INTELLIGENCE STIMULATION ON KINDERGARTEN STUDENT THROUGH PHYSICAL ACTIVITY BASED ON PERCEPTUAL MOTOR

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The research intends to produce model of physical activity based on perceptual motor to develop multiple intelligences for Kindergarten students. The procedure of this development research adopts Borg and Gall research and development procedures (1983: 775), which are originally 10 steps modified into 7 steps. These steps are: 1) collecting information in the field, 2) analysing the information collected, 3) developing the initial product/draft, 4) validating and revising the initial product/draft, 5) conducting small group trial and revision, 6) conducting large group trial and revision, and 7) compiling the final product. The subjects of small group trial involve 10 Grade B Kindergarten students and large group trial 54 Grade B Kindergarten students. Instruments for collecting data use: interview guidelines and value scales. The data analysis techniques used are by descriptive quantitative analysis and qualitative analysis. The research result is a model of physical activity based on perceptual motor consisting of 8 (eight) games: 1) my personal-themed game, 2) my family-themed game, 3) my neighbourhood-themed game, 4) animal-themed game, 5) plant-themed game, 6) vehicle-themed game, 7) universe-themed game, and 8) my country-themed game.

Keywords: Intelligence Stimulation, Kindergarten Student, Physical Activity, Perceptual Motor.

INTRODUCTION

The development of multiple intelligences in learners in kindergarten should get serious attention by teachers. Teachers are required to be able and willing to provide various stimulus to develop multiple intelligences for kindergarten students. The provision of stimulus should be based on the belief that each learner has various intelligences whose the development requires stimulation or appropriate stimulation. Multiple intelligences includes linguistic verbal intelligence, mathematical logical intelligence, spatial visual intelligence, musical intelligence, kinesthetic intelligence, interpersonal intelligence, intrapersonal intelligence, naturalist intelligence, and existential intelligence. One form of stimulus that can develop multiple intelligences in kindergarten student can be done through physical activity in the form of playing. The opinion by Tadkiroatun Musfiroh (2008: 42-43) explains that through playing student can develop all parts of the brain in children, which include: the reptile brain (brain stem), the limbic system, and the neocortex (mammalian brain). In kindergarten children (4-6 years), the reptilian brain and mammalian brain develop about 80%, indicating that at that moment the child's intelligence is open. In addition, it is explained that through the activity of playing, they can be able to

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move ideas, solve problems, and bring happiness. Michael Rettig (2005: 255-256) argues that multiple intelligences are also related to brain function and brain process/working. Therefore, early childhood education is expected to focus on developing the overall brain, both right and left brain. Zahra Dolati & Abdorreza Tahriri (2017: 1-2) state that stimulating the academic ability of learners is an important thing that teachers do. This can be done through activity that includes all kinds of intelligence. The application of multiple intelligence theory of Gardner provides an advantage in education; firstly is to plan educational programs to realize the potential of the learners in accordance with their abilities and secondly is to make the learning process more active. This can occur if the teacher plans the learning by covering various activities related to various kinds of intelligence.

In accordance with the Kindergarten curriculum, physical activity is the scope of physical, sports and health learning programs. In the learner in kindergarten, the form of physical activity that contains the perceptual elements of motor and delivered in the form of playing is very important. This is based on the findings of several research results, among others: 1) Elena Bodrova & Deborah J. Leong (2005: 6), state that playing has correlation with the cognitive development and social skills needed in the learning process of children. Such as, playing grows memory, self-organization, to communicate orally, and recognizing symbols. Playing also improves literacy skills and other academic areas, 2) Scott G. Eberle (2011: 19) claims that playing provides benefits in developing mental, physical, and social skills. Furthermore, playing can be used as a medium in developing intelligence of children, 3) the results of the research indicate that the ability of the perceptual motor has a relationship with the academic ability of the children, (Pravias Nourbakhsh, 2006: 40), 4) the research results show that the physical education program containing the perceptual motor elements can improve academic achievement in math, reading, and writing exams (Gonzales, Coretes, and Dobbins (2003) in Pravias Nourbakhsh, 2006: 41), 5) the research results conducted by Rajni Dhingra, *et al* (2010: 143) says that visual, auditory and kinesthetic perceptions of 4-6 year-olds have correlation with academic achievement in reading, spelling and math, 6) research results from Seyed Sajad Hosseini *et. al* (2011: 764) suggests that physical activity programmed within preschool period has an impact in the children's cognitive skills, 7) research results of Jose Morales, *et.al* (2011: 410) claims that perceptual motor performance is associated with academic achievement, children with good perceptual motor also have good cognitive, 8) Vannier and Gallahue in Hari Amirullah Rachman (2011: 14) states that perceptual motor can be developed optimally when children aged 2-6 years and at this age, it is golden age to lay the basic skills, and 9) Johnstone and Molly Ramon (2011: V) state that the age of 3-6 years is the optimal age for developing perceptual motor.

