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ISPHE

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FIRST INTERNATIONAL SEMINAR ON PUBLIC HEALTH AND EDUCATION

GRAND CANDI HOTEL, SEMARANG CITY, SEPT 2nd 2014

BOOK 2

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UNNES

PUBLIC HEALTH DEPARTMENT
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PREFACE

Assalamu'alaikum warrahmatullahi wabarakatuh

Firstly, may we made our highest praise and thank to Allah The Almighty, for His bless so that we are able to conduct such an precious moment; First International Seminar on Public Health and Education 2014 in Semarang Indonesia, to share our knowledge and ideas with so much warm and friendship from worldwide public health and education community.

International Seminar on Public Health and Education 2014 is aimed to gather all of experts, researchers, academicians and practitioners in health education field in general as well as national and international level in one prestigious academic forum which to discuss all health-education-related issues, ranging from human resources, curriculum, institutionalization etc. The seminar also proposed to contribute to the focus of health development direction; by considering also situation and the status of local health condition from each region, both national and regional levels as well as its relation to global health trends

I would like to deliver our highest respect and appreciation to our honorable speakers, Prof. Dr. Ir. H. Musliar Kasim, M.S (Indonesia vice Minister of Education and Culture for Education Affairs) and to the Rector of Semarang State University for their support and appreciation on this seminar; and my deep gratitude to our honorable guests: Prof. Doune Macdonald (Queensland University Australia), Maria Consorcia LIM Quizon, MD (South Asia Field Epidemiology and Technology Network, Inc , Philippine), Dr. Khancit Limpakarnjanarat (WHO Indonesia Representative), and also Assist. Prof. Dr. Songpol Tornee (Srinakharinwirot University, Thailand). I really expect that this seminar will be beneficial for all of us and to the development of the Public Health and Education field.

Allow me to express my gratitude to the participants and audiences from Indonesia and other foreign countries who are enthusiastic in attending this seminar. I do hope that all audiences will gain important values and collaborate it into our own fields and make significant changes in the future. Besides that, I also convey my appreciation to all of organizing committee who has given their outstanding commitment for presenting this occasion.

Wassalamu'alaikum warrahmatullahi wabarakatuh

Sincerely yours

Rudatin Windraswara

Content

ORAL PRESENTATIONS

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ORAL PRESENTATIONS

THE IMPLEMENTATION OF MODIFICATION IN FOOTBALL LEARNING AT ELEMENTARY SCHOOL AS AN INJURY PREVENTION EFFORT TO STUDENTS

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Abstract

Introduction: Football is included in the scope of the game and sport in Physical Education lessons in elementary school. The game of football is very exciting for everyone, including children. Learning football in elementary school has the potential for injury to the student, if it is done inappropriate with the growth phase and development of students.

Results: Potential injuries in football play can be minor and serious injury. Minor injury includes: abrasions, bleeding under the skin, strains and sprains, muscle cramps, and muscle bruising. Serious injury includes: muscle tearing, ligament or fracture. The potential for injury to the student in learning football in elementary school can be prevented by applying modifications. Modification is one effort that can be done by teachers in learning to reflect developmentally appropriate practice, which means that a given teaching assignment should pay attention to changes in the ability of children and can help encouraging these changes. Modifications can be made to: (1) the size of the field, (2) the shape, size and amount of equipment used, (3) the type of skill that is used, (4) rule, (5) the number of players, (6) organization of the game and (7) the purpose of the game.

Key Words: Modification, football, injury, elementary school students.

Introduction

The Physical, Sport, and Health Education subject is included as one effort to realize a complete human which is held at school, both from primary to secondary education level. Education as a process of human development lasts a lifetime, Physical Education, Sport and Health taught in school has a very important role, which gives an opportunity to students to be directly involved in a variety of learning experiences through physical activity, sport and health that are selected and performed systematically. The debriefing the learning experience is more intended to foster the growth of physical and psychological development better, as well as forming a healthy and fit lifestyle throughout life.

The achievement of the objectives of the Physical, Sport, and Health Education in Primary Schools should consider the learning objectives, students' abilities, methods, materials, facilities and infrastructures, as well as the pleasure of learning activities of students. The elements mentioned above must be considered, so that the learning process will go well and successful, so that the expected objectives will be achieved. Game sport is one element in curriculum that dominates enough in the subjects of Physical, Sport, and Health Education Elementary School.

Sport games include small ball and large ball games. Small ball games taught in elementary schools include: baseball, kippers, rounders, softball, and baseball, while the big ball games taught in elementary schools include: football, volleyball, and basketball.

The football materials taught in Physical, Sport, and Health Education subject is a medium used in the educational process. The material taught football game in elementary school must be customized to the children stage of growth and development. The material for the football game in elementary school must be given in a different form. The form of football games for elementary school students should be different with the material form of football game for adults. The main purpose of learning the game in elementary school is that children gain the excitement. Sports are used as a medium of learning in school physical education which has the potential injury. Big and little risks of injury caused by the accident depend on the type of exercise performed and the parties involved in the learning, such as teacher and students. The game of football certainly has a greater potential to cause injury to the others like volleyball game.

The efforts to avoid accidents in physical education teaching, especially in football game material are needed. A teacher should understand the dangers and mistakes made in learning the game of football. Factors of accidents in physical education lessons, including: lack of leadership, lack of good equipment are used, the children's behaviour cannot be predicted, inadequate skills, not good physical condition, and the risk that characterizes the type of the activity itself, (Sayarti Soetopo, 2004: 7.5). Basically injury in learning football game can be prevented. One effort that can be done is to modify the implementation of learning the game of football. Modification is one way that can be done by teachers to reflect developmentally learning practice, which means that given teaching assignments should pay attention to changes in the ability of children and can help drive these changes. Therefore, the teaching task should match with the developmental level of students who are learning. Appropriate teaching tasks must be able to accommodate any changes and differences in the characteristics of each individual as well as pushing it in the direction of change for the better.

Results and Discussion

The Injury in Football Game Leaning

Injury in football game in school learning can possibly occur in students. Environmental and student pressures received by students at the time of learning the game often cause an accident or injury. Basically, the injury is a result rather than the forces acting on the body or body part than that exceeded the body's ability to cope, these forces can happen quickly or long-term. All kinds of sports injuries are injuries that occur, either at the time of exercise or at the time of exercise (game) or afterwards. Sports injuries are caused due to the pain of exercise, which can cause defects, wounds and damaged muscles or joints as well as other parts of the body, (Andung Sudijandoko, 2000: 7). Injuries that occur in football can be minor and major injury. Minor injury is an injury that is not followed by significant tissue damage in our bodies. In minor injury, it is usually not required

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any treatment, and will heal by itself after a break some time. Students, who suffer minor injuries in football play, usually will still be able to continue the game. The examples of minor injuries are: abrasions, hematomas, strains and sprains of the level, muscle cramps, and muscle bruises (contusions). Whereas, major injuries are serious injury, where the injury we find any damage to the body tissues.

Students, who suffer major injuries in football play, usually cannot continue playing. The examples of serious injury are: injury to the head (concussion or injury that causes fainting, and a broken nose), injury to the knee (contusions, sprains, strains, dislocations of the patella, and the tear meniscus), injury to the ankle (the medial malleolus fractures of the tibia , talokruralis dislocations, muscle tears and ligament, haemarthrosis), injury to the spine (vertebral fracture and dislocation of the spine), and injury to the shoulder (luksasio (subluksasio) of the shoulder joint and joints akroinioklavikularis), (Hardianto Wibowo, 2007: 108).

Causes of Sport Injury

Learning of physical education in schools has the potential for injury to the student. Watson (1992) cited by Santosa Giriwijoyo (2013: 99) states that the teaching of physical education in schools, accounted for around a quarter of all cases of sports injuries, and the incident in the boys much bigger in sports outside of school, with the largest number occurs during exercise. Factors that could cause sports injuries in children include: (1) carelessness, (2) fraud or illegal game of opposing players, (3) field or a bad play equipment, (4) body size or strength is not appropriate the activities carried out or not in accordance with the opponent to be faced, (5) inadequate level of fitness or any postural problems, (6) the absence or not good protective equipment, (7) shoes or sports equipment that is not appropriate, (8) rudimentary healing injury, (9) monitoring or refereeing is not good, and (10) lack of sufficient heating, (Santosa Giriwijoyo, 2013: 99). Further Andun Sudijandoko (2000: 18-21) explains that the cause of injury, among others: (1) factors sportsmen, including: age, personal factors, experience, level of exercise, technique, warming up, recovery period, body condition, and balance nutrients, (2) the equipment and facilities, and (3) the character of the sport factor.

Dunkin (2004), quoted by Yustinus Sukarmin (2005: 15) says that the injury occur at exercise is caused by several things, namely: (1) accident, (2) implementation of poor training, (3) equipment that does not comply , (4) lack of physical condition preparation, and (5) inadequate warming and stretching. The factors of accidents or injuries in physical education lessons, include lack of leadership, lack of good equipment is used, the children's behavior that cannot be predicted, inadequate skills, good physical condition, and the risk characteristics of the types of activities itself, (Sayarti Soetopo, 2004: 7.5). Hardianto Wibowo (2007: 13) explains that the causes of sports injuries, among others are: (1) external violence (the causes of which are from outside), for example: the presence of body contact, as sport equipments, and state of the field that does not meet requirements, (2) internal violence (causes originating from inside), for example: coordinating the muscles and joints that are less than perfect, the size of the feet or legs of unequal length, the

strength of the muscles that are antagonistic unbalanced, and the lack of heating, and (3) over-use (continuous usage or too tired), for example: the use of excessive muscle or too tired.

Prevention of Sport Injury

To prevent is better than to cure, it is still a rule that must be made and adhered to. Prevention of sports injuries can be done by: (1) changing the rules, (2) modification of equipment adjusted to the size, strength and skill level, (3) the right shoes, the use of protective equipments required, (4) the selection of appropriate exercise and in particular children through a special assessment, and (5) improvements in training techniques and exercise programs, including proper warming up, strength, and flexibility exercises, appropriate loading portion, and step by step intensity, (Santosa Giriwijoyo, 2013: 102). Congeni (2002), quoted by Yustinus Sukarmin (2005: 16) explains that injury prevention measures can be done through: (1) having a good physical condition at the time of exercise, (2) determine and implement the rules of the game, (3) use of appropriate and good protective equipment, (4) knowing how to use gym equipments, (5) warming up before exercise, and (6) do not exercise at the time of having fatigue or sickness.

The prevention of sports injuries can also be done in several ways, such as: (1) prevention through improved skills, (2) prevention through fitness, (3) warming up, (4) consider to the environment is used, (5) using appropriate equipments, (6) using the appropriate sport apparels, (7) prevention through aids, and (8) sportsmanship and responsibilities of coach, official, medical personnel and athletes, (Andun Sudijandoko, 2000: 22).

Injury Prevention in Learning of Football Game in Elementary School through Modification

Football is very attractive to children. The flexibility to do a variety of movements, such as jumping into the air, twisting body, and rotates once, a movement that has the potential to cause injury. Heading a ball from a powerful kick from close range is to children, especially if the ball is a ball that is used standard. The use of modified balls is by soft materials, such as synthetic rubber in several sizes (large or small) is very suitable for primary school children, (Rusli Lutan, 2001: 139). The prevention of injury to student in learning the game of football in elementary school can be done in various ways. One of the ways that can be used for injury prevention is by the application of learning through a modification football. A football game is done by a child, who cannot create a sense of fun and joy and cause inactive children to move, there should be an evaluation of the game.

Modification of the game is one of the alternative ways that can be used to improve the shape of the game. As what was said by Pangrazi (1989: 488) that a game can be modified and created in the form of new variations that can be done by the teacher or the child and even both. According Yoyo Bahagia (2000: 1), it is stated that in a study of learning, especially in physical education in schools, can be done by using a modification. Modification is one effort that can be done by teachers to reflect developmentally learning practice, which means that a given teaching assignments should pay attention to changes in the ability of children and can help drive these changes. Therefore, the teaching task should match the developmental level of students who are

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learning. Appropriate teaching task must be able to accommodate any changes and differences in the characteristics of each individual as well as pushing it in the direction of change for the better.

Modification of the game has some very important benefits, one of which for the prevention of injury to the student. Further, Yoyo Bahagia (2000: 1) states that the modification has to analyze the essence of the subject matter as well as developing the learning materials form of learning activities that can potentially facilitate students in learning. This method is intended to guide, direct, and learning students who cannot otherwise be able to, from a level that was lower to have a higher level. In connection with the modification of sport or game that is applied in the teaching of physical education in schools, Gusril (2004: 46-48) states that the modification has advantages and effectiveness, which includes: (1) Improve Students' Motivation and Joy in Learning Physical Education. Sport learning orientation and modified game into physical education, namely: to motivate children's pleasure. Children who follow the pleasure of learning will encourage the motivation to participate in the following study physical education. Eventually children will have the opportunity to actively move, so the goal of learning to improve the fitness of the children will be achieved; (2) Increase Student Learning Activity. The principle of sport and game modification is learning activities. Therefore, in the teaching of physical education, it needs to be stressed the time to take advantage of motion activity. According to Jones (1995) quoted by Yoyo Bahagia (2000: 47) that states that in teaching physical education teacher should be able to utilize 50% of the time available to the motion activity. In this regard, the teacher should be required to design learning physical education in such a way, good materials, methods, and effective learning organization; (3) Increase Learning Outcome of Student Physical Education. As has been stated above, that the principle of using a modified learning is learning and fun activities, giving students the chance to experience high activity and provide a lot of motion. According to Toho Cholik Mutohir (2000: 108), the modification of sport is to encourage children to perform motion tasks with a higher success rate than the traditional approach. If the child has a lot of movement experience will certainly contribute to the improvement of physical fitness. Physical fitness is one aspect that is very important for the basic capital gain optimal learning results.

Overcome the Lack of Facilities and Infrastructures

One of supports of the learning process of physical education is the availability of existing infrastructure. Facility is a tool that is used in physical education, while infrastructure covers the place used in the field of physical education. To create the learning process of physical education of good quality, it is necessary to have adequate facilities and infrastructure. If the availability of infrastructure is inadequate, then the teacher needs to be adjusted for creativity or create some form of modification to overcome the problem of infrastructure.

The Principles of Modifying Football Game

The game of football is essentially included as invasion game and team game, because in this game each team tries to do an attack that aims to score goals against the opposing team. Learning the game of football in elementary school, should be tailored to the stage of growth and

development of students. Students should not be taught the game of football like adults. Further, Pangrazi (1989: 597) states that the game of football 11 people 11 people opposed, not exactly taught to elementary school age children. A football game is given to elementary school age children, must be modified in accordance with the stage of growth and development of children. To create a modified game of football, there are considerations that need attention. The main purpose of learning the game of football is the children so that children gain the excitement. The form of football games as a result of modifications made simple real game. Modifications can be made to reduce the size of the field, the width of the goal, the number of players, and shorten time to play, (Soendoro, 2004: 14). Modifying a game should not change the challenges in the game. Modifications game should also provide an opportunity to the players to perform technical and tactical exercises. Modification of the game also includes changes related to the size, weight equipment used, play areas, old games, the rules are used, the number of players in a team, the size of the wicket, a net height, players position shift, or how to score goals or numbers , (Siedentop: 2004: 59).

In accordance with Siedentop (2004: 60-64), there are some keys or strategies to modify a fun and challenging game that can make children attracted to do, they are: (1) How to Score Easily, children will love a game that aims to form scores or numbers. Scoring is a way to describe success in a game. Children will feel bored and frustrated, when doing a hard or difficult game scores / numbers. For example, children will feel bored or not happy, when playing football rarely or too difficult to score against opponent. Therefore, the game of football can be modified to increase the amount of the goal, so that the children will have a frequency to score more. Another possible way is to increase the height and width of the goal; (2) Slow Down the Move of A Ball or Object, Slow down the movement of the ball or the object used in the game will help children. This will facilitate the children in anticipation of the ball or the object used in the game. For example, in the game of tennis, the children will find it difficult to anticipate or hit the ball, if the ball is hard to use (standard or normal size). The ball movement can be slowed down by using a ball that is not hard (soft), so that the children will be easier to anticipate or hit the ball. Similarly, football game, children will be easier to kick the ball, if the ball is not hard to use or use a ball made of plastic, rather than using a hard ball (standard ball); (3) Increase the Opportunity to Train Technique and Tactic, one of the key strategies for modifying the game is trying to improve the technical and tactical training opportunities to children. This effort can be done by reducing the number of participants involved in a game. In the game of football is played 11 vs. 11, will make children have the opportunity to practice the techniques and tactics. Opportunity training techniques and tactics in the game of football can be done by reducing the number of participants, for example, a football game 7 vs. 7; (4) Possibly to Perform the Game Systematically to Emerge Tactic Learning. Attacking game (invasion games) presents many complex and difficult tactics when studied by beginner students. Small-sides games (small game) is one way that can be used to solve the problem and improve the tactics students with a sense of comfort, while playing an attacking game

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form (invasion games). Examples of small game-sides soccer games in the game for primary school children can get through the competition 1 Vs 1 who played on the basketball court are only using half of the field. In this game students have to do dribble and shooting when attacked and the student must maintain the area and tried to snatch the ball when defending or attacked. The size and shape of the field of play will also help to determine how the tactics learned. Form of a large field provides an opportunity for students to conduct long-range shot, otherwise when using small or short field allows students to frequently use the short pass; (5) Change the Rules in the Scoring, game modifications can be done by changing the way of scoring rules. It is very important to do, because the goal or objective in the game is to produce a score against opponents. Modification of the scoring can be done in accordance with the objectives and the needs of the game.

Aussie Sport (1993) cited by Gusril (2004: 45-46) argues that there are four elements that need to be considered in modifying exercise in teaching physical education, namely: (1) Field Size Modification, modifying the field size and the time aims to reduce student expectations of physical abilities. Modifications to the size of the field can be adjusted to the situation and conditions that are available on the school field; (2) Modifying the Equipments, modifying equipments includes equipment needed for learning. In the game of football for elementary school students, the equipment used should be adjusted to the growth and development of students. This will make students feel more comfortable doing and avoid the possibility of injury. A football game is done by students in elementary schools using an adult size football field and will make the students feel happy and less enthusiastic in following the game. Students will feel pain and can lead to injury, since it uses the ball for adult or standard size; (3) Modifying the Game Time, modifying the duration of the game aims to give full concentration and fun for students to follow the learning of physical education. A long time will make the bored students to perform movement tasks. Determination of time spent used is adjusted to the existing needs, (4) Rules Modification, modification of the rules aims to help students develop the skills and enjoyment in performing the game without breaking the original rule of the game. Regulations are made in the game is done and agreed collectively or teacher sets it first, then notify to the students.

According Yoyo Bahagia (2000: 31-32), modification of a sport game can be done by reducing the structure of the game. These structures include: (1) the size of the field, (2) the shape, size, and amount of equipment used, (3) the type of skill that is used, (4) rules, (5) the number of players, (6) the organization of the game and (7) the purpose of the game. Furthermore, Knut Dietrich (1984: 12-13) explains that football game can be done in a modified form. The modification can be applied in terms of: (1) changes in the number of players who play, (2) changes in the size of the field and equipment, and (3) changes in the rules of the game. Football International Federation Association or called FIFA explains that the existing rules of football can be modified for children under the age of 16 years old, female players, veteran players (over the age of 35 years), and players who suffer disability. According to FIFA (2007: 3), it is explained that the points can be modified regulations in the football game include: (1) the size of the field used for play, (2) the size,

weight and materials used ball, (3) the height and the width of the goal, (4) the length of the game, and (5) substitutions.

Closing

Injury in learning football game in elementary school is something that is not expected by anyone. To that end, all parties involved must always seek to avoid and prevent it. The main actions must be taken to prevent injury. We must first know and understand the factors that lead to injury and then try to minimize the factors. One of the efforts that can be done by physical education teachers is to avoid injury in learning the game of football in elementary schools by implementing a modification.

Modification is one effort that can be done by teachers in order to make the learning reflect developmentally which means that a given teaching assignment should consider changes in the ability of children and can help drive these changes. In order to create a modified form, especially in football game, then the modification can be done in terms of: (1) the size of the field, (2) the shape, size, and amount of equipment used, (3) the type of skill that is used, (4) the rules, (5) the number of players, (6) the organization of the game and (7) the purpose of the game.

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MODEL DEVELOPMENT OF LEARNING TOOLS OF PHYSICAL EDUCATION TO IMPROVE STUDENTS' INTEREST IN ELEMENTARY SCHOOL

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Abstract

Introduction: This research was aimed at developing and producing multifunction tools as well as effective learning samples to be done in physical education at elementary schools.
Methods: This research used research and development on learning tools for elementary schools. Research instrument used in this research were questionnaire, observation, and measurement. Reseach data were the assessment of the quality of product, dan the result of students' Vo2 Max. Data analysis used descriptive-quantitative in order to know the percentage students' interest after using multifunction tools and to know the percentage of the improvements of students' Vo2 Max.
Results: The research findings were as follows: (1) the development of multifunction tools which can be used in physical education, (2) the result of field tesing on the product which was carried out at SD 2 Trimodadi, SDN 2 Ratu Abung, dan SDN 1 Ratu Abung showed that the improvement of Vo2 Max was 62,81%, (3) the result of the product acceptance in the aspect of internal and external was 94,58%.It can be conlcuded that the development of the model of learning tools in pyisical education empirically produced the effective product of multifunction tools and it can be implemented in phisical education at elementary schools.

Key Words: Learning tools, physical education, interest, elementary schools

Introduction

Sports physical education and health is an integral part of education as a whole due to join the intellectual life of the nation's existence. Physical education subject matter and motion have pedagogical objectives as its activity. Physical education has the goal of education as 1) the development of the organs of the body to improve health and fitness, 2) development of the neuromuscular junction, 3) emotional mental development, 4) social development, and 5) of intellectual development. The final goal of sports and physical education lies in its role as a unique container perfecting character, and as a vehicle to own and form a strong personality, good character and noble nature. The description makes it clear that physical education and sport is an educational tool as well as acculturation. This process is a condition that allows humans are able to continue to survive as human beings.

Education is the effort to influence the formation and the formation of personality, including changes in behavior, because it's physical education and sports always involve a social dimension, in addition to the criteria that emphasize the physical nature of skill, agility and performance of "permissibility". The social dimension involves relationships between people, between learners and facilitators or directors.

To achieve the goal of physical education required in a process called learning process. According Hamalik (2007) learning is a process. Learning is not a destination but a process to

achieve the goal. Goal is achieved is the result and evidence of a change in behavior of the learning process. To change the behavior of students is not as easy as what we imagine the need for planning a truly appropriate. Preparedness planning is a teacher or teachers to teach, educate, and guide, as well as learning devices made in accordance with the circumstances of schools and preparation of facilities and infrastructure.

