

# Development of Teaching Materials in Children with Down Syndrome

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**Abstract**— Down syndrome (SD) is a genetic disorder that is most often found and associated with mental retardation. Abnormalities that occur are caused by an excess of chromosomal genetic material. In this case physical education, sports and recreation take part in the provision of teaching materials to students of Sindrown Down. The purpose of this study is to develop teaching materials for Down children. Subjects in this study were teaching materials in children in Down Syndrome children. The method used is Research and Development up to 3 stages. That is seeing the potential and problems, gathering information, and designing products. The results in this study are 5-post sequential games in children with Down syndrome.

**Keywords:** *Down syndrome, develop teaching materials*

## I. INTRODUCTION

Students with special needs need to get special learning services tailored to their conditions in each subject. Special Physical Education lessons (Physical Education) students with special needs need to get special services. This special service is called adaptive physical education. Adaptive physical education is education through physical activity programs that are modified to enable individuals with disabilities to have the opportunity to participate safely, successfully and obtain satisfaction.

Teachers as educators must try to develop their competencies in order to achieve educational goals [1]. Physical education in its understanding is a process of education utilize physical activity to produce holistic changes in individual qualities, both in terms of physical, mental, and emotional. Education the body treats the child as a whole, total being, rather than just think of it as someone who is separate physical and quality mentally [2]. Schools are one place in shaping character [3]. On the other hand that training activities are a fundamental factor if you want to get the peak performance. This condition forces anyone who wishes to do

performance training exercises to understand the training procedures themselves in order to achieve the expected goals [4]. Education is a basic need of every human being to ensure his life to be more dignified [5]. Improving the quality of human resources is a serious problem from every country including Indonesia [6].

Therefore adaptive physical education is education that provides opportunities for students with special needs to be able to actualize physical activities through activities that are directed and planned in the learning program. Also states that the majority of students with special needs have low mobilization capacity, and physical performance is lacking, therefore students with special needs have a greater need for movement, it is only natural for physical education to become the main program of the education program for students with special needs as a whole, because it becomes the basis for the improvement of bodily functions that are very necessary.

The number of children with special needs (ABK) in Indonesia from year to year continues to increase. The UN estimates that at least 10 percent of school-age children have special needs. In Indonesia, the number of school-age children, which is 5-14 years, is 42.8 million. If you follow these estimates, it is estimated that there are approximately 4.2 million Indonesian children with special needs. In Indonesia there is no official data released by the government. According to the latest data, the number of children with special needs in Indonesia reached 1,544,184 children, with 330,764 children (21.42%) in the age range of 5-18 years. Of these, only 85,737 children with special needs went to school. This means that there are still 245,027 children with special needs who have not yet received education at school, either special schools or inclusive schools. Meanwhile, from the assumption of the United Nations which estimates that at least 10% of school-age children have special needs. The number of children with special needs in 2011 was recorded at 356,192 children, but there were 86,645 new children and up to this year only

105,185 children, in 2012 the government targeted at least 50% of children with special needs to be accommodated[7].

Based on observations at SLB-C Abdi Kasih Martubung and SLB YPAC Medan where several problems were found: 1) many children with special needs with Down syndrome are unable to understand instructions from physical education teachers. 2) the implementation of physical education learning is limited to physical activity without achieving the goals for the growth and development of Down syndrome children. 3) physical education teachers do not carry out learning that can stimulate the growth and development of Down syndrome children such as games in the form of therapy. 4). Down syndrome children experience different health problems so learning should be adjusted to be not equated with normal children, but the reality in the field is usually not conceptualized as an interesting activity. 5) interview is limited to greeting children with Down syndrome that they have poor language skills so that to achieve learning goals will be very difficult.

**II. METHODS**

Subjects in this study were teaching materials in children in Down Syndrome children. The method used is Research and Development up to 3 stages. That is seeing the potential and problems, gathering information, and designing products. [8] proposed a series of stages that must be taken in this approach covering 10 general steps, in this study researchers used up to 3 steps such as the following model:

- *Research and information collecting:* study of literature relating to the problem under study, and preparation to formulate a research framework.
- *Planning:* formulate skills and expertise related to the problem, determine the objectives to be achieved at each stage, and if possible / necessary carry out a limited feasibility study.
- *Develop preliminary form of product;* developing the initial form of the product to be produced, the preparation of supporting components, preparing guidelines and manuals, and evaluating the feasibility of supporting tools. this step includes: (1) Determine the design of the product to be developed (hypothetical design), (2) determine the research facilities and infrastructure needed during the research and development process, (3) determine the stages of carrying out design tests in the field; (4) determine the job description of the parties involved in the research.



