

DEVELOPMENT OF ETHNOSCIENCE PUZZLE GAME FOR CHILDREN WITH SPECIAL NEEDS

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ABSTRACT

Science is the science that underlies the development of technology that is used to obtain an explanation relating to objects and phenomena that occur in everyday life. The purpose of this study is to develop science by using learning media in the form of puzzles with Javanese local wisdom to determine the learning activities and motivation of children with special needs. The research method used is a mixed method in which research uses qualitative and quantitative methods. While the data collection techniques used were interviews, documentation, and observation to determine the learning activities and motivation of children with special needs. The sampling technique used in this study was purposive sampling area with a total sampling of seven children with special needs in the Panti 2 Yayasan Sayap Ibu. Sampling was carried out for children in the Panti 2 Yayasan Sayap Ibu. Finally, the puzzle game can determine the activities and motivations of students with special needs. Therefore, it is important to develop learning media (game)based on local wisdom for children with special needs.

Keywords: puzzle, disability, science, Javanese wisdom.

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Introduction

Every citizen has the right to education. Education itself is a human right, as well as investment in the future of the nation. Every citizen is free to get a proper education without discrimination. The rights to education apply to all citizens, including those with special needs or disabilities, are often called. Disability is a nickname given to people who have different abilities from people in general (Ormord, 2008). Law No. 20 of 2003 Article 5, paragraphs 1 and 2 states that every citizen has the same right to obtain a quality education as well as citizens who have physical, emotional, mental, intellectual, and social are entitled to special education.

All children at school age are entitled decent quality education even though children with disabilities are entitled to the same. One factor for the progress of a nation seen from the implementation of the educational process in it. It is a policy where children with special needs must get the same treatment in getting a decent and quality education. Law No. 4 of 1997 concerning Persons with Disabilities and Law No. 20 of 2003 concerning the National Education System emphasizes the right of every citizen to obtain an education by levels, pathways, units, talents, interests, and abilities without experiencing discrimination. Education should not discriminate against people with disabilities.

The number of disabilities in 2019 was 9,488 people with details of the Kulon Progo area of 1,116 people, Bantul 1,869 people, Gunung Kidul totaling 3,068 people, Sleman 1,927 people, and the City of Yogyakarta as many as 1,508 people (Department of Population of DI Yogyakarta). So far, access and facilities received by people with disabilities are still inadequate in facilities. People with

disabilities generally do not have adequate education places and facilities. The availability of facilities and infrastructure that support learning for each disability is minimal, especially in science subjects.

Science is a knowledge that underlies the development of technology that is usually used for discovery activities to obtain an explanation of the objects and phenomena. According to Carin (1993), science is the body of knowledge and the process of knowledge discovery, which, in essence, can be concluded that science is a product and process. The products of science itself include facts, concepts, theories, principles, and laws. Meanwhile, the process of science includes ways to acquire, develop, and apply knowledge. Therefore, we need an educational game that supports learning for people with disabilities.

Educational games are games that are designed for children and are used to be able to facilitate understanding of given learning material (Indrawan, 2019). One of the educational games provides for people with disabilities is puzzle games. The puzzle is a game apart pairs that are used to entertain children and adults. Puzzles are used to develop imagination and also innovative thinking by imagining in order to be able to understand and lift puzzles on the puzzle (Hidayati, 2018). Several studies have shown that puzzle games can improve student learning outcomes (Alawiyah, Suryana, & Pranata, 2019).

The development of the puzzle game was also associated with local wisdom. The goal is to instill a love for local culture (Nadlir, 2014) and held on contextual learning (Ormord, 2008). Local wisdom is values implemented in daily life, which can be used to reflect the identity of a particular community. Learning with puzzle media based on

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local wisdom is essential to be applied to children with special needs.

Children with special needs must also get attention because not all children with disabilities can go to inclusive schools (Rizky, 2014). The appropriate learning media given to students is very influential on motivation. If the learning process has made use of the media, then student motivation in learning can be created with joy-full learning (Alannasir, 2016). This study aims to determine the learning activities and motivation of children with special needs when learning science using learning media in the form of puzzle games equip with Javanese local wisdom.

Research Method

The research method used is a mixed-method where research uses qualitative methods. Data collection techniques are done using interviews, documentation, and observation. The sampling technique used in this study was a purposive sampling area with a total sampling of seven children with special needs in the Panti 2 Yayasan Sayap Ibu.