Based on empirical surveys in 3 (three) schools in the district of North Lampung, South Abung District, particularly at the elementary school District 2 Queen Abung, SD Negeri 2 Trimodadi, and SD Negeri 1 Queen Abung. Then looks facilities and inadequate infrastructure that not all material can be taught there, such as: materials basketball, badminton, high jump, volleyball, Tonis, even the material being taught a very simple football. The following observations regarding the number of students, facilities and infrastructure and the effectiveness of learning outcomes by increasing the pulse of the students.

Table 1. Number of students in three schools in the district of South Abung

No	School	1	2	3	4	5	6	Total
1	SD N 2 Ratu Abung	41	33	38	44	38	30	224
2	SD N 2 Trimodadi	24	28	19	14	14	40	137
3	SD N 1 Ratu Abung	16	18	22	11	18	19	104

Table2. Means and infrastructure at three schools in the district of South Abung

No	School	Total facilities and infrastructure											
		Foot ball	Volley ball	Pel ru	Lem bing	Ckr m	Tip e	Buku penjs	Footb all court	Ba k pa sir	Gd g OR	L. Tg gi	Mtrs
1	SD N 2 Ratu Abung	1	-	1	-	-	1	100	1	-	1	-	1
2	SDN 2 Trimodadi	1	1	2	6	2	1	90	1	1	1	1	-
3	SD N 1 Ratu Abung	-	1	-	-	-	1	-	-	-	-	-	1

Table 3. Average computation pulse V grade students before and after learning physical educaion follow.

No	Name School	number of students	Average per minute prior to learning DN	The average pulse per minute after learning
1.	SDN 2 Ratu Abung	224	64.04	93.4
2.	SDN 2 Trimodadi	137	62.07	100.5
3.	SDN 1 Ratu Abung	104	69.57	135.3
Jumlah		465	195.68	329.2
Pulse Average			65.25	109.73

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From the table above, the number of students among the three schools has a number of different students. Then in terms of the facilities was minimal in all three schools and facilities for exercise is a very pretty place for 2 (two) schools Abung SD Negeri 2 Queen and 2 Trimodadi Elementary School has a football field wide enough while the Queen Abung Elementary School has only one page school for exercise. But the field is large enough that can't be used to its full potential for learning physical educaion. Field is due to limitations such as no pole volleyball, basketball pole, pole badminton, high jump pole, or a football goal post. As for the increase in pulse rate was not maximized.

To the authors will make a modification to a multifunction device that can use a variety of sports, such as a football field, volleyball, basketball, badminton, Tonis, and high jump. This tool is made using a metal consisting of two pieces that can be formed into2 (two) pieces of goal ball, 2 (two) volleyball pole, 2 (two) basketball pole, 2 (two) badminton pole, 2 (two) poleTonis and 2 (two) high jump. Expected after this modification development model used by the teacher penjas it will be easier to set up equipment, space, materials, or methods of learning, time spent will be more effective and efficient. Then be able to increase students interest in learning so as to provide students the impact of increased physical fitness.

Definition of interest in learning: to do something and achieve maximum results then someone needs to have an interest. Great interest to study its effects, because the material of the lessons learned are not in accordance with the interest of the students will not learn well. Interest does not grow by itself but needs the stimulus of interest. According to Riber (in Shah, 2009: 152) is not a term that popular interest in psychology due to its dependence on a variety of other internal factors, such as concentration, curiosity, motivation, and needs. Under the Big Indonesian Dictionary (KBBI) (2007: 744) interest is the tendency of high hearts on things. Further, according to Hilgard (in Slameto, 2003: 57) is persisting interest Tendency to pay attention to and enjoy some activity or content.

According to Gie (1998) the importance of interest in relation to the implementation of the study are: interests and equitable delivery of attention, interest creation of concentration, prevent interference from outside interests, interest in strengthening the adhesion of materials at the memory and interest minimize boredom in self-study learning

From the above it can be concluded that the definition of interest in learning is the tendency of people to feel something. And interests are affected by several things, namely: internal factors and external factors.

Factors that affect learning: in the learning does not just run smoothly, usually have the constraints that affect the learning process. According Aunurrahman (2009: 178) the issues that affect the learning process among internal factors and external factors. Internal factors include: 1) characteristics / characteristics of students, 2) attitudes toward learning, 3) motivation to learn, 4) concentrations studied, 5) process the learning material, 6) explore learning outcomes, 7) self-

confidence, 8) and study habits. While external factors are: 1) the teacher factor, 2) the social environment (including peers), 3) school curriculum, 4) and the facilities and infrastructure.

Meanwhile, according to Mudjiono Dimyati and the factors that affect learning outcomes are influenced by 2 (two) factors: internal factors and external factors. Internal factors include: 1) attitudes toward learning, 2) motivation to learn, 3) the concentration studied, 4) ability to process materials, 5) ability to keep learning proceeds, 6) ability to explore the learning outcomes, 7) ability to perform or demonstrate learning outcomes, 8) self-confidence of students, 9) the success of intelligence and learning, 10) study habits, 11) the ideals of the student. Then the external factors that affect learning, including: 1) the teacher as a mentor to learn, 2) infrastructure and means of learning, 3) policy assessment, 4) the social environment of students at the school, 5) the school curriculum. Also according to Baharuddin and Wahyuni (2007) factors that affect learning divided into two categories, namely internal and external factors. Internal factors include: physiological factors (state of tonus, a state of physical functioning) and psychological (student intelligence, motivation, interests, attitudes, and talents).

From the above it can be concluded that the factors that affect learning are divided into 2 (two) factors: internal factors and external factors. These factors need to look for a solution so that the learning process can proceed smoothly.

Learning strategies: learning strategy was initially used for the military to use the entire military force to win a war. According to Sanjaya (2010) strategy of learning that teachers implemented a strategy will depend on the approach used, whereas a strategy of how it can set a variety of learning methods. In an attempt to run a method of learning the teacher can determine the techniques that are considered relevant to the use of the method, and the use of techniques that every teacher has a tactic that may vary from one teacher to another teacher.

Learning is a process of adding new information and skills. Therefore it is necessary for effective learning strategies and efficient way to achieve it all. Before we determine the learning strategies that can be used then there are several considerations that must be considered, including: considerations relating to the objectives to be achieved, considerations relating to the materials or instructional material, consideration of students' corner, and other considerations. that is considered in terms of strategy itself, because so many strategies that we can choose to learning tudents.

From the above it can be concluded that the learning strategy is an approach that requires learning strategies, methods, techniques, and tactics in the learning process by considering aspects of the purpose, content, students, and other considerations related to learning.

Physical education: to improve learning process on Physical Education, Sports, and Health, it needs a learning which is in accordance with the students' characteristics and school condition. According to Mutohir (2002) modification can be carried out on tools, field size, rules of the game, etc. On this modification approach, a teacher should be able to utilize existing environment

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optimally so that it can foster situation and condition that makes students happy to learn. Thus, by using TGFU it can be answered that teaching skill games for tactics and tactics for skills.

The purpose of modifying the learning in school soccer is an effort to influence student teaches for ease in learning to play soccer, although the infrastructure is owned by the school was minimal. The method or methods used by teachers in the delivery of learning in school soccer is the creativity of teachers in modifying lessons soccer because of lack of facilities an infrastructure that exist in schools in general, and to create an optimal learning strategies to encourage initiative and facilitate students' learning. Modification of learning soccer in question was modification of the tooling infrastructure and facilities and modification to the rules in the game. The results are models of learning a new style of soccer (Boladiator), four soccer goal, soccer castle, soccer and soccer dhogdhog, triangle.

For the implementation of Physical Education, Sports and Health in Elementary School, thus it needs an implementation guidelines. According to Lutan (2002) there are 9 basic guidelines in implementing Physical Education, Sports and Health program in Elementary School, among others: developing the fitness accompanied by the development of skill, no using task execution or a kind of exercise to punish students, for example, when students come late or make mistakes by breaking rules, implementing the assessment by focusing more on process than solely on result, no cornering the position of physical education, sports, and health program as an activity which can bring negative impacts toward other subject matters which are judged underachievers, giving assistance to students to achieve the desired standard (criterion), presenting the activity by paying attention to local culture, presenting physical fitness program must be accommodated in a program fulfilling the rules of health and giving encouragement, and avoiding mockery.

It often happens the misuse of language between *physical education* and *physical activity.* According to Michigan (2005) there are things that distinguish between Physical Education, Sports, and Health and Physical Activity, namely: physical education program teach developmentally and sequentially appropriate skills and knowledge and confidence needed to establish and sustain an active lifestyle in a safe, supportive environment. Physical education teachers evaluate student knowledge, motor and social skills, and provide feedback for student improvement. Physical activity is bodily movement of any type and may include recreational,fitness and sport activities as well as daily activities like walking to school. Physical education is the foundation for physical activity. Here some ways to introduce physical activity into your school and students day.

Furthermore, according to Chunlei LU and Amanda De Lisio (2009) there are three categories of fundamental movement, namely: locomotor / travel, a skill which involves moving the body to any direction from one point to another, for example: walking, running, hopping, skipping, galloping /sliding, leaping, chasing, fleeing, dodging, manipulative skill which involves handling and controlling a thing by part of a tool or body, for example: propulsion, throwing, batting, kicking, punting, strinking, dribbling, receipt: catching, collecting, volleying and stability skill involves body balance either in one place (static) or moving (dynamic), for example: bending, stretching, twisting,

turning, rolling, balancing, weight transferring, curl-up, jump landing, pushing, pulling, rocking, swaying.

It is of course that in Physical Education, Sports and Health can't be separated from the growth and development of the students related to cognitive, affective and psychomotor, health and the formation of physical fitness.

The goal of physical education is to assist every child in the development of a healthy life style (Pangrazi & Gibbons, 2008; Ring,2006). More specifically, CAHPERD (2005) highlights the importance of physical education in assisting student to: (a) acquire skills that enable them to perform a variety of physical activity; (b) acquire skills that will have them become physically fit; (c) participate regularly in physical activity because they find it enjoyable and exhilarating; (d) understand and value physical activity; (e) understand with others; (f) display responsible and socialbehavior during physical activity; and (g) display an understanding of and a respect for all people during physical activity (Chunlei LU & Amanda De Lisio, 2009).

Besides learning Physical Education, Sports and Health which is practical in nature, the learning Physical Education is also theoretical. The subject matters which are theoretical, among others: 1) the culture of healthy living, 2) History and rules in games. In teaching philosophy of theoretical subject matters on Physical Education, Sports, and Health, the presentation is organized as follows: 10 percent from what we read, 20 percent from what we listen, 30 percent from what we see, 50 percent from what we see and listen, 70 percent from what we speak and 90 percent from what we read, listen, see, speak and do Edgar Dale (in Harvey Grout and Gareth Long, 2009: 180).

The learning Physical Education,Sports, and Health will not succeed without a teacher, because he or she has a very central role in education. A teacher is an important element in education because he or she is an intellectual factor who makes this nation proceed and able to compete with other nations. A teacher is a professional educator whose main jobs are educating, teaching, guiding, directing, training, assessing, and evaluating learning participants (Undang-undang Republik Indonesia No.20 Tahun 2003 Bab I Pasal 1:2). About the teacher, Mudjiono and Dimyati explain that a teacher is a professional educator.

There are 6 (six) activities in teaching, among others: activities, management, organization, planning, instruction, and evaluation, in line with the basic experience of a Physical Education, Sports, and Health teacher which must be mastered by a physical education teacher in Elementary School. According to Mutohir (2002: 15) the teacher of Physical Education, Sports, and Health in Elementary School must have following characteristics, for example: 1) having the capacity to identify the characteristics of Elementary School students on: a) physical growth, b) mental development, c) social and emotional development in accordance with phases of children growth of Elementary School students, 2) able to encourage and provide opportunities to Elementary School students to be creative and active in learning process of Physical Education, Sports, and Health and able to develop potential ability and motor skills of Elementary School

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students, 3) able to provide guidance and development to Elementary School students in learning process to achieve the goal of Physical Education, Sports, and Health.

In learning process, a teacher needs facilities and infrastructure that support for the smooth of teaching process. Based on National Sports System No.3 Year 2005 article 1: sport facilities are equipment and supplies which are used for sport activities while sport infrastructure is a place or a room including the environment that is used for sport activity or organization of sport events.

In relation to facilities and infrastructure which Elementary School has, of course there are still some constraints in their availability. Based on survey by:

In the joint Oireachtas Report on the Status of PE 2005 it was noted that there was never a period of significant funding in the area of PE nor had it ever been seen as worthy of serious investment or concentration either in them of resources or planning.

The following is the result of survey on facilities and infrastructure which are very important factors in learning Physical Education, Sports, and Health.

According to a recent INTO survey carried out in 2005, the situation in school in relation to PE facilities was still unsatisfactory. While the vast majority (88%)of respondent indicated that their school had a suitable – surfaced school yard which could be used for PE, only 39% indicated that their school had a general – purpose (GP) room, though a small majority of respondents (68%) indicated that they had access to a hall for PE. However, as indicated in previous surveys, such facilities are not always adequate. Therefore, it's quite clear that very high percentage of primary schools either don't have PE halls or are relying on inadequate and unsatisfactory hall. A significant minority (23%) did not have access to a playing field. Although PE facilities in schools include astro truf, a shared assembly place, all weather pitch and access to a local sport center.

According to Sukintaka (2004) there are several requirements in provision of facilities and infrastructure of Physical Education, Sports, and Health in schools, among others: 1) safe, safety is the most important element in implementing the learning of Physical Education, Sports, and Health. Safety will reduce injury during learning process. Safety element is the top priority before other elements, 2) easy and cheap, It means that facilities and infrastructure are easily obtained and prepared, or it is easily obtained with relatively low price (unexpensive). It has good durability, 3) Interesting, 4) Spurring to move.

The facilities and infrastructure spur students to move. 1) fit to the need. In provisioning the facilities and infrastructure are adapted to the students' need and the user, 2) fit to the goal, 3) tough, not easily broken, facilities and infrastructure should not be easily damaged although it is cheap to make them, 4) Fit to environment.

Development of model multi-functional tool: to determine the nature of the model in this study, it takes some understanding of the term model. According to S. Udin Winataputra (2005: 3) states that the model is defined as a conceptual framework that is used as a guide in conducting the activities. In that sense the model is defined as a conceptual framework that is used as a guide in conducting activities. In that sense the model is defined as any object or thing clone of the real

objects, such as the globe is a model of the earth where we live. In the context of this study the term model is used to indicate the first sense, namely as a conceptual framework used in conducting the activities. Further according to Gagne, Briggs, quoted by Day Amirullah Rachman (2004: 43) says that the model is a sequential set of procedures for the realization of a process, media selection and evaluation.

Development models can also be done in various fields of scientific study, one in education. According Sugiyono (2010) products generated through R & D studies are expected to increase the productivity of education, the graduate of a polynomial, quality and relevant as necessary. Educational products such as teaching methods, educational media, textbooks, evaluation system, the arrangement of the classroom for a particular learning model and many others.

Tools will be developed that is tailored to the needs of schools today. Many schools that have a broad field but has not been able to properly maximized. Therefore made a multi-function tool. It is made of iron that can be formed a variety of fields, among others: Goalkeeper soccer, volleyball pole, basketball pole, pole high jump, pole badminton, tennis and pole pole Tonis.

Based on the above description then this development are intended to provide a model of a learning tool to enhance the learning interest of students in primary school is a media / learning tool designed and developed to help achieve the goal of learning in primary school.

Methods

This research is a developmental research. This model development is descriptive quantitative, that is, a procedure which describes steps that must be taken to generate products. In developing the product, he , the writer, refers to a developmental model Borg and Gall quoted by Ardhana (2002). The following are steps that may be fully followed: 1) conduct a research and gather information, 2) planning, 3) developing the initial product form, 4) conducting expert validation, 5) conducting first stage of the field test, 6) conducting revision of the initial product, 7) conducting second stage of the field test, 8) conducting revision of the main product, 9) conducting trial of the final product, 10) conducting revision of the final product, 11) disseminating and implementing the final product

The trial subjects to be tested are the students of Elementary School in 3 (three) Elementary Schools located in South Abung Sub-District, North Lampung Regency, namely, SD Negeri 2 Ratu Abung, SD Negeri 2 Trimodadi and SD Negeri 1 Ratu Abung. The data used on this research is the students' acceptability toward the developed product, the data on the students' learning interest, the data on the effectiveness of generated product. The instrument used in developing this product is questionnaire and observation. The technique of analysis used to calculate the pulse uses T-test with 5% level of significance.

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Results and Discussion

Based on the steps of the developmental research to generate product that has been done, thus it is obtained a final product in the form of developing learning facilities of Physical Education, Sports, and Health to improve students' learning interest in Elementary School. The use of product modified model on basket ball subject matter has given the impact or influence to the increase of the students' pulse for SDN 2 Trimodadi 58.93%, SD N 2 Ratu Abung 63.51% and SD N 1 Ratu Abung 66%.

Students' responses toward the internal aspect after using the development of learning tool of Physical Education, Sports, and Health to improve students' learning interest in Elementary School indicate that of 66 students , including in internal category of the students who answer "Yes" 97.63% and students who answer "No" 2.37%. Seen from the result of students' response toward the internal aspect after using the learning tool above , it can be concluded that most of the students will have encouragement on the basis of awareness on the benefit of joining Physical Education, Sports, and Health subject matter, interest of curiosities to conducted Physical Education, Sports, and Health lesson, and like the safety and comfort while joining Physical Education, Sports, and Health lesson, improve activity in learning process. Therefore, after students join Physical Education, Sports, and Health lesson, the students' fitness increases. They get the attention and pleasure in Physical Education, Sports, and Health learning process.

The students' responses toward external aspect after using developmental product of learning tool for Physical Education,Sports, and Health to improve students' learning interest in Elementary School indicate that of 66 students, it is found that 91.53% of students answer "Yes" and 8.47% of students answer "No". Seen from the result of students' response on internal aspect after using the development of learning tool for Physical Education, Sports, and Health to improve the students' learning interest in Elementary School that the quality and quantity of the facilities and infrastructures support the learning process very much, then with the existing facilities and infrastructures, all of the material can be taught and students are pleased by the tool used. Then the factor of professional teacher of Physical Education, Sports, and Health is very helpful in learning process.

Based on the description of students' respondent toward internal and external factors above, it can be concluded that the developmental product of learning tool for Physical Education, Sports, and Health to improve students' learning interest in Elementary School provides a good impact on the students' interest in joining Physical Education, Sports, and Health learning and is able to improve the students' pulse so that it will influence to the improvement of students' physical fitness.

Closing

The result of this research is the form of a developmental learning tool for Physical Education, Sports, and Health to improve students' learning interest in Elementary School. The result of a developmental learning tool for Physical Education, Sports , and Health can improve

the students' pulse so that it is found that the effectiveness of learning Physical Education, Sports, and Health through basket ball game. The average of pulse increase in SDN 2 Trimodadi is 58.93%, SDN 2 Ratu Abung is 63.51% , and SDN 1 Ratu Abung is 66%. The development of learning tool for Physical Education, Sports,and Health can improve students' learning interest in Elementary School with the average increase on internal factor 97.63% on option "Yes" and 2.3% on option "No" meanwhile on external factor it is 91.53% on option "Yes" and 8.4% on option "No".

For Physical Education, Sports , and Health teachers in Elementary School ,they can use this developmental learning tool at school in various learning ,for example volley ball, football, badminton, takraw, high jump, and pull up. The researcher hopes that in using the learning tool for Physical Education, Sports, and Health needs to be accompanied with appropriate learning method. For Physical Education, Sports, and Health teachers in Elementary School it is hoped to develop other interesting learning tools to be used in Physical Education, Sports, and Health learning.

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THE DEVELOPMENT OF SPORT THROUGH EXTRACURRICULAR IN THE SECONDARY SCHOOL

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Abstract

The development of sport education is aimed to get knowledge, personality, ability, health, and fitness of body and also to develop sport interest and talent. It is done as a systematic unity that is related to the national education system. It is done by doing an intracurricular or extracurricular. (Paragraph 5 of government regulation No. 16 of 2007 in implementation of sport)

In order to create an extracurricular policy well, it is needed to observe students' condition andpotential and also potential of the school. Especially, in the development of sport, it should have an accurate study about that. After policy of extracurricular activity is created, the next step is to dig up and support students' potential and school's potential, so the development of sport operationally can be done well.

Extracurricular is an activity that is done by students in outside the activity of the normal curriculum of school or university education. Extracurricular activities exist at all levels of education, from elementary until collage.(wikipedia, free encyclopedia).

The problems are whether extracurricular activities which are related to motor skills or sport at school age can be performed continuously. Participation of children who follow the current activity can be more in the same age of few years ago or a few years to later. Then, whether the existing data can be used to create an accurate policy to determine extracurricular activities in the next generation.

Keywords: Extracurricular, sport

Introduction

Based on explanation of constitution of Indonesia No. 3 of 2005 on System of National sport Roman 1, the general statement stated that by this law, the national sport system of coaching and development, basically there is a coaching and development of sport which is begin with the stage of introducing of the sport, monitoring and guiding , and also development of talent and improvement of performance. Those stages are aimed to make massive, civilization, prospect, and development of talent and also improvement the performance at local, national, and international level. All stages involve elements of the family, associations, educational units, and sports organizations in society, both at local and central levels. Furthermore, the Government Regulation (PP) of the Republic of Indonesia Number 16 of 2007 on the implementation of sports Chapter I General Provisions, paragraph 1, article 2: Instructor of the sport is a person who has an interest and knowledge, leadership, managerial ability, and or funding dedicated to the benefit of coaching and sports development.

The government regulation, in part three on coaching and developing sport education paragraph 2: (1) coaching and developing of sport education is aimed to obtain knowledge, personality, ability, health and fit and also development of interest and talent (2) Coaching and developing sport education as sated at article (1) can be done through activities like intracurricular or extracurricular.

The extracurricular activity is tended to students to develop their personality, talents, and abilities in every field beside the academic field. This activity is held independently by school and the students to pioneer the activities non- school activity. The extracurricularactivity can be a form of arts activity, sports, personality development, and other activities which is aimed to make positive activity to develop students. (Wikipedia the free encyclopedia).

Sport Extracurricular

For children or students, generally they have time to develop their personality, at this time the children want to form a habit to achieve success or to make a creative period. And in this age many children have an interest to play something or a playing period. So, it is not a surprising if at the age of children of Secondary School (SLP), there are still many desires to perform motor activity after school. Those who have an interest in motor activity, sports or activities that are still related to physical education in school, then school is required to provide a place or facilities to their participation in the activity or sport. If there is no facility, then they will turn their attention to other types of activities.

The fact shows that many boys and girls have the opportunity to participate in sports exercises even they want to participate in competition as their choice. This condition indicates that the students need a help from others to achieve their goals. In thisprocess, the students have the opportunity to growth and to fulfill the personal needed by communication to the teacher or instructors who are expected to provide guidance. Parents generally support someactivities which are conducted outside of the classroom or in regular class as well managed. There are several activities that are offered in schools in each area or region. The time is taken in late afternoon, when school hours are over, could start at 14.30 at noon or 15.30 in late afternoon.