Perceptual motor-based physical activity allows sensory information to be gained and understood by appropriate reactions. Perceptual motor requires students to engage their brains and bodies in motion. Furthermore Jill A. Johnstone and Molly Ramon (2011: V) state that in perceptual motor conducted by children, will involve the brain and body to complete the task of motion together. Perceptual motor is different from ordinary motion activity, because perceptual motor contains perceptual components. According to Gallahue and Ozmun, (2002: 263) perceptual motor component consists of: body awareness, spatial awareness, directional awareness, and temporal awareness. Perceptual motor, essentially, is the individual's ability to accept, interpret and react appropriately to the number of stimulus that come to him/her, not only from outside but from inside. Perceptual motor is often also described as the correlation between motion and perception. Perception is the process of receiving, selecting, and understanding information or stimulus from the outside. Perception produces awareness of what is happening outside our bodies and is our ability to receive information through sensing. Perceptual motor refers primarily to activities undertaken with the intent of improving cognitive and academic ability. Gallahue and Ozmun (2002: 266) suggest that increased perceptual motor ability plays an important role in the development and improvement of motion abilities of children. Therefore, to achieve a successful performance of good motion ability, it is important to improve the perceptual motor ability from early age. In accordance with kindergarten curriculum, it shows that perceptual motor has not been specified in the curriculum, either independently or integrated in the field of physical/motor.

In addition, based on preliminary study conducted in several kindergartens in Jogonalan District of Klaten Regency related to physical/motor learning, it is obtained information as follows: 1) in the physical/motor learning in kindergarten, the teacher conveys the material according to the existing curriculum, but there is some undelivered material. This is due to the limitations of media and facilities, 2) lack of development of physical/motor material based on perceptual motor in kindergarten, 3) lack of kindergarten teacher with physical education and sport background, thus allowing the barriers in the development and delivery of physical and motor materials, and 4) no perceptual motor test conducted on kindergarten students. The right solution is needed to overcome the problems mentioned above. One solution that can be done is to develop model of physical activity in the form of perceptual motor-based playing to develop multiple intelligences for kindergarten students.

METHOD

This development research procedure adopted Borg and Gall (1983: 775) research and development procedures, which were originally 10 steps modified into 7 steps. These steps were: 1) gathering information in the field, 2) analysing the

collected information, 3) developing the initial product/draft, 4) validating and revising the initial product/draft, 5) conducting small group trial and revision, 6) conducting large group trials and revisions, and 7) compiling the final product. The subjects of small group trial employed 10 students of TK (Kindergarten) Pertiwi Plawikan and the subjects of large group trial employed 54 students, with details: TK Pertiwi Karangdukuh 13 students, TK Pertiwi Sumyang 10 students, TK ABA Plawikan 10 students, and TK ABA Ngering 21 students. The instruments for collecting the data used: interview guidelines and value scales. The data analysis techniques used were by descriptive quantitative analysis and qualitative analysis.

RESULTS AND DISCUSSION

The results of this research are a model of physical activity based on perceptual motor to develop multiple intelligence for Kindergarten students. To create this physical activity model, the researchers follow the procedures in research and development, i.e. initial product validation, small group trials, and large group trials. Before being piloted into the field, both small group trials and large group trials, the initial draft of physical activity model are validated by 2 material experts and 3 practitioners/kindergarten teachers. The validation of initial draft of physical activity model by material experts and practitioners is done with Content Validity Ratio (CVR) and Content Validity Index (CVI). CVR test results show the content validity of physical activity model based on perceptual motor is good or has high content validity, with CVR result in the range 0.600 – 1.000 that is above 0.30. Meanwhile, the CVI test results have high level of validity, as in the table below:

TABLE 1: RESULTS OF CVI TEST OF INITIAL DRAFT OF PHYSICAL ACTIVITY MODEL BASED ON PERCEPTUAL MOTOR.

No	Name of Game	CVI
1.	My personal-themed game	0.880
2.	My family-themed game	0.900
3.	My neighbourhood-themed game	0.880
4.	Animal-themed game	0.924
5.	Plant-themed game	0.905
6.	Vehicle-themed game	0.880
7.	Universe-themed game	0.900
8.	My country-themed game	0.900

Test of the reliability of physical activity model based on perceptual motor using Alpha Cronbach. Reliability test result is below:

TABLE 2: RESULTS OF RELIABILITY TEST OF INITIAL DRAFT OF PHYSICAL
ACTIVITY MODEL BASED ON PERCEPTUAL MOTOR.