Interviews conducted with caregivers of children with special needs at Panti 2 Yayasan Sayap Ibu, Yogyakarta Foundation. Interviews relating to questions about daily activities undertaken by children with special needs who are in anti-care care.

Documentation was carried out to collect data about activities carried out by children with special needs in daily life and when the process of learning science using Javanese local wisdom puzzle games was carried out. The method of observation was carried out by observing the learning activities and motivation of children with special needs at the center when learning science using Javanese local wisdom puzzle games.

Data analysis techniques used in this study were qualitative and quantitative. Qualitative data analysis was performed on the results of interviews and documentation, while quantitative data were obtained from observations of activities and learning motivations of children with special needs.

Result and Discussion

Research conducted at the Panti 2 Yayasan Sayap Ibu is located at Jalan Ukrim RT 07 RW 02 Purwomartani, Kalasan, Kadirojo II, Purwomartani, Kalasan District, Sleman, Yogyakarta. The Panti 2 Yayasan Sayap Ibu has 3 Orphanages, Orphan I, which is devoted to abandoned babies, Orphan II, and Orphan III for children with special needs.



Figure 1. Research with children with special needs at Panti 2 Yayasan Sayap Ibu, Yogyakarta

Based on Figure 1, the science learning process uses educational games for learning games in the form of puzzles for the material of the solar system and parts of the human body. Observations were made on the learning activities and motivation of children with special needs when the science learning process took place. The puzzle game made from thin plywood boards covered with learning materials about science.

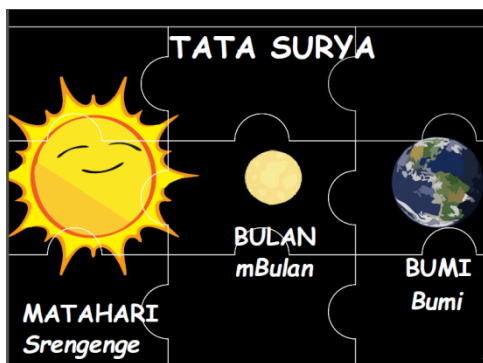


Figure 2. Design of puzzle games on the material of the solar system

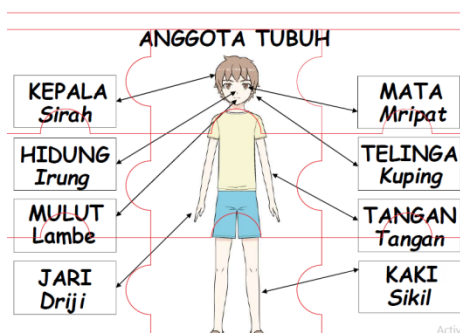


Figure 3. Design a puzzle game in the material human body parts

Observations on children with special needs when the learning process takes place is related to the activity and motivation to learn. Observed learning activities are the readiness to follow learning, attention to each explanation, active in the learning process, and active in asking questions.

Table 1. Description of Learning Activity Data for Children with Special Needs

| Learning activity | Data | |
|-------------------|-----------|----------------|
| | Frequency | Percentage (%) |
| High | 2 | 28.57 |
| Low | 5 | 71.43 |
| Total | 7 | 100 |

Table 2. Frequency Distribution of Learning Activities

| Interval | Data | |
|----------|-----------|------------------------|
| | Frequency | Relative Frequency (%) |
| 10-20 | 0 | 0 |
| 21-40 | 0 | 0 |
| 41-60 | 0 | 0 |
| 61-80 | 5 | 71.43 |
| 81-100 | 2 | 28.57 |

Based on table 1 and table 2, it shows that the results of observations of learning activities show that 28.57% have high learning activities, while 71.43% have low learning activities. Meanwhile, the frequency distribution of learning activities for grades 61-80 is five people, and the remaining two people have values 81 -100 people. Although five children classified as low learning activities, the children have a range of values 61-80.