Even in the days close to holiday or in the end of vacation there will be joint activities, which are provided in one day in every period of the school for all students who want hiking, jogging, or camping. The emphasis of those activities are on the learning activity, improve skills, or informal participation.

The instructor or trainers are physical teachers or teachers of other subjects who are interested and have the skills in school, even though they teach other subjects than physical education. The instructors have the capacity and resource that can trigger a sense of group. Group formed when members of both instructor and students try to think and act as one entity. An instructor is seen as a central on transforming the individual into the group, whichis the unity of the team. By developing and managingthe relationship between instructor/teacher and student in

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school in joining school competition for school sports or student's week sport, also observe the regulations that are applied from the association of sport.

Administration and operational extracurricular programs are depending on the physical teachers in schools. Although physical teachers are busy with this program, but usually it is a voluntary time contributions and energy. And sometimes teachers of other subjects who are interested in the sport will help in being a leader, coaching, or organizing teams. The students often try to keep the program run. To illustrate the nature of the participation they use a model that aim to identify and determine the nature of the relationship between the coach and athlete or teacher and student, and there is a facility to evaluate the relationship. The relationship is defined as a situation between two people who have 'feelings, cognition and behavior causal. The feeling among members indicated the presence of mind, behavior and interconnection between members.

Lack of facilities and equipment that suffered the development programs or sports coaching will limit the extracurricular activity. In addition, many school administrators are apathetic towards extracurricular activities, although some principals support when they know the sport in the late afternoon is a way to reduce juvenile delinquency. There is a balance between the needs and independence which fluctuates in activity and time. Strong emphasis on extracurricular program can imbed the availability of infrastructure or facilities and staff to take part so the extracurricular activities can be performed well.

Based on school classification, there are some school which have a lot of sport clubs but the others only have a few sport club. And schools in rural area have two to five teams that competed in the holiday against similar teams from other schools, it was a friendly match. The schools strive or struggle to get into the inter-school competition of large-scale, such as the student sports week.

In order to provide maximum benefit and minimum risk to the body, then the exercises can be done by true recommendation, that is the "FITT": The frequency, indicating the amount of exercise that should be done, it is suggest that 3 to 5 times a week. Intensity, indicate the size of a lighter or burden of severity that is carried out during the exercise. Types refer to the form / variety of activities that is taken. Time, refer to how the length of time the exercise takes. Length and intensity of exercise have correlation (Giam& Tea, 1993). Team to get success beside should have the support and guidance from the instructor, they also should get support, attention, help and trust from teammates. All athletes are participating personally, like each other, trust, and interdependent.

Cost for operational activities derived from participating fees or who follow the games, the schools which is supported by the donations of parents, and citizens who have capability to pay. In some school systems, the trainer receives additional compensation for their service, or reduced their teaching time during the competition. One school sports team can have 7 to 8 trainer. Some small schools can only compete in individual sports, but the larger school and more famous can have teams that play team sports and more sports up to 10. Sports trainer will lead the ongoing

extracurricular activities went well; he will be responsible for the progress of the students or athletes. And the trainer also dare to apply knowledge and skills.

In the realization of result of coaching, besides the achievement as their goal, there are also psychomotor, cognitive and affective goal. On cognitive aspects, coaching can develop intelligence and creative imagination, whereas the affective aspects will make good characterpersonality. Developing skills, which followed the development of intelligence can understand and solve the problems of life, or can adapt to the situation. And the development of creative imagination, that is learning initiative and creative in finding other alternatives. In the development of character that is got a habit to do something based on the life principles to become a principle of their personal development. The activity of physical teacher can develop motor coordination in the form of skill or game. While coach can organize and manage training program comprehensivelyincludes the elements of the physical components and personality which is appropriate and necessary.

A Good trainer or teacher at school is a factor that can determine the achievement of students and schools. The Terms of coach or teacher there are have a good personality, have loyalty to duty, educated, professional, committed, a warrior and a devotee, health and have moral, a stable emotion and others.

The Results that are expected by the coach in developing the students' extracurricular activities that are there will be built physiological characteristics, psychological and sociological. At physiological characteristics, it includes: (1). Better coordination of motion, (2). The Appearance of body looks healthy and strong, (3). There is the difference in strength of muscle between boys and girls. The results of this exercise make their heart more powerful. During activities that require endurance, the large muscles of the body moves, blood circulation will be better, blood volume increases, and the number of capillaries in the muscle also increase, so that the blood circulation accordance to the level of activity.

In psychological characteristics include: (1). Feel proud of their own skills, (2). Expanding the scope of attention, (3) Care to the group, (4). Want to get receive acknowledgementfrom the teacher, (5). want to appreciate and uphold the meaning of punctuality. Students have the discipline, attitude, diligent, efficient and beneficial to his development.

In the sociological character include: (1). Critic to adults and their actions, (2). Glad appreciating by parents, (3). His temper is explosive, (4). Willing to do anything to be known by others, (5). Increased sense of cooperation, and show he quality of his leadership., (6). Loyal to the group or team. Despite the explosive emotions, students are expected to be in control, so they have an emotional maturity that can support their improvement, especially to the confidence and respect to others.

The implication of motor activity push on ; (1) Maximum participation; (2) the success of each child; (3) understanding of human movement; (4) understanding the potential of the child; (5) independent growth and (6) creativity. The exercises and sport situation can help individuals to

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manage environment and their duties and also help the behavior according to the rule, obedience the training and help their lifestyle management and development skills (Rejeski et al., 2003).

The effectiveness of extra-curricular sport activity system sporting is highly dependent on the planning system. It means that the planning system is a process to prepare the things that will be done in the future to achieve a predetermined goal. Therefore, a mature planning of extracurricular activity systemis very necessary.

Planning extracurricular sports activities should be viewed as a tool that can help leaders,coaches or teachers at school becomes more efficient in carrying the duties and functions. The planning help to reach the target of students to follow the sport better, and give the opportunity to easily controlled and monitored in its implementation. Thus, a systematic and systemic planning program will make the program a coherent, integrated and sustainable.

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SAFE EXERCISE GUIDELINES TO ACHIEVE AND MAINTAIN LIFE QUALITY OF THE ELDERLY

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Abstract

The number of elderly citizens in Indonesia in 2020 is expected to increase 11.34% or 28.8 million people. This fact should be taken wisely so that people who are in the elderly age are able to be independentand not considered as a burden by the family or other community groups. During this age, physical and mental decadence will happen such as as easily infected by disease, especially those degenerative ones. Sport can be used as the activity to anticipate the acceleration of that organism setbacks. Based on the results of a study even found that the 50% occurrence of these organisms setbacks due to lack of physical activity. The exercise which is done wisely, under the guidance of doctor's instructions and coaches is certainly safe and expected to maintain the physical fitness, so the daily activities can be done well without being a burden to family even though already become an elderly.

Key Words: Sports, elderly.

Introduction

The number of Indonesian population according to the Census of Population (CP) in 2010 was 237.6 million people. This large amount of the population consists of infants, children, adults, and elderly. In addition, particularly, the number of the elderly according to Family Data Collection conducted in 2010 by the National Family Planning Coordinating Board (BKKBN) found that the number of elderly population in Indonesia was 15.5 million people. This number is predicted to grow in the following years.WHO estimates that the elderly population in Indonesia in 2020 will increase 11.34% or 28.8 million people. Therefore, Indonesia will be later predicated as a country of the world's largest number of the elderly. This large number of elderly citizens should be handled properly and wisely, so people who are on the elderly age are able to be independent and not be regarded as a burden to the State or other community groups.

Getting old is not merely a goal, the real goal of becoming old is how one can live up to the elderly age with good quality of life. Exercise activity is an activity that can help improving the quality of mental and physical function along with the changing of age into the elderly age.

Naturally, as one enters the elderly age, the setbacks of physical and mental condition will happen such as vulnerable to disease, especially degenerative diseases. However, exercise activity done by the elderly will not be harmful if done properly and wisely. The physical fitness of people who are in the elderly age is somehow very low. Therefore the frequency of the exercise done at moderate to sub-maximal level will be safe and this can also improve the physical fitness. (Giant, 1993). Although organism setbacks happen during the elderly age, in fact that the 50% of the organisms setbacks occurred due to lack of physical activity. (Giant, 1993).

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Based on the explanation above telling that exercise activity can have a positive impact on the quality of life of the elderly, this paper will discuss about how exercise can be done safely by the elderly. The quality of life that is expected to be achieved with exercising for the elderly is certainly to improve physical fitness, physical and mental health so they can avoid from counting on others in carrying out the activities of the daily life and they can enjoy a happy life.

Discussion

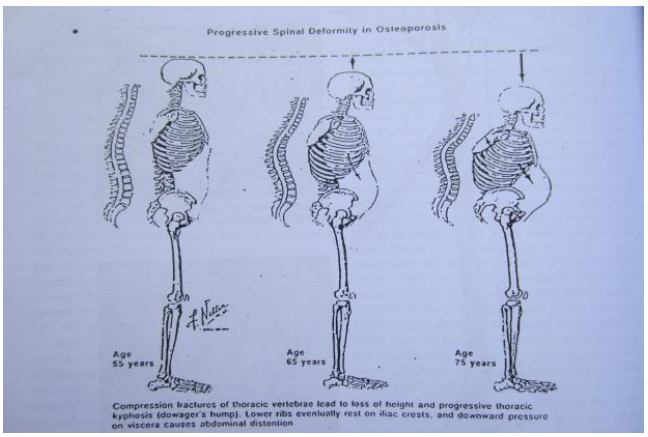
Concept and changes in organisms in the elderly age

Elderly age is the period in which a person has reached old age in proportion and function and has shown deterioration over the time. There are several opinions regarding to the age rioration, they are 60, 65 and 70 years old (Akhmadi, 2009). WHO uses the chronological elderly limits which are at the age of 60 years and above. This is done by WHO as a benchmark standard in formulating the policies of health problems and therefore, the Indonesian law (UU.RI) No. 13, 1998 states that a person enters the elderly age when he is 60 years old and above.

In concept, what is called by elderly or aging is a decrease in the DNA recovery activity, gene expression (aging gene activation), the decrease of immune system activity (particularly the thymus), the decease of brain cells, the release radical activity (causing irreversible cell damage), cells divide only a few times (cessation of the internal clock) (Nieman, 1989). These changes further impact on such as body composition changes so that the size and number of muscle fibers are reduced due to the protein reduce, the increase of fat amount, lung function reduce, cardiac muscle strength and quality of bone density decrease (Strauss, 1984)

Brooks (1985) suggests changes that occur in an organism which is the impact of the aging process for each individual namely; In the elderly age, it occurs muscle contraction (musculoskeletal) while the increase in the amount of fat also happens. As age increases, there will be fat accumulation, mainly around the torso (truncus) and around internal organs. Muscle loss caused by PH decrease in muscle cells thus affects blood distribution to the muscles. Furthermore, this what makes the muscles become stiff, strength reduce, and it also occurs the decrease in nerve conduction velocity to muscle. Moreover, cell mitochondrial which functions to produce adenosine triphospat (ATP) decreases in number, the muscle is susceptible to fatigue.

As bone mineral mass and joint flexibility reduce, it results in osteoporosis which causes in a high risk of fractures. Kiposis occurs (due to decreased height slouch) (see figure). For men, bone mass will begin to decrease approximately 1% per year when it enters the age of 50, while women begin to lose bone mass at a younger age which is at the age of 30, with a decline rate of 2-3% per year after the menopause. Furthermore, this problem affects the reduce of Range of Motion (ROM) of the joint which results in the movement which becomes limited.



Source : Kaplan in gallahue, 2002

Figure 1. Progressive spinal deformity in osteoporosis

In the cardiovascular system, it is identified by the changes occuring in several elements of cardiac function such as the decrease of the sino-atrial node sympathetic stimulation which results in the decrease of lowering pulse maximum. The decrease of elasticity of the blood vessels results in the increase of periper resistance and blood pressure. When the amount of blood pumps in each pulsation decreases, so stroke volume (stroke volume) and cardiac output decreases. These conditions all cause the decrease in the ability of the pulse recovery after physical activity.

Lung condition as respiration system in the aging process is the reduction in the surface area of the lung, in which initially the lung surface at the age of 20 is 75 m2 reduces to 50-60 m2 at the age of 80. As lung surface decreases, the reduction in the number of capillaries in the lungs also occurs so that ventilation and volume decrease in the following. The lung elasticity ability decreases. This results in the flared lung abnormality which causes harder breathing process (not efficient). This condition allows the occurrence of chronic obstructive pulmonary disease that can shorten breath, coughing, excess mucus, which further leads to the lower ability of respiratory system to tolerate exercise.

In the elderly age, it alsooccurs the decrease in cognitive function. It occurs due to disruption of blood flow to the brain system, so it also affects the nerve system. This makes sleep patterns are not normal as usual. At this stage, the decrease of sensory function, memory function and intellectual capacity also occurs. Another constraint regarding to the nerve system is the constraint occurs to the balance system. This results in a decline in the ability to detect spatial information. This condition leads to opportunities to fall into a greater risk of later complication such as spinal fracture and so on.

Benefits of exercising in the elderly age

The exercise done wisely will certainly make a good impact on the functional quality of organism. It does not only happen to the elderly alone but to every age group. This sub-title will reveal the results of several studies regarding the positive impact of exercise on the functional quality of organisms and chronological impact of exercise activity done by the elderly.

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Skeletal muscle strength can be improved through exercise activity, with doing exercise, quality of bone density and strength will be better in the elderly, so fractures due to osteoporosis can be prevented. By exercising, it will decrease the incidence that may cause hip fractures for the elderly (Megan, 2008). Westcott, WL, and Baechle, TR, quoted by EriDesmariniNasution (1999) states that sports activities can avoid losing muscle strength by doing regular strengthening exercises.

Moreover, it can replace a large number of muscles that are reduced in a relatively short time through a simple strengthening exercise program. This was revealed by the research. Average of the elderly respondents aged 61 to 80 years after completing my strength training for 2 months, they could add their weight muscle by 2.4 pounds, even after the participants continued the exercise program for 18 months, they could gain muscle to 5 pounds and reduce 17 pounds of fat.

Sports activities can be used as a program to address the problem on joint movement capabilities with flexibility exercises. Flexibility exercises provide a great opportunity to make the movement so that the power and flexibility of tendons and ligaments can be maintained. Maintaining muscle strength across the joints can reduce pain in osteoarthritis cases so Range of Motion of the joint (ROM) can be maintained. Joints have very important role in performing the movement as if the joints cannot be moved in accordance with the broad movement (ROM), then the movement will be stiff.

The role of exercise activity is huge in keeping the possible causes of death from cardiovascular disease. According to the Biological http://digilib.unipasby.ac.id states that current cardiovascular disease causing death are, stroke (40%) and coronary heart disease (15%). Activities undertaken by the wise exercise can lower blood pressure, reduce the fat content of the blood vessels, LDL, triglycerides and increase HDL cholesterol, and accelerate recovery after physical activity, helps restore cardiac abnormalities as well as the recovery program after myocardial infarction. Sri Hartini Research (2009) in http://download.portalgaruda.org suggests that elderly gymnastic imposed in elderly smokers can lower blood cholesterol levels between 28-43 mg / dl. In addition, not only it improves the condition of the cardiovascular system, the exercise activity can prevent osteoporosis to the sternum, recover respiratory muscles, and improve the immune system.

Exercise activity in older adults could prevent or slow the loss of cognitive abilities. (Craven &Heirnly in Darmojo, 1999). The impact of exercise activity can increase blood flow to the brain and improve brain neurotransmitters. This also improves the mod, and the ability of dealing with stress and depression. Furthermore, exercise activities undertaken by the elderly will create a situation of social interaction. Social interaction that occurs will be very helpful for the elderly to improve and enhance the ability of mod in dealing with stress and depression. Condition of capabilities in facing stress and depression in the elderly age is needed because at this time the possibility of stress and depression are very likely to occur due to the loss or deterioration of pre-existing conditions such as the inclusion of retirement, loss of a spouse, and so on.

Sports activities can help decreasing brain power on the elderly age, the more exercise the sharpness of mind will also be improved. And, it naturally increases the feeling of happiness and boosts self-confidence (MOH, 2000). Barclay (2006). http://search.medscape.com/usclient/ederly explained that, regular exercise performed three times a week can prevent dementia 40% with a confidence level of 95% CI = 0.44 to 0.86 with P = 0.004 showed significant correlation between regular exercise performed and delaying the occurrence of dementia in the elderly age with the pattern of training activities undertaken as walking, aerobic gymnastics, swimming and cycling.

Sidiarto et.al (2003) stated in his study that, the variance of exercises of a certain pattern of range of motion that is aimed as an exercise to maintain cognitive function by identifying the Mini Mental State Examination examination (MMSE) in elderly age indicates that there is a significant correlation between the pattern of motion referred to cognitive abilities. Syamsul (2006) states that, statistical calculation results with the chi square test found that there is a significant relationship between exercise activity and cognitive abilities of elderly age (p value = 0.002). It can be concluded that the elderly who exercise with a good chance have the cognitive ability of 3.16 times better than the elderly who exercise with less well.

Guidelines for safe exercise for the elderly

As previously mentioned above, indeed, exercise is very helpful for the elderly in maintaining organism functions such as maintaining and maximizing the function of muscles, joints, cardiovascular system, respiratory system and the cognitive abilities. Jeffry Tenggara (2009) suggested that regular exercise activity does have a good effect to improve the health of the elderly, but erroneous physical activity would lead to greater risk than the benefits achieved. Generally, the further discussion will reveal the dose of exercise, type of exercise (sports), and the things that should become the concern in order to make the exercise program followed completely safe and positive for the elderly.

Dose of exercises refers to the frequency, duration and intensity. How many sports activities done within one week is termed the "frequency". Frequency of exercise in the elderly can be done at least 3 times per week (dawn in: http://staff.uny.ac.id) .Giant CK & The KC, (1993) stated that the frequency of exercise to improve and maintain physical fitness at least performed 3 to 5 times per week (every other day, three times a week.

How long will it be done a sport activity is termed as a "duration". To improve physical fitness for the elderly takes 20-60 minutes / session for each exercise and the exercise results will appear after 8-12 weeks and will be stable after 20 weeks (Agussupri, 2004).

How hard sport activity undertaken is called the "intensity". Intensity indicates the degree of training quality. Exercise intensity is measured by the increase of heart rate. To determine the intensity of exercise, the easiest way is; firstly, determine the maximum heart rate (maximum pulse) per minute. To measure maximum per minute heart rate, it uses the 220 minus age formula. Next, to determine high or low intensity of an exercise that will be applied is to determine the percentage of maximum heart rate (maximum pulse). For clearer explanation, the concept of

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exercise intensity can be seen in the following table, and this table is recommended for people who are just starting to exercise at low intensity.

Table 1. Maximum heart rate by age

Age(year)	maximum heart rate (perminute)	60-85% ofheart rate maximum(per minute)
20	200	120-170
30	190	115-160
40	180	110-150
50	170	100-145
60	160	95-135

Source : Giam CK & The KC, 1993

Threshold intensity of exercise that is safe is when the sports activity reaches only (sub-maximal pulse) 70% - 85% of maximum heart rate (maximum pulse) which is called as the target zone. A 70-year-old was only allowed to exercise until he reaches the pulse submaximal, with the calculation of (220-70) x 70% s / d 85% = 105-127 times per minute (Soekarman, 1989; Fox, 1993; Wibowo, 2003)

It should be understood that the exercise activities done by the elderly is an activity that is aimed to maintain health and physical fitness. This is longer aimed to seek any achievement. A good form of exercise activities to improve the quality of physical fitness training is a sport that uses dominant aerobic energy system. Aerobic exercise is good for all age groups, especially the elderly. Aerobic exercise is a form of exercise activities which is done continuously with moderate to sub-maximal intensity by using oxygen as the primary energy source. This exercise is very helpful to improve the freshness of the heart and lungs or cardiorespiratory (heart, lungs and blood circulation). The form itself can be varied such as walking, jogging, swimming, gymnastics, cycling and so forth. Moreover, those types of sport are what is recommended in attempting to foster physical fitness other than isometric sports such heavy lifting and sports games like tennis, soccer, basketball or other sports games. Even if sports games are done, this is only additional and not as a replacement of the recommended sports which have been mentioned earlier. (Bustaman, 2003)

Activity of aerobic exercise should be interspersed with other forms of exercise activity so that other physical conditions can be improved as well, beside the quality of the cardiovascular-respiratory that will be improved in maintaining the physical fitness but other physical conditions such as strength, flexibility, balance. Those activities can be done at the beginning or at the end of aerobic activity. Actually, during aerobic activity carried out, such as walking will indirectly train strength and flexibility, especially of leg muscles, including the balance.

In training the strength or flexibility of muscle, it should not be performed movements such as jerking movements or forcing to try to reach the tip of the toes which requires arching waist, sit-ups with straight legs. It is also much better to use helping tools for example to train the exercise which is against gravity by standing on a chair as the kit that was detained for a few seconds. Elastic straps which are pulled can also be used as a tool for strength training.

In addition to those described in the previous sections, the elderly who want to under go exercise training program should consider the following things as well: (1) Consultwith a physician before undergoing the exercise program, especially if suffering from certain diseases, such as hypertension and so on; (2) If the painarises during exercise in left chest stop exercise and immediately consult a doctor; (3) Do the warming up before the activity, the warming upactivity may be in the form the strength or flexibility exercises; (4) Drink enough water so tha tthe balance of fluids in the body remains in an ideal capacity; (5) Progression of the exercise done must be reasonable, it isrecommended for the presence of as ports consultant who is really competent; (6) Wear loose clothing with good material that absorbs weat; (7) Wear athletic shoes can reduce the pressure of the movements done while doing sport activity; (8) Principally,exercise can be done anytime, butin this case it is recommended if exercise is done in the morning when the air is still clean.

Closing

Advanced age is a great gift from the Almighty. Increasing age means more opportunities to be more useful for many people, getting the chance to experience, witness the joy of life. Thanking God for the gift with establishing and maintaining fitness and health condition by doing the exercise wisely. This wise exercise makes the quality of life until reaching old age so it won't turn into a burden for the people around.

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THE ROLE OF COACH'S LEADERSHIP STYLE IN ACHIEVING THE SPORT ACHIEVEMENT

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Abstract

Achieving an achievement in the field of sports is basically an accumulative result of various aspects / elements that support the realization of achievement. This paper highlighted some issues especially regarding the function of the coach as a leader, who led the athletes in order to achieve the highest achievement. The function of a coach as a leader is interesting to be studied and evaluated, because one of the main keys to the success of the athlete is the ability of a coach to lead his athletes.

