

THE DEVELOPMENT OF A LEARNING MODEL FOR ADAPTIVE PHYSICAL ACTIVITIES IN PHYSICAL EDUCATION, SPORTS, AND HEALTH FOR FUNDAMENTAL MOVEMENT MATERIALS IN ELEMENTARY SCHOOLS FOR THE INTELLECTUAL DISABILITY

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ABSTRACT

This study aimed at developing a learning model for adaptive physical activities (APA) in physical education, sports, and health for fundamental movement materials for intellectual disability students of elementary schools in Bantul Regency. This study used a research and development model proposed by Borg and Gall, which was modified into five primary steps: (1) preliminary study, (2) planning, (3) expert validation, (4) empirical validation, and (5) effectiveness testing. The effectiveness testing employed a pre-experiment using the one-group pretest-posttest design, with 22 subjects of SDLB in Pleret. The data were analyzed using the t-test. The research instrument was an observation instrument using the Likert scale in the form of rating scale. The results of the study showed that the APA learning model for physical education, sports, and health consists of (1) a baby komodo playing a ball, (2) playing waves at sea, (3) playing to recognize shapes, (4) frogs playing in a circus, and (5) playing air bubbles. The content substance was relevant to or appropriate for the intellectual disability students of special elementary schools. The results showed that the implementation was easy (100%), safe (very safe 22% and safe 78%), joyful (very joyful 22% and enjoyable 78%), and useful (very useful 44% and useful 56%). Meanwhile, in terms of the students, the implementation of the five models is effective to improve learning outcomes. The physical sport health APA learning model of the five basic motion model materials is effective for teaching to improve the learning outcomes of students' fundamental motor skills of Special Elementary School for intellectual disability. The effectiveness of the test results (on average was higher than the pretest posttest and t-values higher than t-table) shows that the five APA sport health physical education learning model is effective to improve the achievement of learning outcomes, motion response, the focus of attention, and the excitement of the intellectual disability learners. However, the researcher suggests that there should be follow-ups in the form of similar studies to involve other students with special needs and a replication of this research and development to make the APA learning model better, so that it can be applied in other areas.

Keywords: learning model, APA, intellectual disability

INTRODUCTION

Learning Physical Education Sport and Health (PESH) that teaches at the school has a very important role in giving students experience in learning through physical activity in people's life. PESH learning provides an opportunity for learners to be directly involved in experiential learning through physical activity, playing a sport that is done in a systematic, planned and organized. PESH is a medium to encourage physical growth, mental development, motor skills, knowledge and reasoning, appreciation of the values (attitude-mental-emotional-spiritual-social sportsmanship), and habituation to a healthy lifestyle that leads to stimulate growth and development physical and psychological qualities. PESH learning through one adaptive physical activity is to improve Fundamental motor skills of learners in special elementary school (BSNP, 2006). Fundamental movement skills are the abilities to be owned

by the learner as a condition in everyday life. In addition, adaptive learning PESH physical activity can stimulate a child's brain for mental retardation towards meaningful progress. Doman (2012) helps improving brain injury in children by examining the development of normal children, by observing the child's development from infancy, creeping, crawling, standing, walking, until the child can run. After several years of observation, they concluded that the therapy should be done with the brain of injured children is to improve impaired brain function by stimulating the central nervous system or brain child and therapy program with fundamental stages of brain development results is very amazing.

