

Multiple Intelligences and Physical Education Curriculum: Application and Reflection of Every Education Level in Indonesia

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Abstract—Physical education lesson was commonly interpreted as sport education. As a result, sport skill and achievement were the main achievement in physical education class. Student who could perform many sport skills will love physical education a lot, on other hand student who could not perform well would not like this lesson. However, the main purpose in the physical education lesson is not only about sport, but also to promote a healthy life (body and mind). So, the ability in sport is not the main goal, nevertheless they are only used to achieve the healthy body and mind for every student who learns in this class as the primary goal. In Indonesia the implementation of physical education is regulated by the government regulation, especially for elementary and high school level. Whereas the implementation on physical education lesson in preschool and university level, depends on the institution decision. The main duty of a physical education teacher is to encourage every student (who are good or not in sport skill) to have a healthy life, and it could be applied easier by a good understanding of the multiple intelligence theory. This research aims to provide an interesting view of physical education class by using multiple intelligences theory. Moreover, this study also analyzes the application and Reflection of MI in Physical Education Lesson in preschool, elementary school, junior high school, senior high school and university. This is a qualitative research with participant-observer study in several schools about 4 years. There are some typical multiple intelligence characteristics on every education level. The implication and suggestion for physical education class will be explained in this paper.

Keywords—Physical Education, multiple intelligences, curriculum,

I. INTRODUCTION

Physical education lesson or well known as PE is an educational course related to the physique of the human body, it utilizes sports or another physical activity to promote student health benefit. However, mostly physical education is not

implemented maximally yet (Turner, Johnson, Calvert, & Chaloupka, 2017: 210). It only focuses and values physical activity and sport skill, so students who have good sports ability will perform very good in the class and they will love to join in physical education class. On the other hand, students who do not have a good sport skill they will not perform very well, as a result they would not like to do some sport or physical activity during in the physical education lesson. It must to be solved, so every student will achieve daily physical activity recommendations (Kirkham-King et al., 2017: 135).

In Indonesia, PE is a requirement lesson that must be implemented in every elementary school, junior high school and senior high school. It is regulated by government constitution in Peraturan Pemerintah (PP) No. 19 Tahun 2005 and Peraturan Menteri Pendidikan Nasional (Permendiknas) No. 22 Tahun 2006. Other levels of education such as preschool and university, the implementation of physical education depends on their institution decision. So the physical education lesson regulation is also based on institution curriculum.

On multiple intelligence perspective physical education lesson is close related with bodily-kinesthetic intelligence (Gardner, 1983: 217) because it uses sports or many other physical activity to promote health life so that student will have the benefit in their life. So that, this salutary environment very ideal for the bodily kinesthetic person to learn well in this class. Otherwise, the purpose of physical education lesson is for the whole class, so everybody with any difference multiple intelligence profile in the physical education class has to get the benefit from this lesson.

Multiple Intelligence theory has been used by many field of educations to promote a better student achievement, and it proved well. So by this research, there are two research questions and they are:

1. How does physical education work in every education level?
2. What are the multiple intelligences profiles that are involve in the physical education lesson?

Theoretical Framework

Physical Education

Physical Education is an important part in education (Dacica, 2015: 1242). Because it gives a major contribution for student (Thorburn, 2018). Physical education is also an integral part in teaching and learning that contribute internationally minded students and effective lifelong learners (IB Curriculum). So PE lesson concerns with the individual's well-being through the promotion and development of concepts, knowledge, attitudes and skills that contribute to this well-being. The emphasize of PE lesson focuses on students constructing meaning, and expanding and deepening their knowledge of concepts and their understanding of the world rather than mastering in skill acquisition, a game or a sport as an end in itself.

Multiple Intelligences Theory

Intelligence is a type of potential and entails the ability, created or generated in one or more cultural contexts, to solve problems (Gardner, 1999). Every intelligences is different in neurologically, symbol systems they belong to, the tools they call on, the core or sub-abilities included in each, and how each is utilized in the real world.

So, multiple intelligences could be described as multi potential and ability to adapt in some conditions and problems. There are eight intelligence profile that are exist in every person, however everybody has their strength as their dominant intelligence profile. There are linguistic intelligence (sensitivity to the spoken and written word and the ability to master languages), logical-mathematical intelligence (the capacity to analyze problems logically and scientifically), musical intelligence (skill in the performance, composition, and appreciation of music), bodily-kinesthetic intelligence (as exemplified by dancers, surgeons, and artists), spatial intelligence (characteristic of pilots, graphic artists, and architects), interpersonal intelligence (a talent for understanding and relating to other people) and intrapersonal intelligence (the capacity for understanding oneself), and naturalist (the ability to recognize and understand nature phenomena).