Coach is a leader who gained the confidence to command or give instruction to the athletes who have given him credence to achieve certain goals that is the achievement. The role of the coach as a team leader in micro can affect morale, satisfaction and quality of life of the athletes, the athlete 's success ultimately will affect the macro-level team performance because the behavior of a team is strongly influenced by the behavior of each Individual in the team.

A leader or coach, as an Individual should have a high skill level in accordance with the duties which they are responsible. The rationale is that leadership is a situation or circumstance that is special and unique, for which he should be able to adjust to the cırcumstances / situation. A successful leader in a particular situation with his leadership style may not work in other situations, so he had to adjust his leadership style to the situation at hand (be flexible).

Key words: coach's leadership style, national sports, and achievement

Introduction

In the reformation era nowadays, looking for an appropriate leader is not easy. It is due to the fact that most of professionals available now are not ready yet to be a wise leader. This also happens in the national sports world, in which most of the coach as the team leader may have high education, but they do not have enough experience, or on the contrary, they have lots of experiences without high education. Those imbalances, for a coach, can cause a very significant effect towards the harmony and performance or achievement of the team he leads.

Achieving an achievement in the field of sport is basically an accumulative result of various aspects / elements that support the realization of achievements. The main problem in this paper is about the function of a coach as a leader, who leads his athletes in the means of achieving the highest achievements. The function of a coach as a leader is interesting to be studied and evaluated, because one of the main keys in the athletes' success is on the ability of the coach in leading his athletes.

This case is reflected from the interaction happens in the field. Brooks and Fahey (1984) state that a coach has duties as a planner, leader, friend, advisor, and the controller of the rehearsal program. Whereas an athlete has a duty to do the rehearsal based on the program determined by the coach.

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There are some approaches done by a coach in realizing the program arranged, such as through the *style* which is a way of working that is usually done as someone's special characteristics (logman : 1987). This paper tries to evaluate the coaches' style in performing their duty as the team / athlete leader, in order to improve their achievements.

Leader, leadership and coach

A leader is someone who guides and leads an individual, group, and organization (Logman: 1987). Whereas leadership is a process of influencing people to lead their efforts for achieving certain goals (Gibson and Hodgetts: 1986). Therefore, a leader is someone who does an activity or a process of influencing people in a certain situation, through communication process, which is led to achieve certain goals. A leader is also "*a person who occupies a central role or position of dominance and influence in a group*" (Modern Dictionary of Sociology). Then Forsyth (1983) states that leadership is a reciprocal process, in which an individual is allowed to influence and motivate others to ease the achievement that is satisfying for both the groups and the individual's goal.

Coach is a leader who gained the confidence to command or give instruction to the athletes who have given him credence to achieve certain goal that is achievement. The role of the coach as a team leader in micro can affect morale, satisfaction and quality of life of the athletes, the athlete's success ultimately will affect the macro-level team performance because the behavior of a team is strongly influenced by the behavior of each Individual in the team.

Approaches in the leadership

Approach in leadership according to Chelladurai (1985) can be grouped into three main groups, namely: (1) the approach related to the characteristics of the leader, (2) the approach with regard to the behavior of the leader, and (3) the approach related to the characteristics and or behavior of the leader in the context of considering the characteristics of the members and the organization.

Leader's traits approach

Leader's traits approach is to explain the performance differences of workers in terms of their leader's traits, which are essentially related to the identification of a set of characteristics of a person that would distinguish between a good or bad leader. Edwin Ghiselli in Handoko T (1991) suggested the important traits for effective leadership are as follows: ability in his capacity as supervisor *(supervisory ability),* namely with regard to the implementation of the basic functions of management, especially regarding the direction and supervision of the work of others, the need for achievement in work, which includes the issue of responsibility and desire to succeed, firmness *(decisiveness),* the ability to make decisions and solve problems with a skilled, thoughtful, and precise way, confidence, a view towards him which is able to deal with the problem, initiative, the ability to act, including developing a series of activities and finding new ways or innovation.

Leader's behavior approach

Chelladurai (1985) identifies leader's behavior in sport coaching consists of five dimensions, namely: (1) training and instruction, (2) democratic behavior, (3) autocratic behavior, (4) the behavior of social support, and (5) behavioral feedback / positive *feedback* or rewards.

Situation contingency approach

Leadership style behaviors depend on the situation factors or circumstances that are the main reason in the performance difference. From the perspective of leadership system this situation consists of leaders, members, and context-run organizations.

Fiedler's Contingency Model of Leadership.

Fiedler (1967: 36) pointed three important situational dimension factors that are believed to affect the need or effectiveness of leaders, namely: 1) relationship of Leader - Member: describe the influence and trust of the leader among his followers, 2) task Structure: describe the degrees, in which the leader's work is programmed and arranged in detail, 3) leader's Position Power: the authority given to the position of leader.

Situation is assessed in terms of favorable or not, when it is combined with task-oriented leadership style it will be effective. If the favorable or unfavorable situation is only moderate, leader type of human relationship or the tolerant and easy-going one will be very effective.

Multidimensional Model of Leadership

Various theories have been highlighted a lot about leadership, that is the leadership in terms of perspective or different point of view, but the review was limited to the number of variables that are considered relevant or appropriate. Leadership should be viewed from various perspectives that are systematic. It requires a combination or a combination of various perspectives or theoretical perspective in order to obtain a comprehensive insight in leadership. Chelladurai (1985: 158) in this case presents a multidimensional model of leadership or various dimensions, which tries to integrate or merge the existing leadership theories.

Basically leadership model focuses on three leader behaviors, namely: (1) the needed leader's behavior, (2) the preferred leader's behavior, and (3) the actual leader's behavior. These three types define leadership behaviors that are classified into: a) the characteristics of the situation, b) the characteristics of members, and c) the characteristics of the leader, and d) as a result of the process of leadership behavior in this model is the appearance of the group and member's satisfaction.

Coach's leadership style

Coach is a professional whose job is to help athletes and sports teams to improve and enhance their performance. Because the coach is a professional, he is expected to provide professional services in accordance with existing standards (Pate, RB. Mc.Clenaghan and Rotella: 1984).

A coach should regularly adjust to the latest developments, able to change or modify his coaching practice. Such changes may occur if the coach: (1) have an understanding of the

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principles established in each of the relevant science, (2) regularly seek new knowledge in sports science. The coach does not have to be a real scientist but to be a professional, he should be an active consumer of scientific information and apply it.

There are many styles of leadership with different ways in sport in order to realize or achieve something to be achieved in order to succeed, for example, there is a coach whose style is cold and indifferent to the athletes, some are warm and caring and some others are hard or soft.

The following will discuss the leadership style that is often done by coaches and leadership techniques that can support the coaching process.

Authoriter style.

Authoriter leadership style generally has some characteristics: using the authority or power to control athletes, ruling the athletes, acting in the ways influenced by inhumane feelings (impersonal), trying to do things according to the self-beliefs or desires, giving sanction (penalty) to the athletes who do not obey his orders, determine the distribution of tasks / work that should be done, assessing the strength or condition of his ideas.

Researches show that authoriter leadership style is advantageous in certain circumstances. Moreover, it also shows that this style is done especially if the speed and action are urgently needed. In other words, if in a large group involving complex tasks, requiring action and rapid decision making, the authoriter leadership style can also be used to make the athletes feel more safe and protected in distressed situations. However, this authoriter leadership style has some weaknesses, namely: There are more works to do, but it's lack in quality and The team members tend to show the lack of member's satisfaction.

Democratic style.

Coaches who have this style generally have characteristics: Acting in a way that is friendly and familiar, opening the team's opportunity as a unity in arranging plans, allowing the group or team members to interact with other team members without asking for permission to the coach, accepting suggestions and giving little instructions or commands to the team members.

Coaches who use the democratic leadership style particularly believe or sure that this style will give something that is very effective for the development of athletes in terms of providing independence to think and transfer / transfer the values of sport. The weakness of this style is in terms of effective use of time and is less effective in making a quick decision.

In various leadership studies, it is proven that a leader should not hold or always tend to use a particular leadership style that can be used in any levels in different situations. Many coaches show a combination between authoriter and democratic leadership style to complete the strengths and weaknesses possessed by these two styles.

Style that gives more attention to athletes (people centered).

Coaches who are focused more on the discovery of the athletes' personal need. In a pleasant situation, it would be more effective if the coach apply a leadership style which gives more attention to athletes. If the position of the ruler's power is strong enough, then the leader who is

concerned more on athletes would be more appropriate, that is in an effort to develop better relationships with his athletes.

The advantages of people centered leadership style are: can reduce tension and anxiety, although the task is not executed properly or lost in the match, can better communicate with the athletes who are falter, restless, and feeling uncertain and can be more effective in a pleasant situation for him, that is when the athletes need guidance in making decisions.

Style that emphasizes more on task (task-oriented)

Coaches who emphasize more on the task in their leadership style, tend to focus on the achievement of victory in the competition. If the leader has the support of the group, the task is clear, and has a lot of power then the *task-oriented* leadership style is more suitable. Similarly, in a very unfavorable situation, as well as a leader who has a bad relationship with his members, the task is unclear, and he has little formal power, then the *task-oriented* leadership style can also be done. The strengths of *task-oriented* leadership style application are: more efficient, all efforts directed to the task that should be performed, do not spend much time for private communication with the athletes and among athletes, giving instructions quickly, decisively, and directly on the tasks that should be executed and effective in a favorable or unfavorable situation for the leader, for example, many athletes are stubborn, lack of discipline, and need decisive leadership.

Generally, the coaches who are very *people centered,* they too much emphasize on human relationships, and less concerned on the high morale or team's success. The coaches who are very *task-oriented,* they are negligent or failed to organize / solve interpersonal conflicts, because they too much emphasize on the winnings. Therefore, coaches need to learn and adjust themselves to the situations that fit between the style of *people-centered* and *task-oriented.*

Closing

A leader or coach, as the individual should have a high skill level in accordance with the duties which they are responsible. The rationale is that leadership is a situation or specific and unique circumstances, for which he should be able to adjust himself to any circumstance / situation. A successful leader in a given situation with his leadership style may not work in other situations, so he had to adapt his leadership style to the situation at hand (must be flexible).

The relation to the application of leadership styles in the means to achieve the maximum achievement in sports, it can be concluded as follows: there is no coach's leadership style that can be generalized, and is suitable to be applied at all times or at various situations, each coach's leadership style will work well if it is done appropriately, in accordance with the needs and characteristics of the situation, do not rivet on a particular coach's leadership style, a good coach's leadership style is taking the positive things from each style, then combines and applies them to the appropriate situation, no need to hesitate to combine various coach's leadership styles and if the achievement does not work, it should be evaluated carefully and do not immediately blame the coach's leadership applied.

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HEALTH EDUCATION BASED ON CHARACTER EDUCATION THROUGH ACTIVE INTERVENTION OF SCHOOL CURRICULUM

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Summary

One particular model of education that should implemented in specific communities in order to make them better. "To turn a man into a good course, it is very dependent on how the educational model implemented" (Gandhi 2011: 24). Healthy behavior is one's actions in maintaining and improving his or her health (Becker, 1979). The most effective way to change behaviorfrom bad behavior that is detrimental to the health of the health benefits is through health education.School health system is one of the way to maintain and to teach health education efforts aimed at learners (Department of Health, 2010). Ironically,School Health System runs only for the sake of school competition, thus failing to affect students in maintaining healthy habits in everyday life.

The next form of national policy in supporting health education in schools is through environmental education programs and *Adiwiyata* programs. This policy is very close with the implementation of moral values to appreciate and take responsibility for nature. This opinion is supported by Murtilaksono et.al (2011). In accordance with national education goals based on character education, health education cannot be separated from the formation of character to shape student behavior. Characters are not born with. The character for healthy behavior comes from the experience and education of individuals, not automatically achieved from the baby. There is an aspect of learning behavior.

The phenomenon from temporary observation activities in several schools in Malang shows that Environmental Education program, Adiwiyata and UKS just become routine image to win awards from the government without thinking about the program sustainability and its original achievement in teaching students to understand and to internalize behaviors of character education.

All parties concerned are expected to adopt the "health education based character education through active intervention in the school curriculum" at all levels to modify the behavior of the entire community healthy, one of them by modifying the curriculum. With the creation of a homogeneous character of healthy students, when they reach reproductive age they will create a culture of healthy living voluntarily in the family, community, and the government as part of a new generation of national policy makers in the future. At the end, Indonesian nation health improve by itself.

INTRODUCTION

Background

The images of education in Indonesia cannot be separated from the initial understanding of the basic philosophy of education. Educational practitioners always face a big question underlying the meaning and purpose of education. One of the big questions among the people in Indonesia to this date is why education, which is believed to be able to improve their status, creates irony. Is education important so that it should always be there? At the end, the practitioner education move to always look for something new and to always innovate on the types of education, such as what and why some particular educational model should be implemented in specific communities in order to make them better. "To turn a man into a good course, it is very dependent on how the educational model implemented" (Gandhi 2011: 24). Based on Encarta dictionary, model is

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"something that is used as the basic of a process or system". Moreover, Wikipedia defines education as “any act or experience that has a formative effect on the…,or physical ability of an individual….Education is the process by which society deliberately transmits its accumulated knowledge, skills and values from one generation to another.” Meanwhile, Mudyaharjo (2010) equates education with life. He argues that education is any situation in life that affects the growth of a person. Additionally, education is a process that is attachedin every life, and walk all the way with humans.

Education in Indonesia is described in order to provide constructive impact and contribute to the Human Resources (HR) quality, as defined in Republic Act No 20 of 2003 on National Education System or the National Education System Chapter II, Article 3:

> National education serves the purposes of developing skill and character as well as useful civilization in order to develop students’ potential for being religious, well behaved, healthy, knowledgeable, skillful, creative, independent, and for being democratic citizen and responsible.

By Act No. 20 of 2003 on the consistency of the implementation of education in developing intellectual life of the nation, educators they consistently provide empowering education. Empowering education is the process of humanizing children so that their potential can turn into actual maturity and independence in their lives. To the very least, by having empowering education, every child will get a basic need, such as knowing their rights and responsibilities as individuals, as the members of society and as the creature of God. Empowering education should be pursued ranging from early childhood education, primary, secondary, up to higher education (Syafaruddin, 2008).

John Dewey in Nugroho (2008: 19) describes education as a process of formation, recapitulation, retrospection, and reconstruction as in the following quotation

1. Education as formation ... .all education forms character, mental, and moral, but formation consists in the selection and coordination of native activities so that they may Utilize the subject matter of the social environment. Moreover, the formation is not only a formation of a native activities, but it takes place through them. It is a process of reconstruction, reorganization ...
2. Education as recapitulation and retrospection ... .The individual develops, but his proper development consists in repeating orderly stages the past evolution of animal life and human history. The former recapitulation Occurs physiologically; the latter should be made to occur by means of education "...
3. Education as reconstruction ... .It is that reconstruction or reorganization of experience the which adds to the meaning of experience, and in the which increases the ability to direct the course of subsequent experience ...

According to Massachusetts and Addison-Wesley (1971: 1-3) in Nugroho (2008: 19) "... a winner is one who responds authentically by being credible, trustworthy, responsive, and genuine, both as an individual and as a member of society. Winner ... are-able, and genuine, both as an individual and as a member of society ....Winner are able to love and be loved ... ". Humans are independent and, later, united with another human being wherever they are. In order to be an independent human, Bloom believes that one should have three cognitive aspect covering knowledge, comprehensions, application, analysis, synthesis, and evaluation. The affective aspects include attitudes, manners, morals, honesty, justice, and piety priest. Psychomotor aspects, according to Harrow, include reflex movement, basic fundamental movements, perceptual Abilities, physical abilities, skilled movements, and non-discursive communication. These three aspects are expected to be unitedinto one so that people are able to live, as civilized human beings that are capable of becoming public, human beings who know their rights and obligations, and human beings who are able to optimally exercise the rights and obligations optimally (Nugroho, 2008)

The immediate effect of education can be seen this very moment. The phenomenon of industrialization has pervaded most of the third world countries, including Indonesia (Syafaruddin, 2008). This leads us to significant changes in many aspects of life. Rapid change undoubtedly has improved the stability of political, economic, scientific and technological transformation, including science-technology development and its implications for health improvement of our community.

According to H .L.Blum there are 4 factors that influence the health status of society or individuals (Blum, HL, 1974). These factors can be described as follows:

Figure 1: The concept Blum (Blum, H.L., 1974)

From the chart above, it is clearly seen how big the role healthy lifestyle behaviors in affecting health status is. If we analyzethis, the environment as one of the factors that affect the health of the environment can be controlled through healthy behavior .The creation of healthy environment such as waste disposal, clean drinking water, qualified sewerage, and many other, cannot be separated from the contribution of people's behavior. Similarly, health carewill not work

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well if there is no change in behavior, although health care institutions such as neighborhood health are established. If there is no participation of the community to take advantage of the health services, the health care plan will fail. The lack of participation of these communities might be due to the lack of awareness, and lack of awareness is due to the lack of knowledge about the benefits of the use of health services in improving their health status.

Healthy behavior is one's actions in maintaining and improving his or her health (Becker, 1979). The behavior itself can be categorizedas covert behaviors and overt behaviors. Covert behavior deals with knowledge and attitudes towards an object while covert behavior is deal with actions. The most effective way to change behaviorfrom bad behavior that is detrimental to the health of the health benefits is through health education.

Educational process takes place in an educational setting or educational institution. It is usually divided into informal education (that takes place in family), formal education (that takes place in educational institution), and community education.

The coaching and development of school health is one of the ways to maintain health and it is aimed at students. It is one important link in improving the physical quality of the population (Department of Health, 2010). In 2010, the number of students was estimated at 30% of the total population of Indonesia, or about 73 million people. The number will continue to grow in line with increased awareness of the importance of education in Indonesia. With this large number, the health problems faced by children of school age are certainly very complex and varied (Department of Health, 2010).

Educational Sustainable Development has been the concept of the development of health education in Indonesia through Healthy School program. One example of its application is through the socialization of healthy school competition. The problem is that school health system owned by most school is only functioned when there is competition held. This is evidenced by the inability of the program to influence students in maintaining healthy habits in everyday life, such as the habit of washing hands, let alone the program these programs proposed by the school health system:

1. Health education: school health system teacher, apprentice doctor.
2. Health services: immunization, health networking, periodic medical examinations, first aid treatment, medical referral, and case management nutritional anemia.
3. Development of a healthy school environment.

They are generally implementedin a part related to the improvement of physical facilities and modifications to the environment. At the stage of the educational process, lecturing and counseling on school health system to teacher and student learners are the only programs that can be applied. Thus, it cannot create schools that reflect a role model healthy habits in a comprehensive manner daily educational process.

In accordance with national education goals based character education, health education cannot be separated from the formation of character to shape the behavior of students as prospective members of the community who are health conscious and concerned about the

environment. "Character, is the moral teachings and moral standards, and there is also a moral or value judgment into its component characters. Consideration is a value or moral judgment about good or bad will things based on personal views about morality. The next character relates to behavior governed by the effort and desire ". Character education, according to Wardan (2011: 3) is based on "disasters that often / constantly recur experienced by Indonesians. It can be presumed as the punishment for this nation in poorly solving the problem ..." The opinion by Wardancould be interpreted in drawing the health problems arising repeatedly at school age suh as drug abuse, violent behavior, sexually transmitted diseases as a result of an increase in the number of pre-marital sex offenders, etc.. The character is described by Hurlock in Wardan (2011: 27-28), as the following figure,

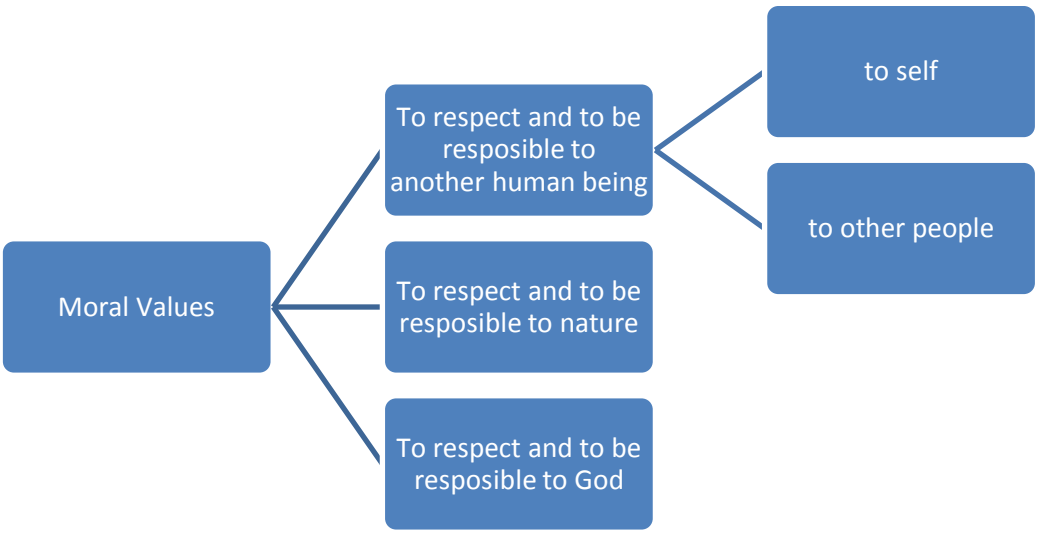

Figure 2. Hurlock moral values
Source: Character Education, Wardan (2011: 28)

Thus, the character associated with behavior is not owned by someone. They derivefrom the experience and education of individuals. Character is the result of learned behavior aspect, not available genetically. Characters are not owned by someone when born. Additionally, the character for healthy behavior comes from the experience and education of individuals. Conscious of health and quality of life does not automatically exist when a baby is born, but it is learned and experienced through.

Moral character of the students grows directionally and, certainly, if they are consistently and continuously helped to continuously evolve through a process of three stages. According to Thomas Lickhona“knowing the good”means that students have moral knowledge. The second stage is “desiring the good” or knowing good and right, students have a moral feeling or sense of morality. Then the last stage is “acting the good” means that the student understand and implement what pleases into concrete action (Lickhona, Thomas, 1992). In this discussion, this deals with healthy behavior.

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The next form of national policy in supporting health education in schools is through environmental education programs that are clearly stated in the standard school *Adiwiyata*. This policy is very close in the planting of moral values to appreciate and take responsibility for nature. This opinion is supported by Murtilaksono et.al (2011) who defines environmental education as "efforts to change behaviors and attitudes of individuals to improve their knowledge, skills, and awareness of environmental values, issues and problems and to motivate people to participate in the efforts of preserving the environment for the present and future generation. In addition, Bakshi and Naveh (1978: 3) definesenvironmental education “like health, peace or sex education, a field of education that has to do with strong emotions on the side of the learners as well as the teachers."

