should have the awareness, skills and willingness to accept new knowledge (Wong Chin Ho et al. 2014) in applying a variety of new approaches to the teaching and learning process in order to attract students to further learning (Ahmad and Jingga, 2015). The rapid advances in Information and Communication Technology (TMK) have led to many changes in teaching approaches and techniques including special education teachers. The existence of a wide range of latest applications and software has helped special education teachers diversify their student-centered teaching methods and integrate ICT in teaching and learning. One approach that has direct implications for the teaching and learning process is the gamification approach.

Gamification, which is game-based learning (Deterding, Sebastian, et al. 2011) is one of the most appropriate and effective approaches for all pupils including students with special needs. The term gamification was first used by Nick Pelling in 2002 in the presentation of the Technology, Entertainment, Design (TED) Council. Gamification comes from the English word gamification which means an approach that applies game techniques to the teaching and learning process. This approach not only makes the teaching and learning process more interesting but also makes it more interactive and effective. Gamification is a process by which an activity becomes a formal game activity (Farber, 2015; Gilbert, 2016; Kapp et al. 2014;

and Tan, 2015). This statement clearly shows that gamification is a game-changing method that helps teachers create a fun teaching and learning environment.

Gamification is made up of various applications such as Kahoot, plickers, video games, online games, quizzes and more. Gamification is a popular method of promoting a particular behavior, enhancing motivation and increasing student engagement. One of the features of gamification is that it gives players immediate feedback. This statement was supported by Kapp (2012) who stated that the game provides rewards and feedback instantly allowing players to experience their achievements. Rewards and feedback immediately enable students with special needs to actively participate in the teaching and learning process. In addition, games provide opportunities for students to solve problems and encourage true learning (Gee, 2003). This means that through games, students with special needs can learn to solve problems well.

Studies show that gamification is a new trend in today's educational system that includes digital games that can be integrated into the learning of students with special needs. In addition, the findings of previous studies also prove that the gamification approach has had a positive impact on students with special needs to develop their potential in various aspects such as cognitive, social, and emotional. But the use of gamification among special education teachers is still a question. Therefore, this concept paper aims to identify the obstacles and challenges faced by special education teachers in applying gamification approaches in the classroom.

LITERATURE REVIEW

Pupils With Special Needs

According to the Ministry of Education in the Special Education Code of Practice (2014), students with special education are students who are certified by a private or governmental specialist as students with visual, hearing, speech, physical, learning or other combination of disabilities. Special needs pupils are children who have difficulty learning and cannot attend normal education like normal children. Therefore, these students need a specific and appropriate curriculum that can benefit them in developing their individual potential (Heward, 2003).

According to Sheila & Samsilah (2006), students with special needs are students who need different teaching and learning techniques and strategies than those in the mainstream. This is due to the fact that special needs of pupils are not focused, are easily distracted, do not follow instructions, and their poor memory which makes special education teachers face difficulty in establishing effective teaching and learning processes. In order to achieve effective learning processes, special education teachers need to choose the right approach so that students can achieve the set learning objectives. Therefore, the gamification approach is a very suitable approach as it is a student-centered approach that will attract and encourage students in learning including special education students (Figuerola Flores, 2015; Simoes et al. 2013).

Gamification In Special Education

Statistics in the United Kingdom 2014 through the Global Gaming Stat indicate that 74% of K-8 educators use digital games to encourage learning and 33% use games to assess students' skill levels while 29% reported performing formative assessments to determine basic skills and knowledge of students. In addition, not only do teachers use games to educate young people but 56% of parents say that the games used in this study have a positive impact on their children. This means that gamification in education is not something new, but many parties including teachers and parents are using gamification approaches to create interactive and enjoyable learning for their students or children.