II. METHOD

The data that were collected by the researcher are instructional document such as yearly curriculum, scope and sequence, weekly planner, daily planner, student assessment and also picture or video. All of physical education activities in these data were analyzed and grouped into eight different intelligences profile. There are three frequency categories such as seldom ($\leq 49\%$), fair ($50\% - 74\%$), often ($\geq 75\%$).

Findings

Physical Education in Pre School

Sekolah Cikal Surabaya, Stepping Stone School Surabaya, Tutor Time International Pre School and Kindergarten Surabaya and Diana Education Institution Surabaya are private preschool that provide physical education class for their student. However, only Sekolah Cikal Surabaya who has the permanent physical education teacher, the other school usually invite physical education teacher or coach to train their student in a certain time or frequencies. This preschooler class is for student with 3 to 6 years old, so it has different duration of time in a week (30 to 90 minutes in a week) depends on the student age. The curriculum that is used in this level is arranged by the physical education teacher, but the topics and activities are also adapted to the student developmentally appropriate practice (DAP) and the topics are gymnastic, movement to music, ball games and athletics.

The activities in the gymnastic purposes in balance and flexibility, so students are introduced some basic non locomotors movement such as stand up with any kind position such as in one foot position student has to make a plane movement (hands open, body slouch forward and one foot escalate up back), tree (hands palm in over head with one foot lift up and step on the other side foot knee) and stand horse (lift up one knee forward).

In Movement to music, students learn about music pattern and tempo with body coordination movement in sequence. The song that is used must be a simple song with low to moderate interval and beat, so that students are able to enjoy the rhythm well and also understand the pattern to follow or sing. The movement is a coordination movement which hands and feet, left and right, also up and down, but they do in sequences (usually 8 repetitions or counts) which is repeated in many times at least 4 sets. So in one sequence they will do one coordination movement such as left and right of 8 repetitions in 4 sets.

In ball games students have a time to learn manipulative movement with ball, cone, rubber band, bean bag, parachute, ribbon, tunnel and so on. The activities in the ball game such as roll the ball, trap the ball, throw the ball, and catch the ball with or without assist form the teacher. They try those manipulative movement in a simple game that is done in a group of student and also personal. For example in relay games, every student has an opportunity to take the ball with cone to collect in their team basket. The team that has the most ball in a certain time they are the winner.

In athletic topics, students are introduced some locomotors movement, such as walk, jump, run, hopping, galloping and some other variation of animal movement such as king kong, bear, bird, duck, cat, cow, frog, kangaroo and etc.

As an interesting part in the teaching physical education for preschool is in the teaching methodology, because in the student will not follow our instruction if we use the same

methodology as in the other education level. They need to feel comfort of someone or something before they interest to follow, so we have to make a connection by entering their world. It means we need to use their symbol or knowledge that could connect us and them before we start the lesson. For example if we want to train their cardio, we could not ask them to run directly, however we need to make an introduction story such like “today we are going to visit the zoo, does anyone want to go with me?”, then we ask them to follow our movement by following story “Hei look, there are some penguins, can you move like penguins”. Based on the researcher observation, by using this imagination story, students were much interested and engaged to follow our instruction in the physical education lesson.

Physical Education in Elementary School

Ciputra international school and Sekolah Cikal Surabaya are private elementary school in Surabaya which uses International Baccalaureate (IB) Curriculum, and it is written on the guidelines book which is called Making PYP Happens. In this curriculum, physical education is in the PSPE. The researcher was a physical education teacher in Ciputra International School at 2012 for 3 months and in Sekolah Cikal Surabaya from August 2012 to April 2013.

The kind of experiences that uses in the physical education lesson for IB curriculum are categorized in five topics as follow below:

1. Individual pursuits
The development of basic motor skills through locomotor, non-locomotor and manipulative movement in some athletic activities (for example, track and field, swimming, skating, skiing)
2. Movement composition
Students are introduced a sequence of aesthetic movements to stimuli thier communicate feelings, emotions and ideas (for example, gymnastics, dance, martial arts).
3. Games
By games, students learn manipulating space, developing appropriate skills and strategies; recognizing rules and playing in a team.
4. Adventure challenges:
The variety of task requires physical and critical-thinking skills and work collaboratively to solve problems and accomplish a common goal.
5. Health-related fitness:
Recognizing and appreciating the importance of maintaining a healthy lifestyle; the body’s response to exercise including the interaction of body systems and the development of physical fitness.

