



## **Development of Educational Tool Game (APE) Scooter Board Sensory for Children With Special Needs**

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### **Abstract**

This study aims to develop an educational game tool (APE) that can stimulate the sensor-motor abilities of children with special needs who have problems in motor and movement development. APE was developed in addition to playing but also aims to provide education and other experiences according to their developmental age and needs. The research method used is the ADDIE development research method (Analysis, Design, Development, Implementation and Evaluation). The subjects in this study were 20 person children with mild ID and autism, aged 8-12 years consisting of 12 girls and 8 boys. This study involved 4 experts, consisting of 2 learning media experts, 1 psychologist, and 1 Adaptive Physical Educator. Based on the analysis by experts using CVI and CVR, the sensory scooter board game tool obtained a mean score of 0.6 which means it has high validity, in other words the sensory scooter board APE developed is safe, inexpensive (low cost), and stimulates the motor skills of children with special needs.



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## INTRODUCTION

Online learning in the era of the Covid-19 pandemic is an alternative and government policy in order to reduce the risk of the spread of Covid-19. All levels of education units from elementary school, middle school to university carry out government instructions to carry out online learning, learning from home for students. Some subjects or majors such as sports science at the beginning of this disruptive era both teachers, lecturers and students (students and students) were not accustomed to carrying out their respective roles from home.

According to Jonny Siahaan in Winarno, et al (2019), Predictions of various parties that learning at home digitally (online) is estimated to be relatively unable to achieve optimal learning outcomes, as it is known that learning outcomes in schools are generally measured through three domains, namely cognitive (knowledge), psychomotor (skills or mastery of motion or expertise) and affective (changes in attitude or behavior or character). It is believed that the cognitive and affective domains can still be realized online although the learning outcomes are relatively less than optimal. What about the psychomotor domain, where it is necessary to have physical interaction. This is of course a challenge not only for sports professionals (teachers, lecturers and practitioners) but also for parents, most of whom do not yet have the ability to prepare a learning environment at home which is relatively the same as at school.

Adaptive Physical Education learning in SLB should be in the form of physical activity that gets certain adjustments or adaptations according to the condition of the students or what is commonly referred to as adaptive physical education. But the reality on the

ground, most physical educators in SLB teach the same method for normal students (Ekawati et al., 2021).

Learning is basically a process of interaction between teachers and students (Andi Suntoda S & Andriyani, 2017). It is feared that physical education learning objectives carried out online will not be achieved optimally, if teachers do not have innovative, creative efforts in designing activities that will be given to students while online. According to Samsudin (2020) the stages that physical educator must do to determine innovative and adaptive learning for students during online learning are as follows: (1) teachers need to analyze the environment where their students live, (2) determine effective media and equipment, (3) provide different learning services between students, (4) teachers must cooperate with parents of students (Purwaka, Sabaruddin, 2020).

The results of observations and interviews of researchers in October 2021 at Special Schools (SLB) in Palembang City, namely; 1) Special schools that serve ABK in Palembang City apply online learning during the Covid-19 pandemic, 2) physical educator have difficulty in determining, packaging materials, and developing motion learning media (adaptive physical education), 3) physical educator have not involved parents or assistants Children with special needs at home in the adaptive physical education learning process, 4) adaptive physical education learning facilities and infrastructure at home are less attractive for children to move (minimal and inadequate) 5) the level of economic ability of parents with special needs varies in preparing learning facilities from home. Learning for children with special needs (students with special needs) requires a separate strategy according to their individual needs (Dermawan, 2013). Learning PE Adapted

must be adjusted to the characteristics and barriers of children with ID (Kesumawati et al., 2021).

#### Children with special need's Problem

Children with special needs are defined as children who have limitations in one or more abilities, both physical and psychological. Physically, children with special needs suffer from disorders including low muscle tone, decreased strength, postural control, and poor balance (Desiningrum, 2016). Children with special needs have problems in their sensory, motor, learning, and behavior. All of this results in the disruption of children's physical development. This is because most of the Children with special needs experience obstacles in responding to stimuli provided by the environment to make movements, imitate motion and even some are physically disturbed so that they cannot perform directional movements correctly (Judge, 2017). In the context of special education in Indonesia, physical disability can be defined as a motor disorder. In other contexts, we can find the use of other terms in referring to children with disabilities, such as children with movement barriers. Primarily, physically disabled children are children who experience impaired movement function caused by problems with the organs of motion in the body (Irvan, 2020). Leland & Smith (1965) said, Gross motor skills and fine motor skills can be developed through the inclusion of play items involving reaching, grasping, manipulating, and releasing. These skills are often poorly developed in children with IDs due to a lack of self-initiated exploration of the environment (Astramovich et al., 2015)

#### APE Scooter Board Sensory

Play is an activity that is done voluntarily to get pleasure or satisfaction.