Dennison (2004, as cited in Doman, 2012) states "movement is the door to learning." Movement will integrate new information and experience into the neural network. Every time the head or limbs moves with a good coordination will stimulate the brain active and fully integrated, so that opens the door to learn naturally. Intellectual disability learners impaired cognitive functioning, adaptive behavior and emotion. Deficits in cognitive function for mental retardation is indicated by the low memory, slow learning rate, attention problems, difficulty generalizing what they have learned, and lack of motivation. Limitations of intelligence also affect the social development, the limitations of other mental functions such as taking a long time to carry out the reaction to the new situation known, limited mastery of the language, and less able to consider something. The results of Sumantri (1996) which indicates that the physical fitness levels of children who have mental retardation mental ability at age 2 years to 12 years in the category of less than once, being a normal child of the same age in the poor category. Similar studies were conducted from Westendorp, et al. (2012) study show that the children have mild mental retardation scored significantly lower on almost all items of a certain motor skills, and object control skills against their peers when compared to non-mental retardation. Conditions of low levels of fundamental motor skills and physical fitness levels will have an impact on a person's health status, especially for intellectual disability learners. They will be vulnerable once the body resistance to disease. It economically will give additional weight to the cost of treatment, especially for students who have a duality with other conditions, such as epilepsy, autism, paralysis therapy remains to be done, then the cost will be greater, not to mention morally loss. Based on the above description, then physical education sport and health learning through APA is very important for intellectual disability learners, so that learners have the fundamental movement skills that are efficient, effective and secure so it will be easier for the movements needed in daily life to-day. Moreover; learning adaptive physical activity also can stimulate a child's brain meaningful progress towards mental retardation. APA in physical education is successful when learning material in students of special school for intellectual disability is determined by the preparation of teachers and learners. There are several interrelated elements into a single unit of learning, so that learning goes in line with expectations.

One important element to be prepared by teachers, among others, is the learning model. Learning model is attractive for students to influence the motion response, attention, memory, pleasure and motivation of learners during and after the learning process. The existence of an interesting learning model allows students to understand the learning materials for physical education teachers will facilitate the learning task and the steps that will be taken in accordance with the time available, the objectives to be achieved, the absorption ability of the students, as well as the availability of existing media, and also used as a means of encouraging students in learning activities. One function is to assist the process of learning model of teaching and learning aid effectiveness (Raja Guk-guk, 2008). On the basis of the description of the roles of physical education, teachers are selecting or developing learning models that fit the characteristics of learners in SDLB (special school for intellectual disability). Based on observations and interviews simply by researchers to 6 teachers in three SDLB schools on May 31st, 2012 until June 7th, 2012, there were obtained the following information: (1) four of the six teachers responded that APA has not been able to improve fundamental motor skills especially

for playing to recognize shapes, a baby komodo playing a ball, skip and control objects. Two other teachers are classroom teachers who have been following for a one-year certification to be a physical education teacher, they were able to improve in learning the fundamental movements of the students, only if required to make the modification/development of the six teachers learning model is still experiencing difficulties, (2) learning APA is in place now is not maximized to improve the capabilities and skills of learners intellectual disability motion, this is due to the limitation of understanding of learning concepts of physical education, (3) the implementation for physical education learning was conducted one once a week with a 2 hour lesson, and implementation of teaching combined classes 1, 2 and 3, (4) most of the learning material presented are: soccer, gymnastics and fitness walk, and how its delivery to the learners at non-mental retardation, (5) the learning tools are very limited, sometimes the schools only had one or two balls, (6) for the implementation of the learning activities carried out in the school yard, not all schools have enough spaces for physical education, (7) the physical education teacher corresponding to their field of study of 14 schools ranging from elementary to intermediate level in the area of Bantul there are two new teachers become certified, while other are classroom teachers, (8) the terms of the learners during the learning less focus in the following study, and stopping their classes, saving the researcher as less attractive learning, learners quickly exhausted, participants students are very diverse and the facts is between them have multiplicity disability with hearing impairment, talking impairment, epileptic, quadriplegic, hyperactivity, emotional disorder, and autism. With a variety of conditions and problems mentioned above, it is necessary needed to mitigate the problems, one of which is to develop an adaptive learning model of physical activity (APA) in Fundamental motion with adapting material conditions and the characteristics of learners in the form of mental retardation various adaptive cross motion physical activity, optimizing right and left hand, optimizing various senses (audio, visual, and tactile), created with playing situation, as far as possible each model coupled with children's songs, using the tools of learning that is safe and attractive. The researcher believes the adaptive learning model of physical activity that has been developed will be able to improve fundamental motion of motor skills, increase absorption, bringing focus of attention in their study, and learners will take a part and likes on the APA.