The gamification approach provides a variety of positive impacts on students with special needs in developing their potential. Motivation is an element that greatly influences student achievement. Generally, students with special needs have low levels of motivation to learn. This makes them less willing to engage in the teaching and learning process. The gamification approach enhances the motivation of students with special needs to continue learning while completing assigned tasks. The findings of the study by Gooch et al. (2016) suggest that the use of 'classDojo' gamification in teaching has increased motivation among dyslexic students in primary school. High motivation leads to the achievement and accomplishment of students with special needs academically.

In addition, the ability of students with special needs to manage themselves without the guidance and assistance of others is extremely difficult. The pursuit of gamification can serve as an intervention to foster the social skills and desirable behaviors among students with special needs. The results of the Ya-Shu Kanga

and Yao-Jen Chang (2018) study show that the 'The Kinect sensor' gamification approach allows 6 pupils with Autism special needs to show improvement in taking bath without guidance. The study of Dickinson et al. (2016) shows that games like Nintendo (Kyoto, Japan) and the "Mario & Sonic at the Olympics" software package have the potential to improve Autism kids' social skills.

The gamification approach enhances the achievement of students with special needs. Students with special needs often have problems in reading, writing and counting skills. There are various empirical studies that suggest gamification to be an alternative medium for increasing student engagement that can improve their academic performance. The results of Pede's (2017) study show that the use of the Kahoot app has enhanced vocabulary learning and understanding in Science subjects among students with special needs. The use of gamification in the learning process enhances their concentration and memory so that students do not forget quickly because of the features of the software which have interesting pictures, colors and music. This statement is supported by Plump, C. M., & LaRosa, J. (2017) where the music, color and fun provided by the Kahoot application can encourage students to focus more and to make a positive impact in the classroom.

'Serious game' is an effective video game for learning and practicing students' skills and knowledge in a realistic environment and understanding the consequences and consequences of their actions without facing the real world. This gamification approach encourages students to be fearless and not afraid of making mistakes in which every error can be corrected (Hanus and Fox 2015) and result in an increase in the students' self-confidence that they become dare to try. Serious games involving people with cognitive disabilities can improve their skills, knowledge and trigger their problem solving skills. The findings of the study by Bourazeri et al. (2017) explain that EnCity games encourage young people with Down Syndrome to become more actively involved in the community. This situation directly enables students with special needs to develop social skills effectively and efficiently.

FINDINGS AND DISCUSSIONS

According to the findings of previous studies, gamification approaches can encourage active involvement in the teaching and learning process (Kennedy-Clark et al. 2011). This is because gamification features such as fun, immediate response, use of a variety of colors, images and sounds can attract and enhance students' focus on teacher's teaching. However, there are some obstacles that make special education teachers use lesser gamification approaches in their teaching and learning process.

Task and Time Expenses

Selecting and applying an appropriate approach based on the students' special learning abilities is the biggest challenge faced by special education teachers (Hannah et al. 2019). Many studies have shown that special education teachers experience greater stress compared to mainstream teachers (Bettini et al. 2017). In addition to teaching, special education teachers take additional time to carry out other tasks as they face time constraints to plan and apply new approaches such as gamification in the teaching and learning process. Special education teachers are often burdened with other tasks such as co-curricular activities, school activities (Ghafar and Sanisah, 2006) and clerical tasks (Prather-Jones, 2011; Albrecht et al. 2009). Butt and Lance's (2005) study showed that 96% of teachers work in the evenings and 90% of teachers work on weekends. The burden of work and time constraints caused by overtime have made special education teachers to be less motivated and interested in adopting a gamification approach in the teaching and learning process.

In addition, a tight schedule is also one of the obstacles that special education teachers face that makes them not use gamification in the process of teaching and learning. The shortage of accredited and trained teachers (Hannah et al. 2019) is a major reason for special education teachers having a tight school schedule. The findings of Ghafar and Sanisah (2006) show that special education teachers have to teach 23 to 26 periods a week which even reacher more than that often. The tight timetable has led special education teachers to face time constraints in learning and applying information technology innovations such as Gamification into their practice.