Play is a reflection of physical, intellectual, emotional, and social abilities, and play is a good medium for learning because by playing, children will speak (communicate), learn to adapt to the environment, do what they can do, and get to know them. time, distance, and sound. The main function of play is to stimulate sensory-motor development, intellectual development, social development, moral development, and play as therapy. To teach children with special needs, the teacher's role as a teacher and protector is needed, on the other hand the role of a teacher must be creative, professional, and fun by placing himself as a mentor, planner, facilitator, and evaluator in learning (Jariono et al., 2021). This tool is one of the creative and planned to help learning PJOK for children with special needs (Sukmaningtyas et al., 2018). Developing APE puzzles for children with special needs, this tool is also proven to be fun and stimulates the creativity of children with special needs.. (Septaliza et al., 2022), developed an assistive device in the form of a digital mattress for children with special needs and has also been shown to improve basic jumping and jumping movements.

Barnett et al. (2016) said Fundamental movement skills (FMS) represent the 'building blocks' of specific movement skills necessary for being physically active, participating in games or practicing sports (Maïano et al., 2019)

Fundamental movement skills (FMS) are movement skills that need to be mastered by someone to be able to daily living activities without experiencing obstacles which means that the children with intellectual disability (ID) are no exception (Martinus & Kesumawati, 2020).

Frost (2010) said Playing is an activity that is liked by children, including children with special needs.

Play is considered a central component of healthy growth through which children develop cognition, language, social competence, self-regulation, and self-esteem (Kesumawati et al., 2020).

APE is a tool for playing while learning which includes tools for free play and activities under the leadership of the teacher. APE is a game tool specifically designed for educational purposes. This research develops APE Scooter sensory board, which aims to improve locomotor, sensory and proprioceptive skills for children with special needs. The APE scooter board sensory developed are as follows:



Figure 1. APE Scooter Board Sensory

#### Product Specification

The material, made of wood, is coated with various textures (smooth to coarse) smooth, flannel, and synthetic grass and uses wheels on all four sides to make it easier for the body to move. The design, in the form of a square measuring 40 x 40 cm, and a height of 8 cm.

APE Scooter board sensory was validated by 4 experts with assessment criteria related to aspects; 1) safety (materials used, methods and soups for using tools, conformity to the characteristics of crew members), 2) price/cost of manufacture and ease of making tools (cost) 3) suitability of functions and uses of tools for users.

## METHODS

The research method used is the ADDIE development research method (Analysis, Design, Development, Implementation and Evaluation). The subjects in this study were mentally retarded and autistic children with 20 people aged 8-12 years consisting of 12 women and 8 men. This study involved 4 experts, consisting of 2 learning media experts, 1 psychologist, and 1 Adaptive Physical Education teacher. The results of the assessment by experts were analyzed using CVI (Content Validity Index) and CVR (Content Validity Ratio) to see whether the sensory scooter board educational game tool was feasible for field trials (empirical validity).

## RESULT AND DISCUSSION

The results of the assessment by experts can be seen in the table 1 below:

Table. 1 CVI and CVR

No.	E1	E2	E3	E4	ne	N	N/2	ne-	CVR	C
									(N/2)	
1	4	4	4	3	3	4	2	1	0.5	V
2	3	4	3	3	1	4	2	-1	-0.5	V
3	4	4	4	4	4	4	2	2	1	V
4	4	4	4	4	4	4	2	2	1	V
5	4	4	4	4	4	4	2	2	1	V
6	4	4	4	4	4	4	2	2	1	V
7	4	3	4	4	3	4	2	1	0.5	V
8	4	3	4	4	3	4	2	1	0.5	V
9	4	3	4	4	3	4	2	1	0.5	V
10	4	3	4	4	3	4	2	1	0.5	V
Total	39	36	39	38		Total		6		
Mean	3.9	3.6	3.9	3.8		Mean		0.6	Valid	
Means	3.8									

Based on the results of the analysis using CVI and CVR, the sensory scooter board game tool obtained a mean score of 0.6 or high validity, which means that the sensory scooter board APE has aspects that are safe to use, including; material and design, low cost if calculated based on the cost of manufacture and easy-to-

obtain equipment, as well as having benefits in improving sensor motors for children with special needs.

Scooter boards sensory develop to improve vestibular sense in children with special needs or disabilities. This sense tells a child when she is moving and the direction and speed of that movement. Vestibular activities and input help children develop their posture, balance, and coordination. This sense provides us with gravitational security, the feeling that we can maintain a position without falling when we move our head. fluid in our inner ear moves and shifts, providing information about the position of our body and head in space.

All equipment can be used in a general physical education classroom. Some equipment is designed or modified for individuals with specific disabilities so they can participate in a general physical education class. PE teachers must innovate to help develop the ability and movement skills of children with special needs. In addition, teachers must also involve parents to play an active role and be involved in implementing games and media that have been developed by teachers in the residential or home environment of children with special needs/ disabilities.

## CONCLUSION

This APE scooter board sensor can be used as an alternative media for learning movement for physical educators, parents and caregivers of children with special needs such as, children with mild ID and autism characteristics, which can be played in the school environment or at home.

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