Physical Education in Junior High School

Sekolah Menengah Pertama (SMP) Garuda Surabaya or Garuda Surabaya is a private school which is located at west part of

Surabaya. The researcher was a teacher in this school at 2011 for 2 months, the purpose of physical education lesson base on PP No. 19 tahun 2005 Ayat 1 butir e is to improve physical potential, cultivate sportsmanship, and awareness of healthy life. There are seven topics that can be used in physical education lesson as follows:

1. Games and sports
In this topic, students are introduced some traditional games (rounders, kippers, kasti, bentengan, and gobak sodor). The exploration of basic movement for student are focused on non-locomotor skill, locomotor skills and manipulative skill by some sports such as athletics, soccer, basketball, and volleyball.
2. Development activities
The main purpose of this topic is to introduce mechanics posture, physical fitness components, and body posture to student by many physical activities such as push up, sit up, back up, distance running, zig zag running, and others.
3. Activities gymnastics
The aim of this topic is to help student to have simple agility, balance, flexibility, and coordination. The activities are used in this topics are gymnastic without tools, gymnastic with tools, and floor exercises such as forward roll, back roll, bridge, candle, and etc.
4. Rhythmic Activities
In this topic, teachers use music as the rhythm and combine some free movement but in sequences. Some activities that are used in this topic are gymnastics morning, Senam Kebugaran Jasmani (SKJ) 2008 and low impact aerobic exercises.
5. Water Activities
This topic encourages student to join in some games in the water, water safety, skill moves in the water, and swimming.
6. Education outside the classroom
In this topic, student are introduced some outside activities which is related with sport recreation such as picnic / field trip, the introduction of environment, camping, exploring, and hiking

Health

In this topic, teacher teaches student about planting of healthy living culture in everyday life, particularly with regard to the treatment of the body to stay healthy, maintain a healthy environment, choosing healthy foods and beverages, preventing and treating injuries, set a proper rest and play an active role P3K activities and UKS.

Physical Education in Senior High School

State Vocational School (SMKN) 8 Surabaya is a government school which is located at Surabaya. The researcher was a teacher in this school at 2011 for 3 months, the purpose of physical education lesson based on PP No. 19 tahun 2005 Ayat 1 butir e is to improve physical potential, cultivate sportsmanship, discipline, cooperation, and healthy life. Culture of healthy life includes awareness, attitudes, and behaviors of healthy living individual and collective social such as freedom from risky sexual behavior, drug addiction, HIV / AIDS, dengue fever, vomiting, and other potential disease for the plague. There are seven topics in the physical education lesson for senior high school in Indonesia as follows:

1. Games and sports include
The activities that are used in this topic are: traditional sports, athletics, soccer, basketball, volleyball, and badminton.
2. Development activities include
Physical activities that are included in this topic are strength training, cardio training, power training, and agility training.
3. Activities gymnastics
Gymnastic without tools, Gymnastic with tools and floor exercises are the activities for this topic
4. Rhythmic Activities
free movement, gymnastics morning, SKJ, and aerobic exercises and other activities
5. Water Activities
games in the water, water safety, skill moves in the water, and swimming and other activities
6. Education outside the classroom
including: picnic / field trip, the introduction of environment, camping, exploring, and hiking
7. Health
including the planting of healthy living culture in everyday life, particularly with regard to the treatment of the body to stay healthy, maintain a healthy environment, choosing healthy foods and beverages, preventing and treating injuries, set a proper rest and play an active role P3K activities and UKS. The health aspect is an aspect of its own, and implicitly entered into all aspects.

Physical Education in University

Researcher was a lecturer assistant of "Physical Education Course" for undergraduate student in Universitas Negeri Surabaya (Unesa) and also lecturer assistant of "health and wellness course" and "sport and art course" in Universitas Pelita Harapan (UPH) Surabaya at 2014. Those courses are the requirement course that every student has to accomplish in the undergraduate degree, so the implementation of those courses is regulated by the university law and printed in student

guidance. Besides sport and other physical activity, there are 4 essential topics as follow below:

1. Health in body and mind
Students are explained about health in body and mind, it also includes further explanation about healthy life style issue such as smoking and drugs.
2. Nutrient and diet
The knowledge of human nutrients, healthy diet menu, calories that they need and how to keep it in a balance are the chapter in this topic.
3. Training program
Training zone, exercise model, body composition and body function are given to student to help them get the ideal body shape and composition.
4. Sex education
In this topic, students are introduced about fact and myth of sex. So students have the knowledge to prevent them from the negative impact of their society.

The sport activities are organized as follows:

1. Traditional Games activities
In this activity, students are encouraged to make and arrange two traditional games in a group which are one game is without equipment and the another one use equipment. Then the students have to present and perform their game in class, because they have to involve all of classmates to join in their games.
2. Cardio and Strength Training
Students are introduced to measure their body capability by MFT Test in the first meeting, and then they have to practice by their self and record their activities and heart rate before also after practice in a form at least 3 times in a week to improve their body capability. They practice for 4 months then in the last meeting; they have another MFT test to analyze their body capability.
3. Sport Competition
Student has to participate in sport competition such as basketball, soccer, hand ball, or volleyball in the team of each class. The main goal in this activity is not to be a winner, but it encourages all of student to have fun, enjoy the sport activity, learn to work and play as a team.