The purpose of this study was to make a model of the fundamental physical education sport and health APA learning material model for learners of Special Elementary School for Intellectual Disability in Bantul Regency Yogyakarta Special Region. Specifically the objectives were as follows:

- 1) to obtain fundamental material of APA learning model in accordance with the substance of the content characteristics of learners in Special Elementary School for Intellectual Disability.
- 2) to get physical health and sport education material APA learning model in which the implementation is easy, safe, fun and useful for the teacher as learning guide book in Special Elementary School for Intellectual Disability.
- 3) to achieve the effectiveness of health and sport education material APA learning model basis for improving student achievement of learning outcomes in Special Elementary School for Intellectual Disability.

RESEARCH HYPOTHESES

1. The application of five effective APA learning fundamental motion model was effective to improve learning outcomes of students in Special Elementary School for Intellectual Disability.
2. The application of five effective APA learning fundamental motion model was effective to improve responses of students in Special Elementary School for Intellectual Disability.

3. The application of five effective APA learning fundamental motion model was effective to improve focus interests of students in Special Elementary School for Intellectual Disability.

4. The application of five effective APA learning fundamental motion model was effective to increase the excitement students in Special Elementary School for Intellectual Disability.

METHODS

Research and development (R & D) was used as the main research method. According to Sugiyono (2010) research and development is a research method that is used to make a particular product and test the effectiveness of a product. Moreover, Borg and Gall (2003) stated essentially research and development procedure has two main objectives, namely: (1) to develop a product, and (2) to test the effectiveness of the product. Methods of R & D broadly involves three steps, namely: (1) the preliminary study stage, (2) development of the design, and (3) validate the model (Sugiyono, 2010). The preliminary study stage included several activities, such as: assessing theory, literature, and relevant research results and observations in the field by applying a qualitative approach. The development design phase was a descriptive approach, followed by the application of limited testing and tryout to design wider model. Procedures in research and development used seven steps, namely:

1. Gather the information in from the field. These activities included: (a) observing some SDLB in Bantul region in order to know the problems in the learning process of physical education in SDLB, (b) a review of the curriculum for physical education in SDLB, especially lower-class related material base motion, and (c) conduct library research to collect materials in the form of theory, data, and research results that are relevant to this study.

2. Conduct an analysis of the information collected. In this activity, the researchers conducted an analysis of the results obtained through observations and literature. Analysis of field observations aimed to determine whether assumptions of researchers to the real problems that exist in the field, especially that associated with the learning process of physical education. From the analysis of literature study, researchers obtain feedback that can be used to strengthen the focus of the issue being discussed. Finally, the problem can be reduced to the problems being faced by teachers in presenting the teaching material on physical education in SDLB in the lower grade.

3. Develop the initial product. At this stage, the researcher formulated a product early in the development process through several activities, namely: (a) analyze the purpose and characteristics of the learning model of motion play of physical education material in SDLB on lower grade, (b) analyze the characteristics of learners SDLB Intellectual Disability lower grade, (c) set out the principles for developing a learning model of motion APA Fundamental material in SDLB Intellectual Disability of the lower grade, (d) developing the learning outcomes of measurement procedures, and (e) developing initial products of APA P learning model of motion base material in the lower grade of SDLB Intellectual Disability .

4. Conduct early product validation and revision. Initial product development learning model of motion physical education APA Fundamental material in SDLB lower grade before it is tested on a small group and validated by experts in accordance with this research field. To validate the products, researchers recruited 6 experts, namely: 1) Prof. Dr. Sukadiyanto M. Pd. (physical education), 2) Dr. Pamuji Sukoco M. Pd. (adaptive physical education expert), 3) Dr. Priyo Sudibjo Kes S. Ps. (nervous system expert), 4) Dr. B. M. Kushartanti Wara M. S. (sports medicine and therapy specialist), 5) Ayuk Rahadhian S. M. Psi Ps. (child developmental psychology expert), 6) Sutomo S. Pd. (practitioners of adaptive physical education) and revisions to the initial product was made after receiving input from the experts.