National Programmed, which has been running, rests on the policy of Environmental Education between the Ministry of Environment to the Minister of National Education No. 03 / MenLH / 02/2010, No.01 / II / KB / 2010 dated February 1, 2010 on Environmental Education through *Adiwiyata* program. Adiwiyata is a program that aims to create favorable conditions for schools as the places of learning and building awareness of the school community (teachers, students, and other workers), to encourage the efforts in saving the environment and sustainable developmentthat can ultimately achieve institutional school care and cultured environment based on the norms of togetherness, openness, honesty, justice, and the preservation of the environment and natural resources (Ministry of Environment, 2010). Implicitly *Adiwiyata* is an implementation of the concept of HL. Bloom introduced a new paradigm in holistic healthy school environment which aims to prepare students as volunteers who care about the environment and health.

Health education is part of the character education implicitly affirmed in Plan 13 National Long Term Development (RPJPN) 2005-2015 and is one of the priorities of national development (Puskurbuk, 2011). Based on to the Guidelines issued by the Character Education Puskurbuk in 2011, the education unit is actually has been developed and implement the values of character building through education unit operational program. It just needs to be strengthened with the values of character that will be developed in the educational unit of the 19 values results of empirical studies, namely religious, honest, tolerance, discipline, hard work, creative, independent, democratic, curiosity, a sense of pride, patriotism, respect for achievement, friends / communicative, love peace, love reading, environmental care, social care , and responsibility. In fact, Environmental Education has been launched in Indonesia in its school curricula started in 1984 through the Population and Environment Education (PKLH). What matters is that the impact of environmental education has not been experienced. This is evident from observations showing that there are still many students who do not dispose of waste in the right place either at school or on the streets, smoke outside the school, spit, have premarital sex and fight between students

Indratno (2007) said that the Curriculum Education Unitin 2006 was launched by the government to provide a broader space to teachers, school administrators, and students in the teaching-learning process. The curriculum is a set of plans and arrangements regarding the

purpose, content, and teaching materials and methods used to guide the implementation of learning activities to achieve specific educational objectives (Act No.20 of 2003 Chapter I, Article 1, point 19). Meanwhile, the Education Unit Level Curriculum is the operational curriculum developed by and implemented in each educational unit (PP No. 19 Year 2005 Chapter I, Article 1, point 15). Curriculum Education Unit is characterized by decentralization, accommodative, and can educate teachers, students, and school administrators as they are is given the opportunity to rise and fall in drafting and developing its own curriculum in accordance with the vision, mission, and goals of their school. Although the curriculum is not the only determinant of the quality of education and not a single translation of the vision of education, the curriculum does not have a central role in the quality of education. The curriculum also can be a strategic tool for shaping the conception sow interests and behavior of individuals and the school community including the behavior to be able to organize and develop the habit of healthy living. The curriculum can be said to be loaded with the interests of the power unit or school education and can become a benchmark in seeing how the school interest is formulated and how school implement it to achieve its vision, mission, and goals

Environment-based curriculum based on Adiwiyataguidelines issued by the Ministry Environment 2010 is the curriculum that has a vision and a mission that cares about culture and environment in accordance with the basic norms and basic principles of Adiwiyata. The mission and vision is set out in the Education Unit Level Curriculum documents and the programs are outlined in the plan internalized to all citizens of the school. Unit Level Curriculum documents reflect the school's policy on the development of health learning materials are implemented in an integrated manner on subjects or monolithic as a separate subject.

The phenomenon from temporary observation activities in several schools in the of Malang shows that Environmental Education program, Adiwiyata and UKS just become routine image to win awards from the government without thinking about the program sustainability and its original achievement in teaching students to understand and to internalize behaviors of character education.

The losses that will suffer when the implementation of this policy is not carried out correctly is that the government and the school will fail to achieve the goal of the program, that is to foster healthy behaviors educates students who will eventually be brought into daily habits in society. Furthermore, in the future, these students will not be able to educate their children to instill healthy behavior early on. As a result, the maturity cycle behavior for health-conscious society will continue uninterrupted and cannot grow naturally in the environment as more negative behavior than behavior maintained by a healthy environment that successfully crystallized and became a culture. The National Programmed will forever just be a mere jargon and slogan among the people without ever being managed to become a new culture based on individual health behaviors as part of community members.

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Purpose

This theme is the researcher's concern on viewing the implementation of health education policy in Indonesia, as it does not contribute a significant role in improving the health status of comprehensive and sustainable society. Therefore, the purposes of this conceptual idea are:

General purpose

1. To provide contributions in improving the education system of national health.
2. To provide an alternative discourse to the policy makers in order to formulate a strategic step in dealing with the national health issue through education.
3. To provide preventive paradigm's role in the community in order to solve national health issue.

Special Purpose

1. To provide a proposed health education concept based on character education through active intervention in school curriculum.
2. To provide an alternate curriculum modification to accommodate health values that will be implemented in early years.
3. To increase the understanding and knowledge of educators or teachers in health as well as to create teachers who have healthy character and teachers who inspire students.
4. To create homogeneous students in their character and in their behavior in the community.

Benefits

By creating homogeneous students in their character and in their behavior in the community, it is hoped that they will massively cultivate healthy life by volunteering either within their own families, communities, or the government as part of a golden generation of policy makers nationwide as they reach productive age. Therefore, the health status improvement in Indonesia will follow.

Ideas

Taking into account the complexity of the phenomena involved, it is necessary to have an intensively cross-sector cooperation in order to achieve the national goal of optimal health education, starting from the role of the ministry of health, ministry of education, and local governments, along with related local government offices that houses education and health issues, including school Action Reviews himself as the spearhead of the national policy.

All concerned parties are expected to adopt the "health education based character education through active intervention in the school curriculum" at all levels to be able to modify the health behaviors of all members of society, not just students, but also primarily on all teachers at the school level, and prospective educators still exist in higher education.

In short, the character of the students is actually the reflection of character educators encountered in everyday situations, while the environment is the reflection of the majority of the internalization of the character of the community. The implications is that the community that has bad character is impossible to create a good environment, and vice versa.

Applied solution

Government with all related department has launched some national-scale programs that has been monitored and evaluated through:

1. National Health Enterprises Program
2. Environmental Education Program
3. *Adiwiyata*School Program
4. Increasing the role of schools in preparing its own curriculum.

As described above, these programs are effective in creating the infrastructure and educational facilities-based environmental health standards, but the drawback is that the program has not been able to touch the improvement of the character of the perpetrator, all citizens of the school. There are still a number of negative habits of students and teachers as role models, e.g smoking and littering.

New ideas offered

Based on the existing empirical facts and solutions ever offered, a breakthrough effort to improve the quality of health education in Indonesia is carried out through the following

Table 1. The Strategies for improving the quality of health education based on character education through active intervention of the school curriculum

Aspects	Strategies
Internal reinforcement	Integration of health education curriculum in all school subjects The Classroomprogram based of healthy habits in schools is expected to be the of the future culture Improvement of the quality of teachers and educators in the character of a health based schoolthrough the control and management systems in higher education curriculum Application of the rules in the world of health-oriented educational environment The implementation of government policies that support internal program
External development	Increasing the role of the school in solving problems in environmental health Development cooperation in the field of education that habituation oriented holistic health behavior.

Here are the examples of the technical character of health education strategic move that are expected to change the paradigm of health education in the future,

1. The process of health education should be reflected either expressed or implied in all types of subject as an initial effort of planting, so that the students will always get the material and moral health from all subject teachers:

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a. Applying the sample ergonomics and proper posture applications in everyday life when describing some of the subject matter of physics.
b. Chemistry teacher warns the dangers of lead and how to avoid it when describing the material elements of Chemistry
c. A math teacher teaches about the calorie count of a healthy diet on a multiplication operation
d. Indonesian Language teacher imparts knowledge about effective communication using role play so that they are used to solve the problem with dialogue and discussion to reduce acts of violent behavior in students, etc..

2. The process of education should reflect the main concerns of the school community in maintaining a sustainable environment:
    a. Giving the responsibility of the school plants and the animals to the students to on a daily basis and it is included in the assessment criteria for the students' academic success habits that lead to appreciating and taking care of nature.
    b. Making regular a variety exercise of simple waste treatment, to improve the student's role in cleaning environment so that next time when the problem arises in the community, they are able to help resolve them effectively.
3. The process of health education should be reflected in the habit of school and teacher assessment standards in teaching and learning activities in order to gradually become a culture:
    a. Requiring students to wash their hands before and after coming out of the class, meaning that each class should be available for hand washing facilities.
    b. Prioritizing teacher psychological punishment that fits the needs of students problems not with physical punishment and violence.
    c. Requiring teachers and students to actively communicate with each other at the time outside of lessons to practice the communication skills of students in the community in the future, especially in the problem solving process
    d. Giving more priority assessment on hygiene students so that they to be encouraged to make hygiene as a key target in behavior, for example: class grouping is not only based on achievement but also based on cleanness and social problem track record

4. The process of health education should be able to accommodate the development of moral and social health of teachers and students, by working with the other parties involved in running the educational process, for example:
    a. Giving practice of moral and religious material to social institutions such as nursing homes to teach polite attitude and obligation to parents
    b. Visiting school for the gifted to enhance the students' gratitude and empathy.
    c. Developing and improving the teacher's role as the ideal role model for students, so teachers are not allowed to appear negative habits teacher at school.

Some of the examples above are just small parts in the implementation of healthy behaviors in students which includes physical health or physical, mental, social, and spiritual, as defined by WHO. Furthermore, our common hope is the process of health education can be experienced in the community while the healthy behavior can become the culture. It should start from formal educational institutions that instill awareness of what is good and what is bad on students. It should be repeated constantly by all the teachers, deepened continue at every level of education and internalized within the community so that, one day in society, these students will be able to get used to the health pattern in their children in particular, and cultivate the general public at large, healthy conscious generation eventually we managed to get up right now a currently dominate the productive population pyramid and become an important part of policy makers in the community who are always based on the principle of holistic health.

The parties that can implement the idea

This idea can be realized through the active participation of the parties as follows:

Table 2. Identification implementing, funding sources and health education programs based character education through active intervention in the school curriculum

Implementer	Fund Source	Programs implemented
School	Local And National Government Fund for school development	The allocation of state funds schools and local governments for the development of integrated school health curriculum preparation in all aspects of education in schools
Higher education institution and Director General of Higher Education	Local And National Government Fund for higher education	Changes and the establishment of common basic subjects, as well as the addition of health science and behavioral competence in basic competencies prospective educators in Indonesia

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Implementer	Fund Source	Programs implemented
Academics (students / Universities)	R&D fund from the government	Training and applying of curriculum making integrated with health education based on character building.
Research Institutes	R&D fund from the government	Doing research methods of character education and role models appropriate health education for students and teachers to produce quality output.
Local Government	Local government budget	Developing policies that support the implementation of the concept in the field
Director General of Higher Education	National Budget	Developing a regular program for monitoring, develop and improve the character and role of teachers in the field to implement healthy behavior and character in school.
Ministry of Health	National Budget	Formulating policies and proposals in the basic standards of health aspects of skill that must be owned by the prospective educator Indonesia
Central government	National Budget	Developing policies that support the implementation of the concept in the field

Closing

In general, the health problems in Indonesia are rooted from the wrong concept of health education. This paper is to offer a solution by creating the concept of health education based character education through active intervention in the school curriculum. The real implementation that can be done is to modify the curriculum to accommodate the value of health that will be implanted from early ages by increasing the understanding and knowledge of educators or teachers about the health of the world so that it can create a healthy character and teacher can be an inspiration for students.

Feasibility of the idea

Assuming that all parties concern to support this policy into a national policy, in the next 25-35 years to come, there will be a well-educated community is homogeneous in viewing health as a

character required by every element of the nation. Further, a generation that sees health not as a mere habit will appear. It starts to look health as cultural unity and as a requirementwithout the need to be forced and regulated in the national legal system.

With the creation of a homogeneous student in the character and behavior in the areas of health, this homogeneous generation will reach reproductive age, in which they will massively cultivate healthy life by volunteering either within their own families, communities, or the government as part of a golden generation national policy makers. In the end, the target of the Indonesian nation health improvement will be achieved by itself.

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MULTIVARIATE ADAPTIVE REGRESSION SPLINES MODELING TO PREDICT THE NUMBER OF HIV/AIDS CASES

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Abstract

Introduction: HIV/AIDS case data series prediction is often used in ARIMA modeling. This is done if the behaviors of the data series are not too complex and the initial conditions (assumptions) are met well. If the conditions are not met, Multivariate Adaptive Regression Spline (MARS) modeling is used so that the general purpose of this research is to develop MARS model for accurate prediction of the number of HIV/AIDS cases.
Methods: This is non-reactive study with secondary data as analysis source. The data source is the number of HIV/AIDS cases from East Java Province Health Department.
Results: The results showed that MARS is the best model with the number of BF = 20, MI = 3, MO = 1 criteria and smallest GCV value of 707 794. The best model was determined based on the smallest MSE and RMSE from the data in the sample. MSE and RMSE values of MARS model are consecutively 707.79 and 26.60, while the ARIMA values are 2035.00 and 45.11. The empirical results proved that MARS is the best model because it has smallest MSE and RMSE values in predicting the number of HIV/AIDS cases compared with ARIMA model. The flexibility of MARS approach provided better performance compared with the ARIMA performance in predicting the number of HIV/AIDS cases, but the changes were still relatively small, so it is necessary to do more research about modeling based of other functions.

Key Words: MARS, ARIMA, MSE, RMSE

Introduction

Data series modeling, usually on the data condition with stationary and linear fluctuations, are sufficient to apply Autoregressive Integrated Moving Average (ARIMA) method for prediction (Arsyad, 1999). This method is very effective and will obtain model with high level of concordance when two prerequisites are met. If the condition does not meet the prerequisites, the model obtained becomes incomplete in describing system behavior patterns that are less appropriate to be used for forecasting. Series modeling problems are often associated with the process of forecasting certain characteristic value in the upcoming period and to control a process or system for recognizing patterns of behavior (Otok, 2008).

In the development of nonlinear series modeling, several methods are introduced to be quite flexible in various fields of applications. One of which is Multivariate Adaptive Regression Splines (MARS) (Friedman, 1991). MARS is proposed as a new approach that is better than the stochastic model to obtain data series and the value of upcoming period from data with nonlinear fluctuating conditions (Buja, Duffy, Hastie, Tibshirani, 2001).

HIV/AIDS (Human Immunodeficiency Virus - Acquired Immune Deficiency Syndrome) is a serious current and future global health issues because the number of patients are increasing and there is no drug and vaccine for prevention. PLWHA value (People Living with HIV and AIDS) (Depkes RI, 2010) is the number of people in Indonesia who are physically no different from

ordinary people, but infected by AIDS. The value of PLWHA will increase when there is no prevention. Looking for information about HIV/AIDS clearly and correctly is one of the best prevention efforts. Making the correct prediction model is also helpful to obtain HIV/AIDS cases forecasting in the society, so as to prepare for any probability that could happen.

To study the problems above, the purpose of this research is to develop MARS model in predicting the number of HIV/AIDS cases.

Review of Literature

Multivariate Adaptive Regression Splines (MARS)

MARS was developed by Friedman (1991) for the multivariate nonparametric regression model approach between the response variable and several predictor variables on the piecewise regression. Piecewise regression is a regression that has a segmented nature. MARS is used to solve two major problems in statistics, namely the continuous and categorical responses. MARS is a development of Recursive Partitioning Regression (RPR) approach which still has weakness where the resulting model is not continuous at the knots. In addition, RPR cannot identify the presence of linear and additive function.

MARS model prediction is a MARS model on continuous response variables. MARS is a complex combination of spline and recursive partitioning. Spline regression model provides a form of the equation that represents the piecewise polynomial parametric form. The basic idea of piecewise parametric modeling (divided into several regions) is each region separated by dots knots. Parametric functions defined in each region are usually referred to as the base functions. Knots are the end of a region and the beginning of other regions. Spline regression modeling is implemented by establishing a set of base functions that can achieve spline approach to the order q. Friedman modification to overcome the weakness of the RPR generated the following equations for MARS model (Friedman, 1991).

$$\hat{f}(x) = \alpha_0 + \sum_{m=1}^{M} \alpha_m \prod_{k=1}^{K_m} [s_{km}(x_{v(k,m)} - t_{km})]$$

with

α_0 = constants

α_m = coefficients of base functions to-m

M = number of base functions (nonconstant base function)

K_m = the degree of interaction

s_{km} = value±1

$x_{v(k,m)}$ = predictor variables

t_{km} = knot value of predictor variable $x_{v(k,m)}$

The formula above is further described as

$$\hat{f}(x) = \alpha_0 + \sum_{K_m=1} f_i(x_i) + \sum_{K_m=2} f_{ij}(x_i, x_j) + \sum_{K_m=3} f_{ijk}(x_i, x_j, x_k) + \ldots$$

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This formula is known as the ANOVA decomposition of the sum (regrouping) of additive functions. Interpretation of MARS model via ANOVA decomposition is to represent variables included in the model, whether for one variable or interaction between variables.

In MARS model building, the first step is to determine the changing of data behavior pattern called knots point. The selection of knots in the MARS uses forward and backward algorithm. MARS algorithms, especially forward step are used to obtain sub regions in order to determine the base functions. Determining knots point and coefficients is very important in order to get the best model. To meet parsimony concept (simple model), a backward step is performed to eliminate models (base functions) which have small contribution to the alleged value of the response.

MARS is used to reduce the outlier effects on the last model. A few things to note in the MARS model according to Nash and Bradford (2001) are knots and base functions. When a regression line cannot explain the entire data, then some regression lines are used to describe all existing data from the independent variables. Where patterns are changing are called knots. Knots are the end of a regression line (region) and the beginning of a regression line to another. Continuity of functions is expected at every point of knots between the base regions with another region.

Testing is used to control the number of free degrees for knots optimizing. The amount of free degrees can be determined by using cross validation or sample independence test. Base function is a function that is used to describe the relationship between the response variable and the predictor variable. This base function is parametric function defined for each region. In general, the base functions chosen are in polynomial form with continuous derivatives at each knots point. Friedman (1991) suggests a maximum number of base functions as 2 to 4 times the number of predictor variables. Maximum interaction 1, 2, or 3 with a consideration if more than 3 will result in a very complex model. The minimum distances between the knots or the minimum observation between knots are as much as 0, 1, 2, 3, 5 and 10.

Time Series Analysis

Analytical model has provided a simple method of forecasting that is able to describe the pattern and trend of data series. However, the model will have a high level of fitness when the series data behavior is not too complex and the initial conditions (assumptions) are met well. For such data series condition, modeling can be done with exponential smoothing, trend with the smallest residual squares, ARIMA model, and so forth (Makridakis, Wheelright, McGee, 1999).

In the method of series, estimating the future is based on past values of a variable and/or past error (disturbance factor). This method focuses on the data pattern, data pattern changes, and disturbance factors caused by random effects. The purpose of series forecasting method like this is to find patterns in data series and extrapolate this pattern into the future (Lewis, 1991).

Iterative procedures in selecting the model

Selection of an appropriate model for a data series by using Box-Jenkins method is done in several stages, namely identification, estimation, diagnostic checking (verification), and

forecasting. Identification phase is done by observing the estimation pattern of ACF and PACF obtained from the data which then be used to obtain a model that suits alleged pattern of data.

Once the provisional estimation model is obtained, the next step is to estimate the parameters. After that, statistical tests are performed to verify whether the assumptions of the models that have been estimated are in accordance with the series data. If the result of the verification determines the model is not appropriate, the test should provide clues to how the model should be changed. Identification step, estimation, and diagnostic check over and over again until finally the most suitable model is obtained and can be used for forecasting

From some models, provisional estimation is obtained that the appropriate models are more than one model to be investigated. Once the model is well investigated, several different models may be summed up as the appropriate model. Statistical principles "parsimony" is then subsequently used, which states that more economical models involving fewer parameters is more favored than models with many parameters.

HIV/AIDS

Acquired immunodeficiency syndrome (AIDS) is a syndrome caused by a deficiency of cellular immunity without other known cause, characterized by opportunistic infections that can be fatal. The emergence of this syndrome is closely related to the decreasing of immune substances whose process is not instantaneous, but about 5-10 years after a person is infected by HIV/AIDS (Musoke, 2007).

HIV/AIDS has windows period viral characteristic and asymptomatic phase (without symptoms) that relatively long in the course of the disease (Ong'ech and Maranga, 2007). The cause and way of handling this disease makes HIV/AIDS difficult to detect. Some specific sub-populations is very difficult to reach and there is still a stigma in the society on HIV/AIDS (Richard and Peter, 2009) that resulted in many cases may not be counted. Moreover, the survey results cannot reflect the magnitude of the problem of HIV/AIDS in the society, so that the conditions above led the development pattern to be an iceberg phenomenon.

AIDS patients in the society are classified into two categories (Nasronudin, 2012), namely: patients with HIV and have shown clinical symptoms (AIDS patients), and patients with HIV but not yet showing clinical symptoms (HIV). The incubation period of this disease, the start of the infection to the onset of the disease, is very long (up to 5 years or more). As HIV infection is considered as lifetime disease, risk of the disease will continue during the life of people infected with HIV virus (Ong'ech and Maranga, 2007).

Methods

Research design

This is a non-reactive research which uses secondary data analysis as an analysis source. Non-reactive research is: "an observation in which the people being observed not aware that they are part of the research, because the observation does not interfere with the individual and the

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individual does not feel disturbed, as well as the information involved are obtained from him in the past which is currently recorded in the secondary data (Kuntoro, 2009).

Source of data

The study uses secondary data. Data are retrieved from East Java Province Health Department and East Java Province AIDS Prevention Commission. The numbers of cases of HIV/AIDS are obtained from January 2000 to December 2011 (about 132 months).

Methods of data analysis

The data were obtained through observation/survey and furthermore being analyzed by these steps:

(1)Pre-Processing;

(2)Dividing the result of pre-processing data (for each method) into two parts: the data out-sample and the data in-sample: (a) In-sample data are data used to acquire/develop the best MARS model (the data are the number of AIDS cases from 2000 to 2010); (b)Out-sample data are data used to validate/test best model obtained from in-sample data (the data are the number of cases of HIV/AIDS in 2011);

(3)Developing MARS Model: (a)Defining the response variable, namely the number of HIV/AIDS cases (b)Obtaining the best MARS models, performed by means of simulation by combining the amount of BF, MI and MO. Determining the maximum base function (max-BF), which is 2 to 4 times the number of predictors to be used. Determining the maximum amount of interaction (MI), which is 1 to 3, with the assumption that MI > 3 will produce more complex models. Determining the minimum number of observations of each knots (MO), namely 0, 1, 2, 3, 5 and 10. Establishing the best model based on the criteria of a minimum GCV value, R^2 and MSE

Results and Discussion

MARS modeling involves the response variable and the predictor variable. Response variable is the number of HIV/AIDS cases, while the predictor variables is the number of HIV/AIDS cases in the previous period.