Fig.1. .Development Procedure Brog & Gall (1983)

The 5-post game sequence is inspired by the concept of post and series training circuits. But this time it was carried out in a structured and sequential manner for children with

Down syndrome. Research development is one of the processes that are widely used in education and learning, basically research development consists of two main objectives: 1. Product development 2. Testing the product to reach the goal. [9]

The principles of the development model of learning in sports activities which is one of physical education that requires a lot of physical activity such as close skills, or open skills, a combination of skills in which not all children are ready to accept these activities. Therefore it is necessary to develop and play the game and change the rules in the game so that it can help children in receiving the material provided.

The 5-post game series was adopted from the development of outbound games, it's just that this game is not a game on the computer but a game that is applied to motion. As for the facilities and infrastructure needed in this 5-strung post game are: 1) Field, 2) colorful balls, used tires, used cardboard, 3) boards, 4) baskets and buckets, 5) plastic ropes, 6) colored oil paint (Red, Yellow, Blue, Green, 7) Chalk, 8) Bamboo length of 1 m to support the plastic rope (making the game track).

The way to do the 5-string game is

- Students play individually.
- Students run to posts 1, 2, 3, 4, and 5 in each post there is a writing that contains instructions that must be done by students and there is a guide at each post that is assigned to give instructions, there is 1 guide in each post..
- Students who reach the legal finish line are students who have succeeded in carrying out the order in the post correctly and in the end are able to put a blue ball into the basket.

Next is the development of the 5-post game series:

How to play in Post I is:

- a) The guide gives a previous explanation to students.
- b) Then students take the ball in a basket containing colorful balls. The balls taken are 1 red ball and 1 green ball.
- c) The red ball is inserted into the red basket with the specified throwing line.
- d) Likewise the green ball is inserted into the green basket with the specified throwing line.
- e) After finishing students run to POS II

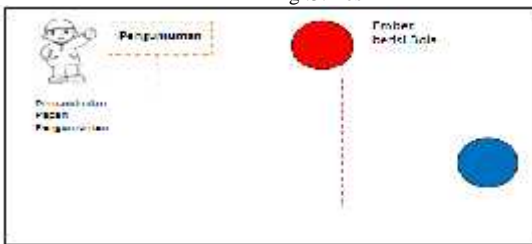
Fig. 2. Pos 1



How to play in POS II are:

- Students run from POS I then run to POS II.
- In POS II the guide gives instructions on guessing the colors on the board.
- Board 1 (Red), Board 2 (Yellow), Board 3 (Blue), Board 4 (Green).
- Students must answer correctly guessed new

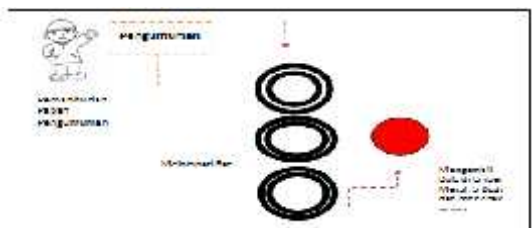
Fig. 3. Pos 2



How to play in POS III are:

- The guide gives instructions to students.
- Take 3 different colored balls in a red bucket.
- Then guess the color, students must guess the color correctly.
- Then after answering correctly, students

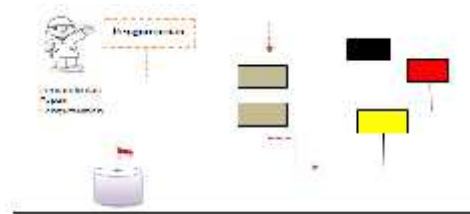
Fig. 4. Pos 3



How to play in POS IV is:

- The guide gives instructions to students.
- Students jump over the circle of 3 old tires, then take 5 colored balls in a bucket.
- After the ball is taken, the ball is counted by the students and then the color is guessed. If successful, students may run to POS V.
- But if it is not successful students must do it

Fig.5. Pos 4



How to play at POS V is:

- The guide gives instructions to students.
- First, students must jump over 2 boxes.
- Then students guess 3 colors that are on the board.
- After guessing the color correctly, students take the red and white flag in the basket.

Fig 6.Pos 5

**IV. CONCLUSION**

Students with special needs need to get special learning services tailored to their conditions in each subject. Adaptive physical education is education through physical activity programs that are modified to allow individuals with disabilities to have the opportunity to participate in the learning process. In this study researchers developed teaching materials in children with Down syndrome. As for the instructional materials the researchers produced in the form of a 5-post series game.

In order for a better study, researchers suggest the following:

- conduct stages 4 to 10 in the study research and development.
- make more variations of the post to make it more interesting.
- make educational games for other special needs children.

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