5. Use small group testing and revision. Small group tryout conducted to obtain feedback and input in order to revise the product, so that the final product will be produced in the form of the learning model of physical education APA Fundamental material in Special School for Intellectual Disability in lower grade. Tryout is using a small group of schools, which are SDLB Marsudi Putra 1 Pandak. Product revision process conducted after receiving input from practitioners who acted as the valuator, Suryani S. Pd., Sukasmiyati S. Pd., and Mukidah S. Pd.

6. Use large group testing and revision. Large groups of tryout using the number of schools more than a small group tryout. For large groups of tryout used three schools, namely: (1) Mardi Mulya SDLB Kretek, the valuator were Nuryaningsih S. Pd., Jawahir S. Pd., Suparyanto, (2) SDLB Marsudi Putra I Bantul, the validators were Ekawati S. Pd., Siti Zumaroh S. Pd., and Dr. Tri Mulyanti, (3) SDLB Bangun Putro Bangun Jiwo, with Utami Dewi S. Pd., Supartinah S. Pd., and Siti Masroah S. Pd. as the valuator.

7. Compose the final product. After going through several phases of testing and revision, a final product is presented, the learning model of physical education APA Fundamental material in SDLB Intellectual Disability lower grade in the form of reference books and DVDs. Once the final product is produced, the next step is to test the effectiveness of the end product by using Pre-experimental research in mental retardation SDLB Tunas Bhakti Pleret Bantul Yogyakarta.

PARTICIPANTS

Trial subjects were the target users of the product which were students of Special School for Intellectual Disability in lower grade in Bantul regency. Product testing was done in two stages. The first stage, which was a small group of trial products of physical education APA learning model of motion base material in Special School for Intellectual Disability in lower grade. The subject which was used in small test group using a school students, at SDLB Marsudi Putra I Pandak. The second phase, which was a large group testing products of physical education APA learning model of motion base material in Special School for Intellectual Disability lower grade. The subject which was used in testing on large groups of learners using the three schools, namely SDLB Mardi Mulya Kretek Bantul I, SDLB Marsudi Putra, and SDLB Bangun Putro Bangun Jiwo. The effectiveness of the product or validating product in Tunas Bhakti Pleret was used.

DATA COLLECTION

The questionnaire based on the grating has been determined. Grating contained two factors with indicators, namely: (1) the substance of the content factor (according to the characteristics, in accordance with the fundamental competencies and indicators), (2) implementation factors (convenience, security, pleasure/excitement, practicality, usefulness). Data collection and a small-scale trial for wide-scale implementation of the teachers' opinion of APA learning model using the questionnaire instrument guided with the grating that has been compiled. Grating contained two factors along with indicators, namely: (1) the substance of the content (in accordance with student characteristics, in accordance with the Fundamental competencies and indicators), and (2) implementation factors (convenience, security, pleasure and benefits for teachers of Special School for Intellectual Disability. While collecting data for testing the effectiveness of the APA learning model outcomes of students was used in the performance appraisal instrument observation sheet (observation).

DATA ANALYSIS

The research data were collected, processed and analyzed qualitatively and quantitatively. For improving product of input from experts and teachers, researcher used qualitative techniques. The validation of the content one of which it is the assessment

(judgment) expert or professional. Although the statistical and psychometric correlation coefficient cannot be used to assess the content validity, several approaches have been proposed by experts to help measure the content validity of the approach developed by Lawrence (1999) who proposed the ratio of content validity (content validity ratio: CVR) and the Kappa coefficient (Shultz Kenneth & Whitney, 2005). CVR score on each item can range from 1 to -1. A high score indicates a higher content validity for the item. In order to answer the research objectives and to determine the effectiveness of learning APA (as treatment), then the trial is limited and broad scale can be seen the results between test 1 and test 2. Test of the effectiveness can be seen in the results between the pretest to posttest. In order to convince the conclusion of the research data collected was processed and analyzed using statistical analysis techniques paired samples t-test when the data is normal. If the data obtained is not normal, then using Wilcoxon statistical analysis techniques.