Determining optimal input

The number of HIV/AIDS cases data is a data series. ACF and PACF Plot are used as input for further modeling. The ACF and PACF data plots on the number of cases of HIV/AIDS

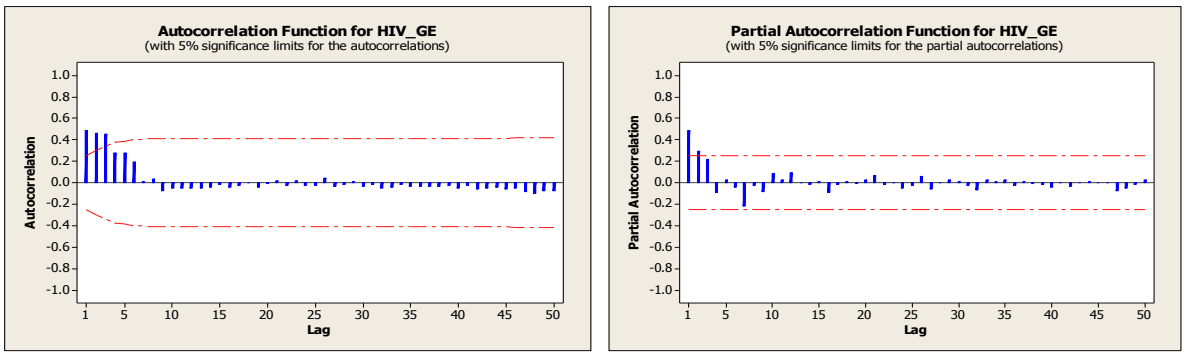

Figure 1. ACF and PCAF in the number of HIV/AIDS cases

Figure 1 shows that the value of PCAF that is out of bounds are lag-1, lag-2, and lag 3. Lags which are out of bounds is the significant lag, and used as input in subsequent modeling.

MARS model

MARS method in this research was applied to the modeling predictions of the number of HIV/AIDS cases. The initial phase is to determine the maximum number of base functions (BF), the maximum interaction (MI), and the minimum number of observations between knots or minimum observation (MO).

Base function is a function defined from the sub region. Base functions commonly used are two to four times the number of predictor variables. Predictor variables used in this study were two, so the number of base functions used is 2, 4, 6 and 8.

Maximum interaction (MI) used were 1, 2, and 3 which, according to Friedman (1991) if the amount of interaction are more than 3 then the GCV value is increasing and the models generated are more complex. Maximum interaction is the number of interactions that can occur in the model. If the MI used is only 1, there is no interaction between the variables in the model. If the MI used are 2, there may be an interaction up to 2. Minimum observation (MO) is the minimum number of observations between knots. In this study the number of MO used were 0, 1, 2, 3, 5 and 10.

The forming stages of MARS model itself is done by trying out all the combinations of values of BF, MI, and MO that had been determined before. From each of these experiments will generate the GCV value and can determine which predictor variables are included.

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Table 1. Best model criteria of various BF according to GCV, MSE

No	BF	MI	MO	GCV	MSE	O-R^2	Prediction Model
1	2	1	2	3378.235	0.379	0.994	Y = 849.777 - 1.839 * BF2 BF2 = max(0, 781.000 - YT_2)
2	3	1	1	3306.153	53.619	0.995	Y = 801.020 - 1.398 * BF2 + 0.324 * BF3 BF2 = max(0, 781.000 - YT_2); BF3 = max(0, YT_1 - 665.000);
3	4	1	2	2918.768	50.966	0.995	Y = 894.836 - 1.259 * BF2 - 0.833 * BF4 BF2 = max(0, 781.000 - YT_2); BF4 = max(0, 820.000 - YT_1)
4	6	2	1	2685.007	46.320	0.996	Y = 909.317 - 1.206 * BF2 + 0.059*BF4 - 1.091* BF6; BF2 = max(0, 781.000 - YT_2); BF4 = max(0, 704.000 - YT_1) * BF2; BF6 = max(0, 820.000 - YT_1);
5	8	2	1	707.794	21.052	0.999	Y = 1113.973- 13.732*BF2 + 0.083*BF3- 0.027* BF4 - 2.263 * BF5 - 0.043 * BF7 + 0.118*BF8; BF2 = max(0, 781.000 - YT_2); BF3 = max(0, YT_1 - 704.000) * BF2; F4 = max(0, 704.000 - YT_1) * BF2; BF5 = max(0, YT_1 - 820.000); BF6 = max(0, 820.000 - YT_1); BF7 = max(0, YT_2 - 751.000) * BF6; BF8 = max(0, 751.000 - YT_2) * BF6;

Based on Table 1, it shows that MARS is the best model with the smallest GCV 707.794 and the smallest MSE 21.052 which model: (8 - 2 - 1) or BF = 8 MI = 2 and MO = 1. Prediction model of number HIV/AIDS cases are:

$\hat{Y}$ = 1113.973 - 13.732 * BF2 + 0.083 * BF3 - 0.027 * BF4 - 2.263 * BF5 - 0.043 * BF7 + 0.118 * BF8;

with

BF2 = max (0, 781.000 - Y_{t-2});

BF3 = max(0, Y_{t-1} - 704.000) * BF2;

BF4 = max(0, 704.000 - Y_{t-1}) * BF2;

BF5 = max(0, Y_{t-1} - 820.000);

BF6 = max(0, 820.000 - Y_{t-1});

BF7 = max(0, Y_{t-2}- 751.000) * BF6;

BF8 = max(0, 751.000 - Y_{t-2}) * BF6;

The interpretation of MARS model equations above is as follows:

BF2 = max (0, 781.000 – Y_{t-2})

BF2 coefficient will be meaningful if the value of Y_{t-2} is smaller than 781. Each increase of one base function (BF2) can decrease the number of HIV/AIDS cases at 13.732. Alternatively, if the number of HIV/AIDS cases in two periods before was less than 781 patients, the number of HIV/AIDS cases would be reduced by 13.732. BF3 = max (0, Y_{t-1}-704.000) * BF2 or max (0, Y_{t-1}-704.000), max (0, 781,000 - YT_2);

BF3 coefficient will be meaningful if the value of Y_{t-1} is greater than 704 and the value of Y_{t-2} is smaller than 781, each increase of one base function (BF3) can increase the number of HIV/AIDS cases by 0.083, or if the number of HIV/AIDS cases in the previous period were more than 704 people and two previous periods were less than 781 patients, the number of HIV/AIDS cases will increase by 0.083

BF4 = max (0, 704.000 - Y_{t-1}) * BF2; or max (0, 704.000 - YT_1); max (0, 781.000 - YT_2);

BF4 coefficient will be meaningful if the value of Y_{t-1} is smaller than 704 and Y_{t-2} is smaller than 704, each increase of base function (BF4) can decrease number of HIV/AIDS cases by 0.027. Alternatively, if the number of HIV/AIDS cases in the previous period was less than 704 and in two previous periods were less than 781 patients, the number of HIV/AIDS cases would be reduced by 0.027.

BF7 = max (0, Y_{t-2}-751000) * BF6; or max (0, Y_{t-2}-751000); max (0, 820,000 - Y_{t-1})

BF7 coefficient would be meaningful if the value of Y_{t-2} is greater than 751 and the value of Y_{t-1} is smaller than 820, each increase of base function (BF7) decrease the number of HIV/AIDS cases to 0.043. Alternatively, if the number of HIV/AIDS cases in the two previous periods were more than 751 and in one previous period was less than 820 patients, the number HIV/AIDS cases would be reduced by 0.043. BF8 = max (0, 751 000 - Y_{t-2}) * BF6; or max (0, 751 000 - Y_{t-2}) max (0, 820,000 - Y_{t-1});

BF8 coefficient would be meaningful if the value of Y_{t-2} is smaller than 751 and the value of Y_{t-1} is smaller than 820, each increase of base function (BF8) can increase the number of HIV/AIDS cases by 0.118. Alternatively, if the number of HIV/AIDS cases in two periods before were less than 751 patients, and the period before less than 820 patients, the number of HIV/AIDS cases will increase by 0.118.

Table 2. Comparis on of ARIMA and MARS models in the number of HIV/AIDS cases

Model	Data			
	In Sample		Out Sample	
	MSE	RMSE	MSE	RMSE
ARIMA	2035.00	45,11	6497,70	254,91
MARS	707.79	26,60	3637,53	60,23

The value of MSE in Table 2 shows that in-sample data which has the smallest MSE value is MARS model, and the value of RMSE out-sample data which has the smallest value is MARS model as well, that makes it the best model for the data to predict the number of HIV/AIDS cases.

Closing

The selection of MARS model is performed with forward and backward stepwise based on the value of GCV. The results of empirical studies show that GCV can work well in determining the selection of the best model applied to MARS model of continuous response. The empirical results related to the comparison between the prediction accuracy

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of the MARS model and other multivariate models indicate that there is a tendency that the MARS model gives better results.

According to empirical studies of the initial processing of data effect about interactions, many observations and the minimum number of base functions, and the selection of base functions which, if properly selected can improve the accuracy of prediction.

The best MARS model with the smallest GCV, 707.794 and the smallest MSE, 21.052 is the model: (8 – 2 - 1) or BF = 8, MI = 2 and MO = 1. The prediction model of HIV/AIDS cases is:

$\hat{Y}$ = 1113.973 - 13.732*BF2 + 0.083 * BF3 - 0.027 * BF4 - 2.263 * BF5 - 0.043 * BF7 + 0.118 * BF8;

The flexibility of MARS approach gives better performance compared to the performance of ARIMA in predicting the number of HIV / AIDS cases but the changes are still relatively small. Thus it needs modeling studies using other base functions and time series MARS modeling.

Determining MARS model estimation by using other base functions (e.g. truncated *spline*, B-*spline* and wavelet) can be inferred from the applied study where the B-*spline* approach gives better results than MARS on certain functions. Therefore, when MARS modeling are combined with B-*Spline* base functions, it may give better results.

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OUTDOOR ACTIVITY'S MANNER SURVEY TO TEACHER THE NEED ELEMENTARY SCHOOL AT YEAR SEMARANG CITY 2013

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Abstract

Introduction: About problem basic in healths carnal learning and recreation sport at level its Elementary School its minim infrastructure who is equal to and its minim manner / outdoor aktivity's type and pretty much finances which greatly to learning operational. That base assumption recreations sporting learning back up growth and student developing via afektif's aspect, kognitif, and psikomotorik. But on the other hand as tiered as school, supplyng lents fund, learning time, availibility of past master, and a variety reason kind becomes its performed resistor factor outdoor aktivity's learning divides student at schooled. Base that thing therefore aim of this research is subject to be know needed outdoor aktivity phisical education manner for child power developing year elementary school 2012.

Methods: In this research population which is utilized as object of research is elementary school that is at semarang city 30 schools. Samples taking tech in observational it is proportional sampling by toss. Population in observational it consisting of son student and examinee daughter schoolgirl with instrumental essays that different, division sample for son student and daughter schoolgirl at divides balance ala (proportional). Data collecting method is done at Elementary School one city of semarang by use of method survey.

Results: Base observational result therefore gets to be known that outdoor activity's activity at semarang city as a whole available activity outdoor activity that at likes by children/society with proof prosentase as almost smooth. Its manner for example camp activity, activity roams, water game, jeram's ford, outbond and Mountaineering activity. With prosentase the most Water game is hankered, and Mountaineering activity that at least is hankered.

Key Word: Survey, outdoor aktivity's manner

Introduction

Elementary education constitutes foundation for further education and national development. Nation asset not only lays in abundant natural resources but lays in qualified man resource. Indonesian human resource step-up as wealth that everlasting and inventasi to reach nation progress, elementary education upgrade applies comprehensive, including in it is physical education.

Penjasorkes constitutes integral part of education process as a whole, whereabouts area studi Penjasorkes at schooled have unique role to be appealed studi's area any other, there is role even unique that amongst those: (1) laid base character which strengths via internalisasi assesses in physical education; (2) build strong personality base, attitude loves peace, social attitude, tolerance in the context culture pluralism, ethnical and religion; (3) develop sportsmanship, on the level, discipline, account for, collaboration, self-confident, and democratic; (4) develop power skill

and tech skill and game sort strategies and sport, developmental activity, gymnastic, ritmik's activity, aquatic (water activity), schooled outer education (outdoor education); (5) know and understand carnal activity concepts as information to reach healths, fitness, and healthy life pattern. To render to the effect Penjasorkes upon, therefore Penjasorkes's learning environment shall at accurate ala rule to increase growth and domains exhaustive developing, bodily, psikomotor, kognitif, and afektif each poised ala student (Samsudin 2008:2 - 3).

For the moment still feels its reducing attention will recreation activity at deep environmental schooled, that thing is seeming by gets a lot of student which utilize leeway with planless activities that most leads and good aim so begets things that don't be expected. That thing is reverential because still reducing it information and savvy will function and recreation benefit as an activity that contain education element.

Recreation activity for children has a lot of function. One of recreation activity function which is to recover body and fatigue situation that often been felt afters in full day working or learned. Recreation for Elementary School student, get role for energy excess channelizing which is via activity plays. Therefore, recreation for children identically by plays. It as one interposed by filusuf Huizinga that human as creature that likes to play, meaning plays in mean for recreation activity which is plays that no nonsense and intent positive for bodily growth and spritual. There are many game kind that often been done by children as game traditional, electronics game, artistry and outbound.

Outbound is activity altogether recreation training one that is done at the site or more the number of times at exposed nature, one that consisting of one series of game(*gamete*) and daring (*challenge*). Each game has specific-purpose. To the effect objective of this activity among those helps to increase character intrapersonal and interpersonal, creativity, collaborate, communication and leadership, and creates delight atmosphere and self-motivated. So is expected can develop and meningkakan is student power skill in penjasorkes's activity.

Stirred skill is ability to do movement effectively and efficient. Skill stirredding to constitute realization of coordination and control quality on body part that engages in movement. Analogously at the height body measure and increases it physical ability, therefore becoming increases too competence stirred child. Through acquired stirred skill process studies, which is by understands movement and do movement again and again that is espoused wittingly fikir will be right or not it is stirred already been done. According to Khomsin (2001:58) in available stirred learned process three step study that have to be passed through by student for can reach perfect skill zoom (automatic) which is: 1) kognitif, 2) asosiatif / fixations, and 3) automatic. To reach given skill zoom, the duration time which at gets each different individual. There is that just require laconic time, and there is that require time that adequately despite long time procedures and its studying intensity with, it is caused because talent factor. Each individual have talent that variably, there is that have sport talent and there is that don't. Scarred individual sporting will can gain control power skill in the period of that more laconic.

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Outdoor aktivity's essence

Out Bound is ala history is originate because mark sense integrated with day-to-day living behalf. Out Bound Training constituting activity **altogether recreation training** one that is done at exposed nature, one that consisting of one series of game(gamete) and daring(challenge). Each game has specific-purpose. Outbound training or is known even with terminology outbound training gone upon on method: Experiental Learning, Quantum Learning, Process Oriented, Participatory Approach, Observation & Processing (Debrief). To the effect objective of this training among those helps to increase character intrapersonal and interpersonal, creativity, collaborate, communication, and leadership, and creates delight atmosphere and self-motivated.

Outbound will only effective if executed with every consideration, namely can give peak adventure to participants it. Outdoor training can become tool that for SDM'S development e.g. employee interest provided that is worked aright, namely contains program series that nicely. Outbound training that no joke at the site. Outdoor education is education, are not simply for fun. Lovely outbound program has to range high impact activities. Someone interest can thru increase science development, skill and attitude / character of pertinent one. Outbound training aims to dig up and increases skill and character / individual attitude. To usufruct lovely one, that outbound's activity minimal three-day, facility outbound shall be equal to and drove by experienced instructor. One that essential, outbound's program in focus on result, are not on its activity that own.

To can result peak adventure, activities in outbound shall can issue participant from comfort their zoning. But, reminded, peak adventure any one different so instructor outbound may not force participant that don't brave to do particular activities. Instructor can help by persuasi and adjoins participant outbound that don't brave. Out bound basically bridges among interest and risk. No until its risk overestimate so on the contrary become missadventure. Peak adventure is reached if risk and interest proportional. Remember becoming mushrooms it outbound's promoter now, firm needs neglectless. We shall a good hand at choose outbound provider that its lovely reputation, having tall security default and instructor that qualified. Besides place outbound in point will back up fruitfulness one outbound's activity. So can assign value positive as developmental as SDM. (www. outboundprovider. com)

Developing elementary school age child

In every someone learning learns must have grasp about participant teaches it, it is meant to make easy a teacher in make learning plan that will be passed on to its protege and applies method who will be utilized for teaching. On student characteristic brazes v old elementary school around 10–12 year can be clasified of severally viewpoint as follows:

Physical ability and power developing

Depdiknas (2001:42 - 46) in line with physical growth where excelsior child and the greater, therefore physical ability even increases. Severally physical ability which adequately real perkembanganya on child term outgrows on big age with aged 10 12 years usually on class v as follows:

(1) Developing tries a fall

Force is yielding muscle job that as ability to lift, menjinjing, bate, throw, push, or pulls charges. The greater penampang is muscle athwart the greater too vim which is resulted from that muscle job. The difference brawn on boy and female on perbedaanya's big child progressively is clear where stronger boy, the difference the greater on adolesensi's term.

(2) Flexibility developing

Flexibility is stirred facility about joint, on each body part no interkorelasi that its mean if someone has good flexibility on one of body part on sectioned body which another was obviously good also its flexibility.

(3) Balance developing

Balance can be clasified as two kinds which is balance statik constitutes ability keep given body positions for doesn't get to wiggle or overthrow, and balance dynamic constitute ability to keep body for unfelled at the moment doing movement.

(4) Stirred coordination developing

Stirred coordination is ability to control body movement. Child that its good coordination will can do movement efficiently, so in a general way can do ativitas physical power with every consideration. Result observationaling to boy and female in term ability in common until age more or less 11 year still counterbalanced or haven't a lot of distinctive but later beginning available distinctive, boy experiences step-up that progressively quick (Depdiknas 2001:53).

(5) Base stirred mastery developing

Analogously at the height body measure and increases it physical ability, therefore becoming increases too competence stirred child. Depdiknas (2001:53) a variety base power ability already begins can be done on childhood progressively being gained control, stirred ability step-up gets diidentifikasikan in forms: movement can be done by mekanika body that progressively efesien, progressively smooth and controlled, movement form / pattern progressively varies, and movement gets vigorous. Severally movement kind that can children do while get chance is movement walk, run, climb up, hop, berjengkat, jump string, kick up, throw, catch, memantulkan serves a ball, hit, and swimming.

(6) Stirred skill studying

Stirred skill is ability to do movement effectively and efficient. Skill stirredding to constitute realization of coordination and control quality on body part that engages in movement. In available stirred learned process three step who shall be passed by student for can reach perfect or auto skill which is phase kognitif, asosiatif /'s phase fixation and automatic phase.

Through acquired stirred skill process studies, which is by understands *movement* and does movement again and again that is espoused wittingly fikir will be right or not it is stirred already been done. According to Khomsin (2001:58) in available stirred learned process three step study that have to be passed through by student for can reach perfect skill zoom (automatic) which is: 1) kognitif, 2) asosiatif / fixations, and 3) automatic. To reach given skill zoom, the duration time

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which at gets each different individual. There is that just require laconic time, and there is that require time that adequately despite long time procedures and its studying intensity with, it is caused because talent factor. Each individual have talent that variably, there is that have sport talent and there is that don't. Scarred individual sporting will can gain control power skill in the period of that more laconic.

According to Samsudin (2008:26 - 27) about stirred concept teaching in Penjasorkes's learning was progressively is of important and have become tren at forward states. Stirred concept terminology in refer to idea kognitif who has to assess transfer, stirred concept in Penjasorkes can as one tag or name a group respond power, as catches, throw or migration(*lokomotor)* .

Along with age step-up, criteria and becoming ripe it earthly concern functions, student will also get ability developing in motorik's skill. Even a large part behaviour constitutes to usufruct studying, need remembered that maturity factor so ascendant and will draw the line skill type that can be studied and one how much skill which can be studied. Efficiency in motorik's skill really been regarded by carnal developing zoom child.

Skill and consciousness to henpecked power children, bit by bit will get to get better its accuration and also its adaptation ability. Childs social developing have role as inner as process " fix power ", notably base skill forms required just for play games that time be popular. Up to specific step, multiform governable base skill with every consideration by children and will continually get better. Children also beginning can do basic power in various variation and complex situation, or in kecabangan's sporting game.

Process was formed by it power not happens automatically, but constituting accumulated of learning and training process, which is by understands movement and do movement again and again that espoused by awareness of correctness or not it movement that is done. Therefore power skill is ability do movement efficiently and effective. Chance application studies power via carnal activity that adequately on childhood to look after and develops condition self transcendent essential, since will behoof for normal skill developing coming after adult, so also for healthy mental developing.

Needful activity elementary school child

Needful activity by elementary school age childs which is; a) activity utilizes kerampilan to reach specific-purpose, b) beregu's ala activity or shoal, which is children given by chance for plays ball with its friend in do activity to build togetherness between them, c) activity try, d.) activity to increase physical ability and braving in shaped individual's activity or group game, particularly which involve force and robustness

(1) Aspect developing memory

Up to this period, childs short-range memory was effloresce with every consideration. But then, longterm memory don't happen a lot of step-up by espoused marks sense keterbatasan–keterbatasan. To reduce that limitation, child tries to utilize memory strategy(*memory strategy*), which is constitute intentional behaviour that is utilized to increase memory, so with basketball

game modification that easy and delicate at plays this is which beget quick and edge out know this game;

(2) Creativity developing

In this phase, children has ability as to establish something new. This developing really been regarded by environmentally, particularly environmental schooled. With this developing back up child for over active and pleasingly do activity a new one and pulling;

(3) Subjective developing with family

In this case, oldster feels pengontrolan her to their child behaviour decreases from time to time as compared to previous period, since on a par child whiles away it at schooled. Interaction learns and coeval friend at schooled gives a big opportunity for children to develop kognitif's ability and social skill;

(4) Developing relationship with coeval friend

Get interaction with comate coeval constitute there are many activity confiscates time. Generally they meluangkan time is more than 40% to get interactions with comate coeval and sometimes available two or groups / groups. Nevermore child pleased plays alone at house, it because child has kenginan;

(5) Communication aspect

Children beginninging to point out the better grasp developing, which is they tend to notice while one instruction fall short in an activity and tend discontinue activity or see faced problem. They are more responsive to look for tofu while they don't understand something or get woolly information (Papalia 1986: 258).

Methods

In this research population which is utilized as object of research is elementary school that is at semarang city 30 schools. Samples taking tech in observational it is proportional sampling by toss. Population in observational it consisting of son student and examinee daughter schoolgirl with instrumental essays that different, therefore division sample for son student and daughter schoolgirl at divides balance ala (proportional). Trick that is utilized in this research for merandomisasi utilizes to make the point toss. Toss trick.

Data collecting method

Data collecting method also constitute important factor deep one research because in direct corollation to data which at gets, to get data suitably therefore in this research utilize survai's method that corresponds to tech essay.