Individuals need time to learn new skills including teachers (Abdul Halim et al. 2016). To equip themselves with the knowledge of gamification, teachers need to explore the application of gamification that they want to use and be prepared to address the technical issues they will face. When teachers know how to use the gamification application, the teacher will then have to integrate the application into the teaching and learning process based on the students' abilities and see how the application of the gamification works for the them. This process can take long time to be mastered, but special education teachers face time constraints. According to the findings of Sánchez-Mena & Martí-Parreño (2017), lack of time, training, materials, and

financial support is a challenge for teachers in applying the gamification approach to their teaching and learning processes.

Teacher Attitudes and Perceptions

The findings of Ed Smeets's (2005) study suggest that primary school teachers are more likely to use skills-based software than open source software. In open software, teachers often use word processing software such as Microsoft Word and Microsoft PowerPoint compared to other open source software. Generally, teachers use ICT to present teaching materials or assignments to weaker students in remedial programmes. Special education teachers should develop positive perception about the use of gamification. According to Hashim and Sharipah Khadijah (2001), although teachers are prepared and interested in the use of computers, negative attitudes have led to them not using computers in teaching and learning. They should look for opportunities to increase their knowledge of gamification approaches.

In addition, the level of confidence in the use of ICT in the teaching and learning process is also one of the obstacles in the use of gamification in the classroom. This is because the use of gamification requires ICT skills. Many researchers find that low self-esteem is one of the main factors preventing teachers from using ICT in the classroom (K. Abdullah Bingimlas, 2009). Teachers who have good computer skills do not necessarily have high confidence in using ICT in the classroom. According to Beeta (2004), most teachers are afraid of using ICT in the classroom because they have students who are more proficient in the technology including students with special needs. The findings of the study by (R. M. Jamieson-Proctor et al. 2006) indicate that male teachers are more confident in using ICT than female teachers.

In addition, special education teachers perceive that the use of a gamification approach causes special education students to focus more on gadgets such as computers, tablets and Chromebooks rather than the teacher's teaching. The findings of Sánchez-Mena & Martí-Parreño (2017) study, explain that some teachers consider the use of a gamification approach in the classroom to be disruptive to teachers and students who are nearby because one of the features of students with special needs is that they are easily distracted by noisy environment. Classroom noise caused by the excitement of learning using a gamification approach causes other students to not focus on the teachers who teach them. If special education teachers are negatively inclined about the use of Gamification, they are less likely to use it in the classroom. Therefore, the attitudes and perceptions of special education teachers greatly influence the use of gamification in the classroom and there needs to be action to reinforce positive attitudes and perceptions.

Facilities and Support

Although the Ministry of Education Malaysia (MOE) intends to bring the country's education system towards the 21st century, the facilities and infrastructure of the schools, especially the rural schools, and their special education Programs are still in poor condition. An amount of over RM 6 billion has been spent by the MOE to complement the ICT infrastructure in schools around the world (Sekar.K, 2017) but there is still a shortage of ICT facilities such as computers, tablets and so on. The use of Gamification tools such as Kahoot, and Quizzes requires more than one device such as a computer, laptop or tablet as it is handled individually, in pairs or groups. The lack of adequate technological tools has led to special education teachers integrating less gamification approaches in the classroom.

In addition, poor internet access is also an obstacle for special education teachers in adopting a gamification approach. The findings of the study by Hasliza et al. (2016) stated that although various efforts were made to equip schools with 4G internet access, there were still some schools that did not have access to the internet, especially in rural schools. The isolation of special education classes such as at the back of the building causes problems with good internet accessibility. Gamification applications such as Edmodo, ClassDojo, Kahoot and others require a good internet connection to use. But poor internet access caused teachers including special education teachers to use their own internet quota in schools. This, in turn, lowers motivation and creates dissatisfaction among special education teachers to use gamification because they have to use their own internet access.