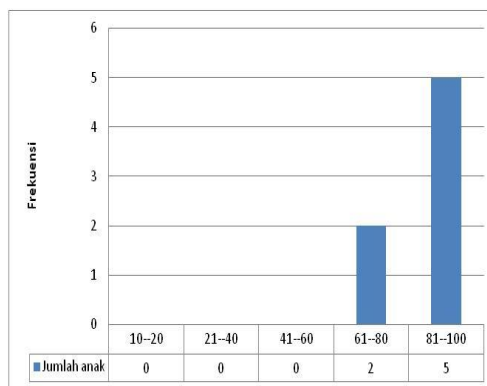


Figure 4. Frequency Distribution Histogram on Learning Activities

Figure 4 shows the frequency distribution of learning activities of children with special needs when learning science using puzzle games. The types of student activities vary, one of which is the opinion of Hamalik (2013) in Dewi, Ahied, Rosidi, & Munawaroh, (2019), namely: visual, listening, writing, drawing, metric, mental and emotional activities. Student activities in learning are essential. Because without the

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learning process, activities will not take place properly (Sardiman in Dewi, Ahied, Rosidi, & Munawaroh, 2019).

Observations on motivation to learn includes several indicators that are persevering in the face of the task, resilient in the face of adversity, show interest, enjoy working independently, quickly tired of the tasks given.

Table 3. Description of Learning Motivation Data on Children with Special Needs

| Learning Motivation | Data | |
|---------------------|-----------|----------------|
| | Frequency | Percentage (%) |
| High | 2 | 28.57 |
| Low | 5 | 71.43 |
| Total | 7 | 100 |

Table 4. Frequency Distribution in Learning Motivation

| Interval | Data | |
|----------|-----------|------------------------|
| | Frequency | Relative Frequency (%) |
| 10-20 | 0 | 0 |
| 21-40 | 0 | 0 |
| 41-60 | 2 | 28.57 |
| 61-80 | 3 | 42.86 |
| 81-100 | 2 | 28.57 |

Based on table 3 and table 4, it shows that the results of observations of learning motivation show that 28.57% have high learning motivation, while 71.43% have low learning motivation. As for the distribution of learning motivation frequencies for the value of 41-60 owned by as many as two people, three people have a value of the learning motivation interval of 61-80, and the remaining two people have a value of 81 -100.

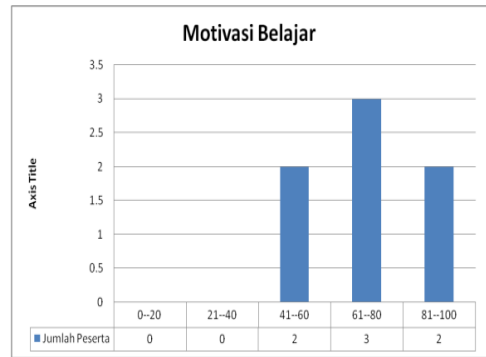


Figure 5. Histogram Frequency Distribution of Learning Motivation

Based on Figure 5, it shows the frequency distribution of learning motivation of children with special needs when learning science using puzzle games with Javanese wisdom shows that students like these learning activities. That is following the results of research conducted by Karim (2019) that the application of game media in the learning process affects learning activities. Besides, the use of instructional media in the teaching and learning process can arouse new desires and interests, arouse motivation, and stimulate learning activities, and also affect student psychology (Sukiyasa in Alannasir, 2016).

Alannasir (2016) also states that learning motivation created if it supported by several factors, namely, internal and external factors. Internal factors are motivational factors that occur in a student, such as students who are not instructed to read will carry out reading activities. External factors are motivational factors that are outside of students, namely teaching materials, teachers, methods, media, and learning environments. The puzzle media as one of the external factors that can increase the learning motivation of students with disabilities.

Furthermore, the research conducted by Rahardja, Aini, & Ariessanti (2019)

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concluded that the use of games in the learning process could be used to increase learning motivation. Because educational games can make learning more optimal, and students become unsaturated and more excited when the learning process takes place. It is also following the results of research conducted by Ahmad, Akhir & Azmee (2010) states that games related to learning can be used to help the learning process of people with special needs.

On the other hand, learning by using educational toys (puzzles) regularly and adequately will stimulate cognitive development so that they can develop well and quickly because it assisted with games as a means of learning children (Muloke, Ismanto, & Bataha, 2017). Thus, learning with puzzle media is suitable for increasing student interest in learning, especially for students with disabilities. This research is expected to initiate learning media for children with special needs, so they get the same educational rights as students in general.

Conclusion

In summary, the use of puzzle games with Javanese local wisdom in children with special needs can be used to determine learning activities and motivation. Puzzle game can help students with special needs to learn and they are more motivated by it. Thus, this puzzle is important to help students' learning process.

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