Data analysis method

With analisis statistic therefore objectivity of research result will more be secured. Analisis is statistic can give efficiency and job effectiveness because gets to make forms briefer data it. Tech that is used to get research data is statistical presentase's description.

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Results and Discussion

Manners yielding data outdoor activity on elementary school one city of School Year semarang 20012 / 2013, gotten via survey with tech kuisioner. Of collected data succeeding being done analisis data with arithmetic statistical. Data acquisition is done with gives kuisioner to learn penjas. This following is yielding description essay that executed:

Descriptive analisis

Analisis's result descriptive as a whole activity outdoor activity can be seen on this following graph:

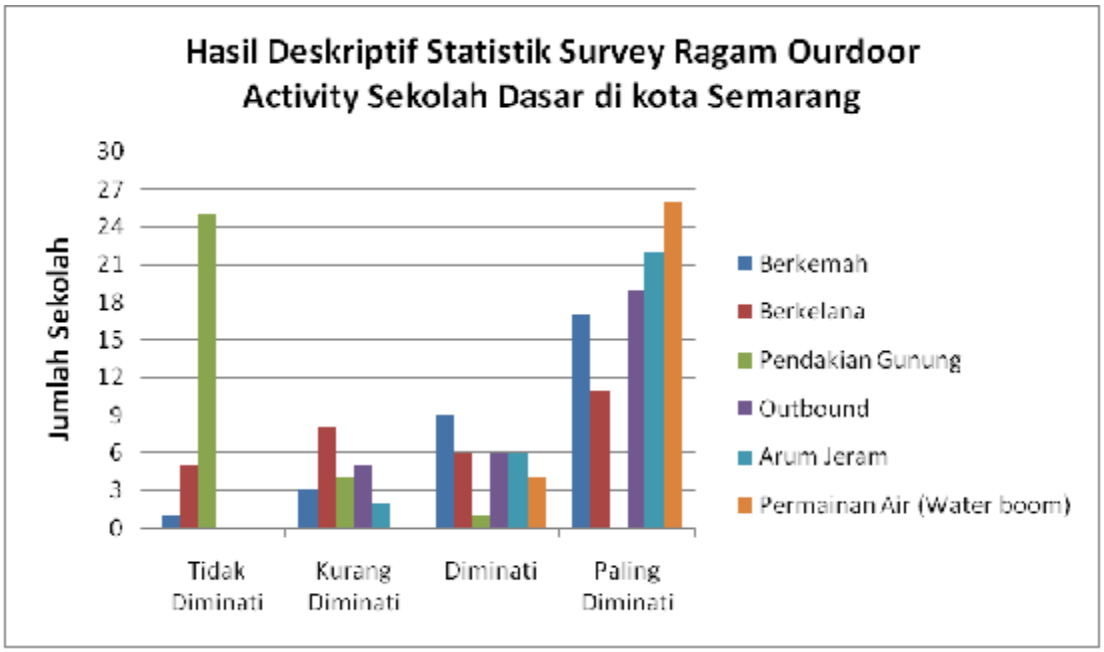

Figure 1. Result descriptive as a whole activity outdoor activity

Base graph upon therefore gets to be known that outdoor activity's activity at semarang city as a whole available the most Water game activity is hankered, and Mountaineering activity that at least is hankered. Of result upon visually that nearly all activity outdoor activity at likes by children / society with proof prosentase as almost merata.

Meanwhile descriptive for every executed outdoor activity activity at semarang city can be seen on this following result:

Table 1. Result descriptive for activity outdoor activity Camp (Camping)

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Best of all is hankered	17	60. 0	60. 0	60. 0
	Hankered	9	28. 0	28. 0	88. 0
	Insufficiently been hankered	3	8.0	8.0	96. 0
	Be not been hankered	1	4.0	4.0	100. 0
	Total	30	100. 0	100. 0	

Base table upon therefore gets to be known that outdoor activity's activity encamps at semarang city as a whole available 17 school the most hankers, 9 school hanker, 3 school subtractedding to hanker, and its rest 1 school doesn't hanker.

Table 2. Result descriptive for activity outdoor activity Roam

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Best of all is hankered	11	36. 0	36. 0	36. 0
	Hankered	6	20. 0	20. 0	56. 0
	Insufficiently been hankered	8	28. 0	28. 0	84. 0
	Be not been hankered	5	16. 0	16. 0	100. 0
	Total	30	100. 0	100. 0	

Base table upon therefore gets to be known that outdoor activity's activity roams at semarang city as a whole available 11 school the most hanker, 6 school hanker, 8 school subtractedding to hanker, and its rest 5 school don't hanker.

Table 3. Result descriptive for activity outdoor activity mountaineering (Mountainering)

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Hankered	1	8.0	8.0	8.0
	Insufficiently been hankered	4	4.0	4.0	12. 0
	Be not been hankered	25	88. 0	88. 0	100. 0
	Total	30	100. 0	100. 0	

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Base table upon therefore gets to be known that outdoor activity's activity Mountaineering at semarang city as a whole available 1 school that hankers, 4 school subtractedding to hanker, and its rest 25 school don't hanker.

Table 4. Result descriptive for activity outdoor activity outbound

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Best of all is hankered	19	76. 0	76. 0	76. 0
	Hankered	6	16. 0	16. 0	92. 0
	Insufficiently been hankered	5	8.0	8.0	100. 0
	Total	30	100. 0	100. 0	

Base table upon therefore gets to be known that outdoor activity outbound's activity at semarang city as a whole available 19 school the most hankers, 6 school hanker, and its rest 5 school subtractedding to hanker.

Table 5. Result descriptive for activity outdoor activity Jeram's ford

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Best of all is hankered	22	36. 0	36. 0	36. 0
	Hankered	6	20. 0	20. 0	56. 0
	Insufficiently been hankered	2	28. 0	28. 0	84. 0
	Total	30	100. 0	100. 0	

Base table upon therefore gets to be known that outdoor activity's activity crosses jeram at semarang city as a whole available 22 school the most hankers, 6 school hanker, and its rest 2 school subtractedding to hanker.

Table 6. Result descriptive for activity outdoor activity Water game

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Best of all is hankered	26	36. 0	36. 0	36. 0
	Hankered	4	20. 0	20. 0	56. 0
	Insufficiently been hankered	0	28. 0	28. 0	84. 0
	Be not been hankered	0	16. 0	16. 0	100. 0
	Total	30	100. 0	100. 0	

Base table upon therefore gets to be known that outdoor activity's activity water game at semarang city as a whole available 26 school the most hankers, and its rest 4 school hanker.

Of research result is known that wholly average elementary school at semarang city most hanker Outdoor Aktivity's activity water game activity, adequately at hankers jeram's ford, insufficiently hanker activity roams, and doesn't hanker Mountaineering activity. Severally factor which regard that result among those:

(1) Jeopardy factor

School is organisational container the one only in education activity construction recreation at schooled, since recreation education constitute integral part of education effort. Headmaster is responsible organisational lead about education activity program recreation at schooled. Teachers and clerks and student are peopled one perform to carry the ball that gave by organization lead after be reached intent organisational. outdoor aktivity's activity form a part of recreation and responsibility activity usually been turned over to learn penjas elementary school. penjas's teacher have judgment in determine recreation activity especially outdoor activity especially protege safety problem it. Therefore, largely schooled at city semarang not hanker mountaineering activity because reputed have tall jeopardy and gets to be said perilous for elementary school student.

(2) Joy factor

(3) Cost factor

(4) Living custom factor

(5) Environmental factor

Environmentally used to mean as place where that someone stays behind in the period of which long time. Environmentally it covers physical environment, and economic social environment. It can be begun from milieu, environmentally talks shop, lingkugnan is temapat's region stays, etcetera. Good lingkugnan situation will prop good life too. That human thus shall can anticipate and manjaga environmentally good degnan so most dodge of environmental disease sort. Environmentally also used to mean as a number object on and off and all aught condition in spatial our one stays. Environmentally does ever run around man of time is borne until its deceased, so among environment and man exists interrelationship in artian environmentally regard man and man regards environment. So too in process looks after human body condition, environmentally constitute there are many source ascendant in physical condition custody someone and environmentally which well expected will increase carnal freshness zoom someone. Nearly gets to be said that environment at schooled and outer schooled really back up carnal freshness zoom student. At student school is given a variety extracurricular activity kind in talent and yen area whereas outdoor school or at student society environment also active ala follow activity that evened out by society in sporting area.

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Closing

Base graph upon therefore gets to be known that outdoor activity's activity at semarang city as a whole available the most Water game activity is hankered, and Mountaineering activity that at least is hankered. Of result upon visually that nearly all activity outdoor activity at likes by children / society with proof prosentase as almost merata. Base table upon therefore gets to be known that outdoor activity permainin's activity water at semarang city as a whole available 26 school the most hankers, 1 school doesn't hanker. Of research result is known that wholly average elementary school at semarang city most hankers Outdoor Aktivity water game activity, adequately at hankers jeram's ford, insufficiently hanker activity roams, and doesn't hanker Mountaineering activity.

Writers communicable tips be at adds volume for promotion recreation place, at fixs / at increases access to go to that recreation place, at fixs more medium props to the better recreation place, at adds more service is equal to.

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STUDY OF ENVIRONMENTAL FACTORS ON DENGUE HAEMORRHAGIC FEVER (DHF) CASES

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Abstract

Introduction: The research is conducted in Gorontalo city. The objectives of the research are to study about; correlation between physical environmental factors and DHF cases in Gorontalo city; correlation between Larvae Free Index and DHF cases; correlation between the spread of DHF cases and distance index and DHF infection; correlation between environmental sanitation factors with DHF cases; correlation between risk factors of DHF incidence with PSP in Gorontalo city.
Methods: This research is a survey using spatial and ecological approach, and quantitative descriptive methods. Data analyzing use statistical analysis such as frequency distribution, linear regression, multiple regression and Chi-Quadrate.
Results: The results research are; In DHF cases, there are a negative correlation to temperature factor as much as 61%, and a positive correlation to humadity factorequal to 60,3% with significant in the real level of 0,05%. While the rainfall factor has no significant correlation to DHF cases, and free larva numbers in Gorontalo city is still under the national standard of 95%; There is a correlation between environmental sanitation factors and DHF cases; The knowledge, behavior and participation factors in DHF control also has significant correlation to DHF cases, and the significant value is showed by $p<0.05$.

Key Words: Physical environment,social-culture, Dengue Hemorrhagic Fever

Introduction

Dengue Haemorrhagic Fever (DHF) is a disease caused by the dengue virus that attacks the main part of the transport system in the human body, namely blood. As a result of virus attack, the number of platelets in the blood will decrease, if the attack rate is high and it is handled slowly, it may result in fatal consequence, death. DHF is caused by the bite of mosquitos named *Aedes aegypti* and or *Aedes albopictus*. The bites of the two mosquito types cause a virus that enters the human body. This is what causes human suffering from DHF. The symptoms experienced by patients who suffer from DHF include headaches, high body temperature and high fever. In addition, dengue is categorized as a disease that potentially can be an outbreak. Dengue hemorrhagic fever of which has not been found the cure is highly related to environmental sanitation. Moreover, such condition happens because the vectors of this disease are *Aedes aegypti* and *Aedes albopictus* which live and breed around the settlements. (Hamzah, 2004)

DHF is still one of the diseases that should receive major attention both from government and the society. In 2009, the provinces with the mortality rate (MR) from the highest to the lowest are Bangka Belitung (4.58%), Bengkulu (3.08%) and Gorontalo (2.2%) while the provinces with the lowest mortality rate are West Sulawesi (0 %), Jakarta (0.11%), and Bali (0.15%). Mortality Rate has managed to achieve the national target that is below 1%, but most of the provinces (61.3%) have high MR which is still above 1% (Ministry of Health, 2009). It should be the concern to

Gorontalo province who has not reached the target in order to increase the efforts that can decrease the MR. The efforts that can be done are such as conducting training on the case management for the officer, providing facilities and infrastructure for early detection, and proper and quick handling for the DHF case.

Gorontalo city as the administrative center of the Gorontalo province has the development of various aspects such as in economic, social, cultural, agricultural, and industrial, as well as the high mobility of the population. These conditions certainly have an impact on the environment and the public health, such as changes in residential environment that supports the development of disease vectors as well as the decrease in population health status.

The development of *Aedes albopictus* and *Aedes aegypti* as the vector of DHF is closely related to environmental factors. It includes altitude, rainfall, air temperature, air humidity, density of settlements and population density.

Although various endeavors have been made to control the vectors of DHF disease, but The DHF cases is getting even higher from year to year. According to Boewono DT., et. al. (2012), "Some problems in the prevention efforts may be because of a possibility of DHF cases without symptoms (asymptomatic), the trans-ovarian transmission (virus passed on to the offspring through the ovum), the occurrence of the *Ae*. Aegypti resistance vector to insecticides, and the people's unhealthy behavior that supports the existence of mosquitoe habitats ".

Methods

Research procedures

Research procedure consists of preparation of thematic maps used in the study, and the classification and the criteria determination of environmental and social factors.

Preparation of thematic maps used in the study

Preparing thematic maps used in the study includes: Isohiet maps, temperature maps, humidity maps, altitude maps, population density maps, and residential density map.

Classification and criteria of environmental and social factors

From both the measurement of the field data and the results of the interpolation of the maps used as research parameters, it is carried out the classification and criteria determination. Classification method used in the study is by determining the class interval as proposed by Bintarto (1989). The formula is as follows.

$$\text{Class Interval} = \frac{\sum \text{highest score} - \sum \text{lowest score}}{\sum \text{class}}$$

Analysis of the relation between physical environmental factors and DHF cases.

The relation between climatic factors, which consists of precipitation, air temperature, and humidity, and DHF cases in the Gorontalo city is analyzed by simple and multiple regression analysis. In which the climatic factor is the independent variables (X) and the DHF case is the dependent variable (Y).

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Analysis and relation between environmental sanitation factors and DHF cases

The relation between environmental sanitation (clean water, sanitation, environmental hygiene, and drainage) and DHF cases in the Gorontalo city is analyzed in the form of cross-tabulation with Chi-squares with a significant probability of 0.05.

Analysis of the relation between factors KAP (Knowledge, Attitude / behavior, and Participation) and DHF Case

The relation between the respondents' knowledge, the respondent's behavior, and community participation in DHF control and DHF cases in Gorontalo city is analyzed in the form of cross-tabulations with Chi-squares with a significant probability of 0.05, it can be concluded that there is a relation.

Results and Discussion

Geographic location, border, and area of the study

Gorontalo city is one of the six regions located in Gorontalo province, which borders Gorontalo and Bone Bolango regency. Geographically, it has 64.79 km^2 in width or 0.58 percent of the Gorontalo province. Astronomically, Gorontalo city is located between 00^o 28 '17' - 00^o 35 '56' of North Latitude and between 122^o59 '44' '- 123^o 05' 59 'of east longitude. Based on its geographical position, Gorontalo City has boundaries which are in the Northern part is Tapa district in Bone Bolango district. The southern part is bordered by Tomini Bay. Western part is bordered by Telaga and Batudaa district of Gorontalo regency. The eastern part is bordered by Kabi;a district, Bone Bolango regency. The distance between the capital city of Gorontalo to the districts and all-regions, namely: (1) To the Districts: Gorontalo-Kota Barat (4,00 km), Gorontalo-Kota Selatan (0,40 km), Gorontalo-Kota Utara (4,00 km), Gorontalo-Kota Timur (3,00 km), dan Gorontalo-Dungingi (5,00 km); (2) To-Regions: Gorontalo-Limboto (16.00 km), Gorontalo-Kotamobagu (251.09 km), Manado-Gorontalo (442.81 km), Gorontalo-Tondano via Tomohon (474.07 km), Gorontalo-Tahuna (992.81 km), and Gorontalo-Bitung (484.20 km).

Gorontalo city is divided into six (6) districts and it consists of 49 villages. These districts include Kota Barat District, Dungingi, Kota Selatan district, Kota Timur district, Kota Utara district, and Kota Tengah district. The largest district is Kota Bara with area of 15.16 ha or 23.40 percent. The width of the smallest district, the Dungingi District, covers 4.10 ha or 6.33 percent.

Number and population density

The number of population in 2010 decreased by 1734 people. The decrease in population occurred in four districts namely Kota Barat, Kota Selatan, Kota Timur and Dungingi. Kota Selatan District is the district where the decrease of the population is the highest, 2289 people. On the other hand, the district which has the least decrease of population is Dungingi district which is 384 people.

Population density describes the ratio of the number of population per unit area of the region presented by measuring number of people/km2. Based on the results of data analysis of

population density and associated with the number of people suffer from DHF in 2010, it is concluded that there is no relationship between the population density with the number of DHF sufferers. Districts based on the population density from the highest one to the lowest are Kota Tengah District, Dungingi District, Kota Timur district, Kota Selatan district, Kota Utara district, and Kota Barat district with the number of cases of each are 35, 60, 26, 45, 20, and 19 people.

Types of population's profession

Types of work done by Gorontalo citizens include Civil Service, Army, Police, Teacher, Lecturer, Doctor, Midwife/Nurse, Legislative Members, Students and Student Colleges, private Employees, Entrepreneurs, Farmers, Fishermen, breeders, labors, servants, and not yet working or jobless.

The relationship between employment with DHF is more about over the activities of a person / worker outside the house. It means there is an opportunity to be exposed to the bite of the *Aedes aegypti* both inside and outside the house. The relationship between people's activity, in which the higher the activity, the more fatigue the condition of the body. Thus, the condition where the body is unhealthy (fatigue), it is easy for the virus to transmit through the bite of *Aedes aegypti* mosquito. And it can cause people sick.

Health facilities

The number of health facilities in 2010 such as public hospitals, health centers, sub health, yandu Post, and others, has not changed much. In 2010, there were only 1 public hospital, 3 private hospitals, 2 maternity hospitals, and 7 health centers, 33 auxiliary health centers and 132 health posts. The number of health facilities is very important in helpin the treatment of DHF disease. Based on the data of Gorontalo City Health Department, almost every district in Gorontalo has a health center. In Kota Baru, there are two of it. In Gorontalo city, there is also an auxiliary health center located in each village. In addition, the highest number of auxiliary health centers is located in Kota Selatan. On the other hand, in Kota Tengah and Dungingi districts, there are only four auxiliary health centers. Referring to the availability of health centers in every district, it is easy for the immediate treatment of DHF disease.

The spreading of DHF cases in year 2003-2010

DHF disease is a disease caused by factors such as people's behavior and the environment where people live. The secondary data obtained showed that the number DHF sufferers in Gorontalo City increased from year to year. This is even found in each district. At the district level, DHF surveillance generated data in the form of number of DHF sufferers which fluctuated from year to year. In 2003, there were 20 DHF sufferers in Kota Tengah, Kota Selatan and Kota Timur districts with two of them were passed away. In 2004, there were two cases without death toll in Kota Selatan and Kota Timur districts. In 2005, the number of the sufferers has increased drastically. There are 184 cases with the death toll 5 occurred in five districts. In the 2006 to 2010 DHF cases have been found in all the districts in Gorontalo city. In 2006, the number of the sufferers is 170 with 2 death cases. In 2007, there were 124 cases of DHF with 3 death cases. In

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2008, there were 99 cases. In 2009, there were 86 cases and in 2010, there was an increase of DHF cases that is by 205 patients. From the data between 2003-2010, since it was found the DHF cases, there is an increase of the DHF cases from three to five years.

DHF vector conditions

Larva Free Numeric Data (LFND) which is obtained from the health centers in six District in Gorontalo City showed that *Aedes aegypti* population is quite high in each district.

The value of LFND in Dungingi 61%, Kota Tengah 78%, Kota Utara 79%, Kota Selatan 74% and Kota Barat (Buladu 82% and Pilolodaa 95%) (see Table 4.9). Based on the data above, the value is still far below the national standard which is 95%. Low LFND illustrates the lack of community participation in eradicating mosquitoes. Thus, it triggers the increase of the population of *Aedes aegypti* mosquitoes and this is what causes DHF transmitted.

The increasing population of Aedes aegypti is caused by the lack of public participation in doing the mosquito larvae eradication (MLE), as well as the use of insecticide which less effective. The fact that there are insecticides used in Gorontalo city since the finding of DHF, from 2003 until now it uses the insecticide called *Malation.* This causes *Aedes aegypti* become resistant. "The use of insecticides in the control of *Aedes aegypti* mosquitoes needs to be replaced with the alternative insecticide." (Boewono, DT, et.al, 2012).

Physical environmental conditions

The discussion of the physical environmental conditions in the study includes climate factor namely rainfall, air temperature, air humidity, altitude, and environmental sanitation.

Climate

Climatic factors affect the growth of *Aedes aegypti* mosquito larvae that causes dengue transmission. There are three namely dengue virus, the presence of the vector (as an intermediary) and the third is human factor. Dengue virus transmits to the human body through the bite of its mosquito vector that is *Aedes aegypti*. Climatic factors, especially in the rainy season and the availability of container that can hold rainwater, it means that there are potential places for reproduction (habitat) of the *Aedes aegypti*.

Temperature

Temperature is a measure of the relative thermal conditions possessed by an object. Air temperature or temperature data are generally hard to obtain because not all the rainfall stations have the data of temperature. The temperature data is obtained from secondary data by means of interpolation of five temperature recording stations located around the Gorontalo city, which includes Tapa, Kabila Suwawa, Taludaa and BGM Jalaludin stations.

The rainy and the dry seasons have an influence on the level of temperature on the environment. This influence tends to be local to a particular time period only. This is due to the more complex temperature and humidity levels and also influenced by global phenomenon, regional and topography as well as the vegetation. When it is season changes from rainy season to dry season,

air temperature ranges between 23°C-31°C, it means this is the optimum temperature range for breeding mosquitoes (24 ° C -28 ° C).

Air humidity

Air humidity tells the number of air humidity of water vapor in the air. The water vapor in the air is a small part of the whole atmosphere and air components which are are very important in terms of weather and climate. Water vapor is not constant, varying from 0% to 5%. The greater the amount of water vapors in the air, the greater the amount of latent potential energy available in the atmosphere. This is the source/origin of storm. The minimum average range of air humidity is 72.05%-74.34 and the air temperature $27,38^0$C-$27,56^0$C on September it was found 2 cases of DHF.

Altitude

Altitude is one of the environmental factors that influence the growth of the Aedes aegypti as the DHF vector. The process of making a height map as the base map is from a contour map of Gorontalo city with the scale 1: 50,000. The height map can be used to determine the spreading of altitude according to the administration area. Therefore, village or district as a potential habitat for the mosquito Aedes aegypti can be recognized through the DHF sufferers.

Residential Density Conditions

Density settlements, settlement increase, the management of the urban environment that is not optimal and not supported by the climatic conditions, will accelerate the spread of DHF. This raises the major issues that must be solved. The unavailability of the determination on the appropriate level of vulnerability of the region to the breeding of *Aedes aegypti* and *Aedes albopictus* mosquitoes makes the efforts to eradicate those DHF vectors harder. It also costs more and will take a long time to make it.