In addition, communication and support with administrators also impede special education teachers from using gamification in special education. Teachers and students of special education are often considered second class by school administrators and lacking in financial allocation (Siti Goodwill & Zetty N., 2018). Inadequate services have caused special education teachers to avoid facing school administrators for access to technology facilities such as computer equipment and hardware. Although special education teachers use various methods to enhance the potential of students with special learning needs, the lack of support and

appreciation by the administrators (Gee & Gonsier-Gerdin, 2018) has led special education teachers to be less motivated to adopt various innovations such as gamification in the teaching and learning process.

Exercises

Lack of exposure and training on gamification is also an obstacle that makes special education teachers less likely to use this approach in the teaching process. According to Carolyn M, & Julia LaRosa (2017), most educators lack the opportunity, experience and understanding to use digital games in the classroom. Special education teachers have no exposure to the benefits of using technology in their teaching even though most of the applications available online are free of charge. In-service training often conducted at the school / District Education Office / State Education Department level lacks focus on gamification and its advantage which results in teachers lacking exposure and knowledge of gamification that helps students to develop motivation and interest in learning (Kiili, 2014), create a rewarding experience for players (Schell, 2014) and promotes active learning and enhances problem solving among students (McGrath, Naomi & Bayerlein, 2013).

RECOMMENDATION RESOLUTIONS

Gamification greatly benefits the teaching and learning of students with special needs. However, the issues and challenges that arise in the implementation of gamification prevent these benefits. Special education teachers need to work together to solve the problems raised to the root so that the benefits of gamification can be enjoyed together. Professional Learning Community (PLC) is a school improvement process that requires school leadership and its community to work collaboratively to enhance student excellence (Ahmad et al., 2015). The purpose of the PLC is to enable the school community to work in a team-friendly way to address the problems that arise in the school and improve student achievement. According to Henderson (2008), implementing PLCs in schools can improve student achievement. This is because special education teachers can discuss strategies and problems that arise when implementing gamification and find solutions together. The use of PLCs can help special education teachers to create and integrate gamification in the teaching and learning of students with special needs. Group discussions can help teachers find solutions to the challenges of integrating gamification.

According to Binti Isaac et al., (2013), teachers need to have willing to learn attitude in order for teachers to develop new knowledge over time. If teachers practice this behaviour, they will be updated with the latest developments. The practice of seeking new knowledge among special education teachers will lead them to seek new strategies in the field of education such as gamification. This increases the curiosity about gamification and special education teachers will learn how to produce and integrate gamification in teaching. Advances in the field of information technology have enabled individuals to access a wealth of information and knowledge through websites and youtube. Teachers should use these facilities to improve the quality of their teaching. In addition, teachers should also attend workshops and training offered by the MOE, NGOs and other mediums to enhance their knowledge in gamification approaches. The training and knowledge gained enables teachers to prepare and increase their self-confidence in the field of technology (Aswaniza & Rosadah, 2018; Chao et al., 2017; Ruppah et al., 2016).

Teachers who are positive and concerned about their students will always be ready and be willing to equip themselves with new knowledge. This attitude will have a positive impact on their teaching and learning. Therefore, special education teachers should strive to find solutions to improve their knowledge of gamification approaches and to be able to use them effectively in their teaching and learning processes in order to help students with special needs to develop their potential more effectively.

CONCLUSION

This concept paper is expected to provide insights and knowledge on the obstacles faced by special education teachers in applying gamification approaches to the teaching and learning process. Various barriers have been highlighted in this concept paper, including training, facilities and support, teachers' perceptions and attitudes as well as time constraints and workload in the use of gamification approaches by special education teachers. The main challenge of special education teachers is to educate students with special needs with various levels of disabilities because according to Syed Ismail and Ahmad Subki (2012) students with special needs have very low intelligence compared to mainstream students. Therefore, teachers should be creative and keen in choosing the right approach so that students with special needs can become skilled people in line with the Philosophy of Special Education. According to Giang (2013), up to 40% of new skills

learning can be enhanced through games. Gamification actually has a positive impact on education and the findings of previous studies suggest that the gamification approach is appropriate for the teaching and learning process of students with special needs.

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