Table 1: The content and implementation categorization of APA learning model

No.	Interval	Categorization	
		Substance	Implementation
1	81,26% - 100,00%	Excellent	Excellent
2	62,51% - 81,25%	Good	Good
3	43,76% - 62,50%	Fair	Fair
4	25,00% - 43,75%	Poor	Poor

RESULTS

The data results after implementing the learning teacher opinion on a limited scale trial (conducted on three teachers) learning model which was used the five fundamental motion of physical education APA material showed the results in the figure below:

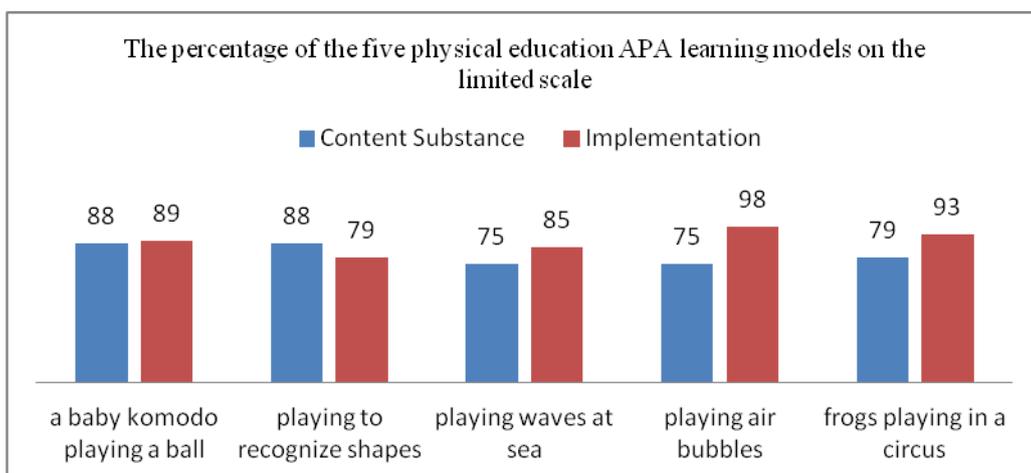


Figure 1: The percentage of the five physical education APA learning models on the limited scale

Based on the results of the calculation of the percentage as shown on figure 1, a baby komodo playing a ball in the category of excellent (88% and 89%). Playing to recognize a ball in the excellent category (88%), while the implementation is categorized in good (79%). APA's learning model playing waves at sea including substantive content of either category (75%), while its implementation include the category of excellent (85%). APA's learning model of playing air bubbles and frogs playing in a circus including both categories are good (75% and 79%), while its implementation include the category of excellent (98% dan93%). Then it can be concluded that the five models of the learning content according to the APA substance characteristics of students and in accordance with Fundamental competence. Hence in the implementation of the five learning model APA, safe, easy, fun and rewarding. Limited scale trial results to the five factor model of learning APA produce substances contents in accordance with the characteristics of student participants, while the implementation factor of safety, easy, fun and rewarding, and Fundamental movement skills factor and brain optimization (response, the focus of attention and tactile) results are average values the average trial 2 larger and significantly different from the value of test 1. It can be concluded that the five learning model of motion base material APA hypothesized proven effective (limited scale testing) to improve Fundamental motor skills and brain as well as the optimization of the substance in accordance with the characteristics of learners and the exercise are safe, easy, fun and rewarding.