No	Name of Game	Correlation Coefficient	Explanation/Status
1.	My personal-themed game	0.908	Reliabel
2.	My family-themed game	0.894	Reliabel
3.	My neighbourhood-themed game	0.894	Reliabel
4.	Animal-themed game	0.951	Reliabel
5.	Plant-themed game	0.925	Reliabel
6.	Vehicle-themed game	0.894	Reliabel
7.	Universe-themed game	0.914	Reliabel
8.	My country-themed game	0.914	Reliabel

The results of the implementation of physical activity model based on perceptual motor in small and large group trial as follows:

TABLE 3: IMPLEMENTATION TEST RESULTS OF PHYSICAL ACTIVITY
MODEL ON SMALL GROUP TRIALS.

No	Name of Game	Test Place of Kindergarten Pertiwi Plawikan
1.	My personal-themed game	3.7
2.	My family-themed game	3.8
3.	My neighbourhood-themed game	3.8
4.	Animal-themed game	3.8
5.	Plant-themed game	3.8
6.	Vehicle-themed game	3.8
7.	Universe-themed game	3.9
8.	My country-themed game	3.8
	Mean	3.8

TABEL 4: IMPLEMENTATION TEST RESULTS OF PHYSICAL ACTIVITY
MODEL ON LARGE GROUP TRIALS.

No	Name of Game	Test Place of Kindergarten			
		Pertiwi Karangdukuh	Pertiwi Sumyang	ABA Plawikan	ABA Ngering
1.	My personal-themed game	3.9	3.9	3.9	3.9
2.	My family-themed game	3.9	3.9	3.9	3.9
3.	My neighbourhood-themed game	3.9	3.9	3.9	3.9
4.	Animal-themed game	3.9	3.9	3.9	3.9
5.	Plant-themed game	3.9	3.9	3.9	3.9
6.	Vehicle-themed game	3.9	3.9	3.9	3.9
7.	Universe-themed game	3.9	3.9	3.9	3.9
8.	My country-themed game	3.9	3.9	3.9	3.9
	Mean	3.9	3.9	3.9	3.9

The scale of implementation assessment of the physical activity model based on perceptual motor consists of 4 (four) scales: scale 1 (very less good/very less

acceptable), scale 2 (less good/less acceptable), scale 3 (good/acceptable) and scale 4 (very good/be accepted). The average test result of the implementation of physical activity model based on perceptual motor in small scale test 3.8 and large scale test 3.9. These results indicate that the physical activity model based on perceptual motor is in good category or accepted. The results of the study present physical activity model based on perceptual motor to develop multiple intellegences for Kindergarten students, covering 8 theme-based games. The advantages of this research are:

1. Development of Basic Elements of Motion in the Physical Activity Model Based on Perceptual Motor.

    The developed perceptual motor based physical activity model contains some basic fundamental motions. Locomotor movement is a movement that requires the movement of places, moving from one place to another. For examples: walking, running, jumping, leaping, and bouncing. Non locomotor movement does not require movement of place, for example: spinning and swirling. Meanwhile, manipulative movement is a movement to play a certain object by using one of body part. For example: throwing and catching the ball, bouncing ball, and kicking the ball.

2. Multiple Intelligences in the Physical Activity Model Based on Perceptual Motor

    Physical activity model based on perceptual motor developed in addition to functioning to develop physical motor also stimulate various types of intelligence. Intelligence honed in the physical activity model based on perceptual motor is linguistic verbal intelligence, logical mathematical intelligence, spatial visual intelligence, musical intelligence, kinesthetic intelligence, interpersonal intelligence, existential intelligence, and naturalist intelligence.

3. Ease of Physical Activity Model Based on Perceptual Motor for Kindergarten Students

    Physical activity model based on perceptual motor developed can be applied by adjusting to the stage of children development achievement. The movements in the Physical activity model based on perceptual motor are generally not difficult to perform. Instead the children are enthusiasm and challenged to do it. In addition, the equipments used presented or painted colourful to make children interested to try them.

CONCLUSION

Physical activity model based on perceptual motor can be recommended to apply in Kindergarten (5-6 years) students. Physical activity model based on perceptual

motor consists of 8 (eight) games: 1) self-personal-themed game, 2) my family-themed games, 3) my neighborhood-themed games, 4) animal-themed games, 5) plant-themed games, 6) vehicles- themed game, 7) universe-themed game, and 8) my country-themed game. Physical activity model based on perceptual motor developed in addition to functioning to improve physical motor also stimulating various types of intelligence.

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