Multiple Intelligences Perspective at Application of Physical Education Lesson

Information:

* Frequency of implementation in the physical education lesson is seldom ($\leq 49\%$)

** Frequency of implementation in the physical education lesson is fair ($50\% - 74\%$)

*** Frequency of implementation in the physical education lesson is often ($\geq 75\%$)

- a. Bodily kinesthetic intelligence are the dominant activity in the every education level, it could be in a form of physical activity and also sport activities. The sport activities are categorized into ball games, striking skill, movement to music, gymnastic, athletic and aquatic activity. So every education level practices their bodily kinesthetic intelligence in every meeting (100%).
- b. Musical intelligence in preschool level becomes the other dominant activity, because in this level student more extracted to follow some movement in the music rhythm in every meeting (100%), rather than in the higher level of education.
- c. Logical mathematical in the physical education activity is trained by the activities that use pattern and number as the domain of activities such as sport games. In basketball for example, student will be explained about the score counting and also position in the game. However, in the lower education level it is not used much. So, the highest implementation of logical mathematical intelligence is less than 60 % in every year.
- d. Visual Spatial is the second stable intelligence that is used in every education level, because it is closely related with coordination in bodily kinesthetic domain. It usually practices together with bodily kinesthetic intelligence; however the part of visual special intelligence is approximately 50 % to 74 % in every year.
- e. Interpersonal is trained in the team game activity such as soccer, volleyball, basketball and so on. It is trained almost every meeting in junior high school and higher level, so the percentage at least is 80 % in a year. Nevertheless, the implementation of interpersonal intelligence in preschool level is very limited or less than 50 % and it increases in the primary education level at 50 % to 74 % in a year.
- f. Intrapersonal intelligence is developed by the activity that obligated the student to be confident in some activities or games. This profile is trained mostly in elementary school and lower level, so the

implementation of the intrapersonal in those levels is more than 75 % in a year. However, in the junior high school and higher education level it decreases in 50 to

Multiple Intelligences	Education Level				
	Preschool	Elementary	Junior High	Senior High	University
Bodily Kinesthetic	***	***	***	***	***
Musical	***	**	**	*	*
Logical Mathematic	*	*	*	**	**
Visual Spatial	**	**	**	**	**
Interpersonal	*	**	***	***	***
Intrapersonal	***	***	**	**	**
Linguistic	***	***	*	*	*
Naturalistic	*	**	***	***	***

74 % in a year.

- g. Linguistic intelligence in elementary school and lower level is applied a lot to attract student follow some activities. It could be in a form of storytelling that require student to follow teacher's movement. Another activity for of the training in this intelligence is by singing activity. In percentage, linguistic intelligences is trained more than 75 % in a year. Afterwards, it declines at less than 49 % in junior high school and higher education level.
- h. Naturalistic intelligence is trained more in junior high school and higher education level, because in this level they start to analyze human body function, diseases and sex education. In percentage, it is more than 75 % in a year. However, Naturalistic intelligence in the lower education level is developed by the activity that introduces the student about healthy food and personal hygiene concept, with that the percentage in elementary school is 50 % to 74 % then in preschool level is lower than 49 %.

III. RESULTS AND DISCUSSIONS

Theory and Practices

The theory in the Frames of Mind explains that intelligence is not a single property of the human mind, as is commonly believed, but rather that each human being is endowed with a set of several intelligences each of which can be nurtured and channeled in specific ways. So every person has their own

intelligence profile. In the physical education class, the one who has a good bodily kinesthetic profile must perform much better than the other. However, the physical educator has to provide the variety of learning that could be enjoyed and done by every intelligence profile. The activity in physical education classes must be fun for every intelligence profile, so they will feel happy to do and practice any activity to promote their healthy behavior. On other hand, the activity which is only good for one certain intelligence profile will not be enjoyed by others.

Multiple Intelligence Assessment in Physical Education

In physical education class there are performances and writing test to analyze student achievement in the physical education lesson. For example, to know the student ability in athletic, the teacher will ask the student to run, jump and throw. However, the sport ability (bodily kinesthetic and musical) is not the main purpose in physical education class. There is also sportsmanship (interpersonal and intrapersonal), and awareness of healthy life style (naturalistic and spatial) purposes in the physical education classes. The appropriate assessment must be able to analyze every purpose that were appointed, so base on the multiple intelligence perspective there are another way to measure student achievement as follows:

1. Digital student portfolio (picture and video)
2. Written student portfolio
3. Student progress report
4. Observation
5. Individual Project
6. Team Project

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