RESULTS OF THE FULL-SCALE TRYOUT

The purpose of large-scale trial is intended to obtain data or information required in establishing the five APA physical education learning model. Full-scale trial employed three Special Schools for Intellectual Disability with total of 42 students and nine (9) teachers. In details, three Special Elementary School namely (1) Bangun Putro Bangun Jiwo Kasihan with 8 (eight) students and 3 teachers, (2) Mardi Mulya subdistrict with 13 students and 3 teachers, (3) Mardi Putra 1 Manding Bantul District with 21 students and 3 teachers. In a large-scale trial will be presented data from teachers' opinions on the implementation of the five learning models and data on five APA impact study model results.

RESULTS OF THE FULL-SCALE TTYOUT ON FIVE APA LEARNING MODEL

Data resulting from the implementation of the five model of physical education learning materials on full-scale trial (42 students and 9 teachers) the result as shown.

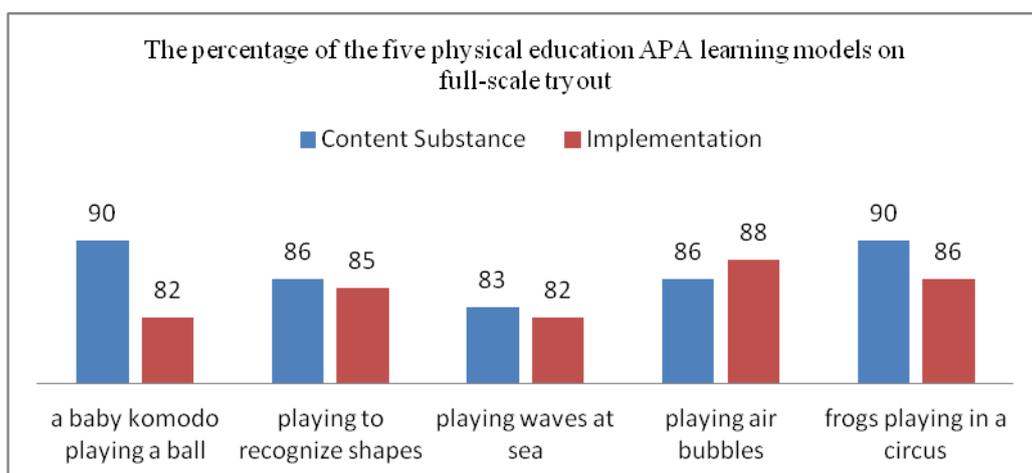


Figure 2: The percentage of the five physical education APA learning models on full-scale tryout

Based on the results of the calculation of the percentage as shown on figure 2, the five models of learning content including substance APA categorized in excellent category (83% and above), while the implementation including in the excellent category (82% and above). Then it can be concluded that the five model of the learning content according to the APA content substance in accordance with the characteristics of the students' competency.

RESULT OF PRODUCT EFFECTIVENESS ON FIRST GRADE STUDENTS AT SDLB TUNAS BHAKTI PLERET

The product is realized on 11 students at SDLB Tunas Bhakti Pleret. The results of testing the effectiveness of the learning model of physical education APAP Fundamental material obtained that post-test mean value of the five models is higher than the average pre-test score. As the results, the models of learning can improve learning outcomes material fundamental motion learners were significantly ($P < 0.05$). It can be concluded that the five models of learning APA namely: (1) a baby komodo playing a ball, (2) playing waves at sea, (3) playing to recognize shapes, (4) frogs playing in a circus, and (5) playing air bubbles effectively used to improve the academic achievement of students in first grade at Special Elementary School for Intellectual Disability on the physical education learning materials.

RESULT OF PRODUCT EFFECTIVENESS ON SECOND GRADE STUDENTS AT SDLB TUNAS BHAKTI PLERET

The application of the second grade at the Tunas Bhakti SDLB Pleret was with five students. The results of testing the effectiveness of the learning model calculation were based on the table as stated above, the average post-test score of the five models is higher than the average pre-test score. In conclusion, it can be concluded that the five learning model to improve learning outcomes material Fundamental motion learners were significantly ($P < 0.05$). Thus the difference was significant. The conclusion is the APA five models of learning materials effectively used for improving learning achievement of students on second grade student at SDLB Intellectual Disability on learning Fundamental movement of physical education.

RESULT OF PRODUCT EFFECTIVENESS ON THIRD GRADE STUDENTS AT SDLB TUNAS BHAKTI PLERET

The field implementation of the third grade at Tunas Bhakti Special Elementary School for Intellectual Disability in Pleret was with five students. The results of testing the effectiveness of the learning models show the average post-test score of the five models is higher than the average pre-test score. As the result, the five learning models is improving learning outcomes ($P < 0.05$). Thus the difference was significant. The conclusion is the fifth models effectively used for improving students achievement of the third grade at SDLB Intellectual Disability on physical education.

DISCUSSION

As shown on the results of the learning model of APA fundamental motion by calculating the average post-test score of the five models is higher than the average pre-test score. It shows more and more students significantly improved, whether it is fundamentally the motion capabilities as well as better motion response, an element of excitement that is increasing, and the focus of increasing attention. This is according to the results of research conducted by Doman (2012: 350-351) that the fundamental movement skills of crawling, of not being able to crawl, crawl out of not being able to, cannot be run on the first can. Furthermore, in the opinion of Orton, et al. (as cited in Dennison, 2004: 6) the motion states cross

interchangeably between couples opposite legs and arms can optimize brain. Likewise, Markam (2005) that exercises the muscles and other locomotors vitalization of the brain devoted to stimulate cooperation between hemispheres and between parts of the brain so that the function of all brain areas will increase, which will then be followed by an increase in blood flow into the brain. Increased blood flow to the brain with better breathing means increasing oxygen to the brain so that it will improve brain function. Also according Caterino and Polak (1999), a recent study concluded that the level of mental focus and concentration in children increased significantly after structured physical activity. Other findings, suggest that physical exercise such as running, jumping, and aerobics games, have a definite impact on the frontal area of child's primary brain lobe for mental concentration, planning, and decision making.

CONCLUSION AND RECOMMENDATIONS

The conclusions from this research are manual books and DVDs of the APA learning model for physical, sports, and health education teaching-learning on the lower grade of Special Elementary School for Intellectual Disability with five major themes namely: 1) a baby komodo playing a ball, 2) playing waves at sea, 3) playing to recognize shapes, 4) frogs playing in a circus, and 5) playing air bubbles. Once the research is completed, it hopefully will become a valuable contribution to improving the quality of human resources especially for learners of Intellectual Disability. For the teachers, the study also contributes to improve the quality of human resources, as guide books and the DVDs are available as a learning model of adaptive physical education, as well as increased knowledge and skills in teaching adaptive physical education grow.

Based on the research and the development, it can be concluded as follows:

1) The content substance of APA physical education sport and health learning fundamental motion model is relevant with the students in Special Elementary School for Intellectual Disability.

2) The application of the five models of APA physical education sport and health learning fundamental motion is safe, easy, and can give joy and be useful for the teachers as the guide book adaptive physical education learning.

3) The five fundamental movements of physical education sport and health APA learning model is effective to increase learning outcomes fundamental skills for students of in Special Elementary School for Intellectual Disability. The effectiveness results (average post test is higher than the pre-test and t values counted higher than t table) show that the five models is effective to increase learning outcomes for students in Special Elementary School for Intellectual Disability.

4) The application of the five models of APA learning fundamental movement is effective to increase the interest focus of the learners in Special Elementary School for Intellectual Disability.

5) The application of the five models of APA learning fundamental movement is effective to increase the responses of the learners in Special Elementary School for Intellectual Disability.

6) The application of the five models of APA learning fundamental movement is effective to increase the excitement of the learners in Special Elementary School for Intellectual Disability.

However, the researcher suggests to be followed up with studies that encompass other students with special needs, as well as researches and re-developments, by improving APA learning model that can be applied in other regions.

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