The residential density is the distance of home buildings that indicates the condition of the air circulation and comfort to reside. High density settlements show the limited distance between the buildings, so that the air circulation cannot be going well. The bad air circulation will make the settlements dump, and it becomes a good medium for the proliferation of disease-carrying viruses and bacteria.

Sanitation conditions

The condition of environmental sanitation from the result of field observations include population density, waste management, water canal conditions, water containers, environment hygiene, land use, density of settlement, and settlement patterns in each district is as follows (the results of the field survey is presented in appendix on survey data field). The basic sanitation efforts include the provision of clean water, latrines (human waste disposal), waste management and drainage (canal) of liquid waste disposal.

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Water Supply

Based on the Regulation of the Minister of Health, 416/Min. of Health/Per/IX/1990, clean water "is water that is used for everyday purposes that qualifies the quality of health and it is drinkable when it is already boiled. Air is one of the human needs to meet the standards of a healthy human life ".

Water sanitation is the infrastructure along with its tools and equipment that produce, supply and distribute clean water to the community. Types of clean water in Gorontalo city include dug wells, hand pump shallow wells, rain water reservoirs, springs storage, and piping. Water circulation, water utilization, and the nature of water allow the water effect on health. "In particular, the influence of water on health can be direct or indirect" (Soemirat, 2002).

Latrine

Latrine is a facility to dispose of human waste. Human waste is all objects or substances which are not used anymore by the body and must be removed. Substances that are removed from the body are feces, urine and CO2 as a result of breathing process. "Disposal of human waste in the environmental health sciences are aimed for feces and urine, but generally called latrines, privy or toilets" (Notoatmodjo, 2003).

Waste management

In general, the waste management Gorontalo city is actually good enough. It is proved by the city of Gorontalo as the five year Adipura achiever. Waste management facilities Gorontalo city are namely the availability of permanent waste disposal sites while temporary waste disposal site is place in a public place such as school, market, bus stations, harbor, on the side of the road and the residential units, especially in the housing complex. Household level waste management is still limited to the collection and subsequently burned or transported to the permanent waste disposal site by a janitor.

Environmental hygiene which is fairly considered by the resident of household waste from each house was collected to the temporary waste disposal sites either supplied by each household or those provided by the Cleanliness city agency from the department of environment. Thus, it is then transported by car as a routine janitor to permanent waste disposal sites.

Knowledge, attitude / behavior and participation (KAP)

Age

Nadesul, (2007) suggests that "DHF is actually a disease that attacks children only. However, in the last few years this disease also affects adults". The range age suffering from DHF survey and the field data in Gorontalo city ranged from age 0 year to > 60 years. The youngest age range of the respondents who suffer from is 10, while the oldest is 64 years old.

Results of interviews shows that 58.05% (15-59 years) of DHF patients were in the productive age, the second highest was 41.46% which is in the range between 0-14 years old and the least is the only one person whose age is 60 years old.

The characteristics of respondents (age) is the highest is from the productive age (119 people). This result is different from the situation nationally, that based on the report of the extraordinary occurrence in sub directorate of the Ministry of Health (2009), "there was a shift in DHF cases by age group in period 1993 to 2009."

Sex

DHF is a disease that continues throughout the year in Indonesia, hence such disease is called as an endemic. "This shows that this disease can attack both men and women alike with no exception" (Misnadiarly, 2009). The characteristics of the respondents viewed from results obtained 104 (50.73%) of the respondents were male and 101 were female respondents (49 274%). Based on Table 4.13 and Figure 4.12 in Gorontalo city there is no difference between the number of cases of men and women. This is differed from Soemirat (2005) who says that "there is a difference of various diseases attacking between men and women, as well as the risk will be higher to women compared with men ".

Education

Education increases the knowledge and understanding of health. It increases the awareness of the concept of healthy and sick. Thus, it affects the point of view of one's way of life and efforts to improve health status. The eradication of *Aedes aegypti* should be an immediate need and the result of it should be preserved so that the attempt to nourish themselves and their surroundings will be carried out spontaneously. This eventually will become a habit, attitude and behavior of a person to live a healthy life.

Characteristics of respondents by educational level show that there is no the never finish primary school or never school people, 102 (49.8%) high school graduate respondents, 25 (12,2,8%) primary school respondents, 26 (12.7) junior high school graduate respondents, and 39 (19.0%) college graduate respondents.

Job

The characteristics of respondents by occupation in Gorontalo city show that most of Gorontalo citizens did not work which were counted to be 75 (36.59%) of them. Those who are working in the service sector 7 (3.41%), merchant with 12 (5.85%) people self-employed with 19 (9.27%) people, private employees with 19 (9.27%) people, civil servants with 25 (7.32%) people and in other fields are 52 (25.37%) people. Based on the data analysis of the type of work of the Gorontalo citizens, it is obtained that the highest number of the not working are children. It shows the everyone with every type of job is vulnerable to DHF disease.

Behavior Society

Human behavior is essentially a human activity done on their own. Behavior is a reflection of a variety of psychiatric symptoms, such as knowledge, desire, will, interest, motivation, perception, attitude, and so on. Meanwhile, psychiatric symptoms are also influenced by the experience, confidence, facilities and socio-cultural factors that exist in the environment (Notoatmodjo, 1993). "Behavior is the result of all kinds of human experiences and interaction with the environment

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which is manifested in the form of knowledge, attitudes and actions" (Sarwono, 1993: 1). According to Notoatmodjo (1993), "health behavior is basically a response to stimuli associated with illness and disease, health care systems, food and environment". In addition, health behavior according to Becker (in Notoatmodjo, 1997: 124) is "activities done relating to one's actions in maintaining and improving health ".

Society's knowledge

The assessment of knowledge about DHF was measured by 14 questions covering knowledge about DHF, DHF source of information, DHF symptoms, DHF transmission, DHF that can be contagious, kinds of insect causes DHF, the breeding places of DHF-causing mosquitoes, DHF vectors' activity, the risk to be infected by DHF, and DHF can be prevented.

Notoatmodjo (2003) states, "Knowledge is the result of knowing. It is created after sensing a certain object by the human senses". The knowledge of the respondents regarding the DHF and its vectors as well as the factors that influence the presence of Aedes aegypti is needed to prevent and suppress the growth and the transmission of DHF and its vectors.

Knowledge about DHF

From the result of collecting 205 respondents' knowledge, it is obtained the frequency analysis results shows that the respondents who have ever heard about DHF are 79 (38.5%) of the respondents, and those who had never heard of DHF are 126 (61.5%) of the respondents.

This can be one of the further efforts to improve education and dissemination of information to the public about dengue.

Source of Information about Dengue Hemorrhagic Fever (DHF)

The sources of information about dengue can be obtained from the cadres and health workers as well as electronic media (TV / Radio) and newspapers. Health cadres are those who were recruited by the Department of Health who then trained to become facilitators for health workers as well as assigned to include in helping the public health centers. Cadres of health are those from housewives who joined the Family Welfare Movement (FWM) group who had been trained by health workers to deal with the symptoms, prevent DHF. On the other hand, health workers are civil servants. The sources of information about DHF include cadres of health, health workers, electronic media (TV / Radio), and newspapers.

DHF Symptoms

Symptoms of DHF illness is not typical and specific in nature. It means that the "signs and symptoms can vary for each patient based on the degree they experienced" (Hamzah, 2004). The knowledge of the respondents about the signs or symptoms of people suffering from DHF, from the questions asked that the signs and symptoms of people affected by DHF are headache, bone pain, fever, and those are all true. Based on Table 4:19, 79 people or 38.5% of respondents knew about the signs or symptoms when someone is suffering from DHF, such as high fever, headache, bone pain and fever. However, 99 people (48.3%) of respondents knew that the symptoms are only the

high temperature. Those who knew fever are 22 people (10.7%), and headache and bone pain are 5 (2.4%) people.

Ways of DHF to transmit

Society plays an important role in the efforts to eradicate DHF. For example, the role of the community in surveillance of DHF, where people can recognize the early signs of DHF that may attack one of the family members or their neighbors, so they can be hospitalized immediately in the nearest health care facility. "Surveillance activity is a series of activities that are regularly and continuously, actively or passively observing, collecting, analyzing, and interpreting a phenomenon on human health / particular community and the result is used to take action against these health occurrences" (Directorate of Health and Nutrition society, 2006).

Knowledge about dengue

Misnadiarly, (2009) mengemuakan that "Dengue hemorrhagic fever is an infectious disease caused by the dengue virus and transmitted by the bite of Aedes aegypti" .Pengetahuan about whether dengue is contagious or not, of the 205 respondents that as many as 50 people or 24.4% figure that dengue is an infectious disease, dengue is not transmitted 118 people (57.6%), a highly contagious 1 person (0.5%) and did not know 36 people (17.6%).

Type of Insects

People's knowledge about the insect causing DHF which is mosquito Aedes aegypti is still low. There are 131 (63.9%) of the respondents who do not know the Aedes aegypti mosquito causing DHF. This indicates that most respondents do not know the Aedes aegypti mosquito is the cause of DHF.

Breeding place for Aedes aegypti

Breeding places for mosquitoes are the stagnant water and water reservoirs. 35 (17.1%) of the respondents said that they know the breeding places for mosquitoes which is the stagnant water and 154 (75.1%) of the respondents said it is in the water reservoirs, while the remaining 16 people knowing where the breeding place for Aedes aegypti is in the bathroom tub and landfills. This is in accordance with the opinion of Sigit and Hadi (2006), that: "The breeding places for Aedes Aegepti mosquitoes are in shelters that are not paved soil such as the tub, jars, drums, flower vases, and used items that can collect rain water".

Time biting mosquito *Aedes aegypti*

Aedes aegypti, the mosquito's biting activity is during the day, morning and in the afternoon (Sigit and Hadi, 2006). Knowledge of respondents regarding when a mosquito bites an analysis of the results obtained indicated that the results of 46 people have said that it is the morning and evening, or it is the 22.4 percent of the respondents. A total of 5 people declare mosquito bites occur at night or 2.4 percent, while those who state the whole day are just 142 people, or 69.3 percent.

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DHF can be prevented

Respondents' knowledge about the symptoms, signs and causes of DHF is fairly good. They also has well know about the breeding places for mosquitoes as well as anyone who commonly can be infected and DHF actually can be prevented respondent. The level of knowledge of the population is strongly influenced by the information obtained either directly or from the results of learning. If the information is not delivered right on target, it is due to the delivery of information or transfer information from health workers to the health cadres at the lower levels. Besides, it is also influenced by the "media to deliver information through counseling, electronic media, practice, leaflets and banners" (Notoatmodjo, 2003).

Community action

Components society actions captured by the questions about dengue symptoms of dengue fever include how to handle DHF symptoms, efforts to avoid the bites, usig the temefos, cleaning up efforts with voluntary work, counseling and organizing outreach activities about DHF. Notoatmodjo (2003) suggested that "action is the manifestation of attitudes into real action".

The provision of information is critical for handling DHF case and it is where one can directly receive information from health professionals about the mosquito causing DHF. Rogers in Notoatmodjo (2003) states that before adopting new behavior, there happens the following process inside one's self: (1) Awarenes in which one recognizes in term of knowing about the stimuli or object.; (2) Interest for the stimuli or the object. In this case, subject's attitude starts to appear. ; (3) Evaluation on either it is good or not about the stimuli for him. This means that the respondents' attitude is getting better; (4) Trial, where the subject starts to try to do something according to what is desired by the stimulus and; (5) Adaption, where the subject has recently behaved in accordance with the knowledge, awareness, and attitude toward the stimulus.

The Relationship of Physical Environmental Factors on Dengue Cases

DHF is a vector-based disease that becomes a major cause of death in many tropical countries. The increase of DHF cases is influenced by several factors. One of which is the lack of attention on the climatic factors. The least attention on climatic factors in DHF prevention program resulted in the prevention and control of DHF less than the maximum. If what becomes the concern is only the DHF sufferers, outbreak of concern are patients, however, the efforts to anticipate the causing will be still lacking.

Relationship between Rainfall on DHF cases in Gorontalo city

DHF cases always occur in every rainy season (before, in the middle, and after the season). Rainy season becomes the factor causing DHF due environmental factors that support the growt of larvae of *Aedes aegypti*. This is according to McMichael (2006) in one epidemiological bulletin (2010) states that "climate change causes changes in rainfall, temperature, humidity, air direction so that it also affects the terrestrial and marine ecosystems as well as affecting health, especially the proliferation of disease vectors such as mosquitoes *Aedes*, malaria and such before and after the monsoon season ".

The analysis of the relationships between rainfalls with dengue cases uses statistical analysis with SPSS 16.0. Based on the results of the correlation coefficient in attachment 9, it can be known that the relationship between rainfall and dengue cases showed no association with (R = 0.47). The coefficient of determination (R2) is 0.223, meaning that the regression line equation can explain that variation which is 22.3% of dengue cases based rainfall factors as the determinant of dengue cases in Gorontalo city in 2010. In addition, 77.7% of dengue cases variation is explained by other factors. Next, from the analysis of variance (F test), the value of F (count) is 2.874 with a probability of 0.121, which is much larger than 0.05. It can be said that the relationship was not significant / non-significant with a constant value (a value) is -12.996 and the value of b = 0.222 so the regression equation: Y = a + bx, so the DHF cases = -12 996 + 0.222 (Rainfall).

Temperature relationship with DHF cases in the city of Gorontalo

The rainy and dry seasons have an influence on the level of temperature of the environment. The effect of temperatures tends to be local to a particular time period, this is due to the more complex temperature and humidity levels and also influenced by global phenomenon, regional and topography and vegetation. The changes of season from rainy season to dry season make the conditions of temperature ranging between 23°C-31°C. *Aedes aegypti* mosquito usually lives at low temperature with decreased metabolism, and even stops when the temperature drops to below the critical temperature. Meanwhile, temperatures which is higher than 35 ° C can affect physiologic process, the optimum temperature for mosquito growth is 25 ° C -30 ° C (WHO, 2003).

The Relationship between Air Humidity with DHF case in Gorontalo city

Air humidity becomes one of the environmental factors that determine the development of *Aedes aegypti* mosquito larvae. Air humidity monthly average ranged between 72%-83.5%. Lowest humidity occurs in September (72.05%) and the highest is in January (83.49%). The ideal humidity for the growth or breeding of the Aedes aegypti mosquito is 60-80%. Humidity affects the Aedes aegypti mosquito breeding cycle. If it is less of dumpness, the eggs can hatch in a long time, and it can reach three months. If it is more than three months, the eggs will decrease its fecundity (no longer able to hatch). Although, it is only a week, if the humidity is quite high (> 70%) embryos can still grow in its eggshell.

The relationship between Altitude with dengue cases in the city of Gorontalo

DHF is a health problem in the tropical region. This is an endemic disease. This disease spreads over most parts of Indonesia, and repeatedly raises Extraordinary Events (KLB) which followed by the death of many of its sufferers . The disease is transmitted by the mosquito *Aedes aegypti* and i is influenced by various factors, including the altitude factor.

The relationship Index of Larva Free with DHF cases in the city of Gorontalo

DHF is a public health problem. An area is said to be free is when the index of larva free is ≥ 95%, and no free larvae <95%. By analysis of variance, the value of F (count) of 29 166 with a probability of 0.003, which is much smaller than 0.05, the linear regression model Y = 161.98 - 1.68X can be used to predict the DHF patients, or in other words, it has nothing to do with the

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increase in the index of larva free decline in the growth of DHF mosquito larvae resulting in a decrease in the number of DHF. The regression of the larva free index coefficient of 1.68 explains that each decrease of 1% larva free index can contribute to the decline in mosquito larvae which causes a decrease in DHF cases around 1.68 people (rounded 2).

The Index of Distance and spreading of DHF Cases

Gorontalo city is a city that is DHF endemic, because of DHF cases increased year by year. In 2010, the number of DHF cases are 205, after conducting the distance index, indicating that the distance between the case for all districts in the city of Gorontalo is located between 0-50 meters.

The buffer zone showed that the location of the house between dengue cases in the city of Gorontalo is relatively adjacent which are 50 meters. This could potentially be a source of transmission of DHF. The transmission of DHF in Gorontalo city is largely determined by the behavior of the mosquito vector *Aedes aegypti* (<100 m). The results of this study support the claim of Boewono DT, et. al. 2012 that states that: "The transmission distance of DHF is 100 meters in accordance with the flying range (flight range) of the mosquitoes *Aedes aegypti*".

The Relationship between Environmental Sanitation with DHF Cases in Gorontalo city.

Environmental sanitation is a factor to determine whether or not the condition of a good environmental sanitation. The components include settlements, provision of clean water, latrines, sanitation, and waste disposal management. In general, the condition of the environment in Gorontalo city is good enough, it is supported by the availability of water and clean water supply systems, waste management and waste management facilities in the city of Gorontalo as well as the residential density.

The Relationship between KAP (Knowledge, Attitude / behavior and participation) with DHF cases in Gorontalo City

Socio-cultural factors were analyzed further is the level of knowledge, the behavior of the respondent, and the respondent's participation in the control of DHF and DHF cases occurs in the city of Gorontalo is described below.

The relationship between Knowledge with DHF Case

"Knowledge is the cognitive process of a person or individuals to give meaning to the environment, so that each individual will give their own meaning to stimuli even if the stimuli received is the same", (Winardi, 1992). "Knowledge is the result of the sensing of an object. Sensing is largely derived from the vision and hearing ", (Notoatmodjo, 1993).

The relationship between Respondent's Behavior with DHF Cases

Human behavior is essentially an activity done by himself. "Behavior is a reflection of a variety of psychiatric symptoms, such as knowledge, desire, will, interest, motivation, perception, attitude, and so on. Meanwhile, that psychiatric symptoms are also influenced by the experience, confidence, facilities and socio-cultural factors that exist in their environment "(Notoatmodjo, 1993)." Behavior is the result of all kinds of human experiences and interaction with the

environment that is manifested in the form of knowledge, attitudes and actions ". (Sarwono, 1993:1).

Relations Community Participation in Dengue Control

Participation is an effort for someone to be involved in the control of DHF in Gorontalo city. Participation is a process where all relevant parties (stakeholders) are actively involved in the activities, starting from planning to implementation. "Involvement of all groups does not necessarily mean physically involved, but the important thing is to ensure the involvement of all stakeholders procedure can represent all interests" (Sambroek and Eger , 1996). Furthermore, Bryant (1983) in Slamet (1993), argued that: "In a community, participation activities are influenced by the benefits received, costs spent, and the risk that must be faced in the implementation of activities".

Closing

Based on the analysis and discussion described in Chapter IV, it can be concluded that the DHF cases in the city of Gorontalo related to some physical environmental factors, environmental sanitation and the KAP factor (knowledge, attitudes / behaviors, participation). In general, there obtained some conclusions as follows: (1) The physical environmental factors in Gorontalo city including rainfall, air temperature, air humidity, and altitude have a relationship with DHF cases. In conditions of high rainfall (158.63), the number of cases is 96. When temperature > 27^0C, the number of cases is 197. With the humidity <80, the number of cases is 134, and with altitude <50 m above sea level, it occured 115 cases, with the height of above sea level 50 -> 100 m, the number of cases is 90 case; (2) Free Larva Index has a relationship with DHF cases. The average of Free Larva Index in 2010 in the city of Gorontalo is still below the national standard (95%), the public participation needs to be improved; (3) The spreading of DHF cases in Gorontalo city is clustered, with an index of 50 meters and transmission caused by the Aedes aegypti mosquito behavior; (4) Environmental sanitation factors have a relationship with DHF cases. Poor sanitation conditions are reflected with larva free index <95% and the number cases occurred in 2010 was 205 cases; (5) KAP community factors including the level of knowledge, behavior and participation in DHF control has a relationship with DHF cases in each region of districts in the city of Gorontalo. The higher the knowledge, the lower the respondents' possibility of DHF transmission. The better the behavior, then the smaller the number of DHF patients. The higher the participation, the lower the DHF cases in the city of Gorontalo.

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MODEL DEVELOPMENT OF PROBLEM-BASED LEARNING CURRICULUM MANAGEMENT FOR PUBLIC HEALTH STUDENT

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Abstract

Intoduction: Public Health Faculty of Diponegoro University had implemented problem-based learning curriculum (PBLC). Few problems appeared may be related to PBLC management that had been implemented. This research aimed to develop Problem Based Learning Curriculum Management Modell that is effective for public health student.
Methods: This study used a research and development approac (R&D). The subjects are manager, facilitators, and students. It was initiated by analyzing of the existing PBLC, PBLC modell development, and testing the modell. Testing the modell was conducted by expert and limited experiment through applied learning. The collected data would be analyzed descriptively and statistical test using analysis of variance and paired t-test at α=0,05.
Results: This research showed that the existing PBLC was not giving chance to students gaining experience in solving the real public health problem in the community. The learning modell should be implemented consist of problematization, problem investigation, problem solving, and critical reflection. Validation test and limited experiment showed that hypothetical modell of PBLC was proved effective for public health students and there was significantly difference of effectiveness compared to factual modell (p-value<0,001). Conclusion, the hypothetical modell of PBLC could increase the effectiveness in problem-based learning for public health students.

Key Words: Problem-based learning, public health student

Introduction

Recently, education quality was still low in Indonesia. This condition was indicated by indicators i.e: unable to compete in international level, many higher education institutions couldn't get high position among universities in the world, low competitiveness to get labour market. And the most important thing that the graduation was unable to be responsible person, It was not met to national educational goals (Hasbullah, 2006). Other indicator was that the Indonesian Human development Index (HDI) just reached 107th rank in the world. This level was lower compared to Malaysia (Sudibyo, 2009).

Strategis goals of national education year of 2010 -2014 (related to the higher education) were the available of educational sevice and Its quality, relevancy, had a high copetitivenes in international level, and equity in all province. While the future educational policy focused on 3 pilar: 1) quality and relevancy, 2) equity and acces, and 3) public awaweness (Hasbullah, 2006). Therefor each higher education institution alway mush increase quality in learning in othe to produce profesional graduate and had high copetitiveness spirit.

In the year of 2009, Faculty of Public Health Diponegoro University had implemented PBLC Problem-Based Learning or PBLC (Suwondo, 2009). Some problems appeared after implementing it. Based on information gathered that It was less efective. This information indicated that the

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factual PBLC met some obstacles in management. For sustainablity in implementing PBLC, It was necessary developed a new modell of PBLC which will be more effective and efficient for public health students. This study aimed to create a modell of PBLC which was effective for public health students in Faculty of Public Health Diponegoro University.

Methods

This study used Research and Development approach (R&D). It was choosen because of R&D was research method that produce certain product and examine of Its effectiveness (Sugono, 2009). The design used was effective R&D (Samsudi, 2009) as folllow:

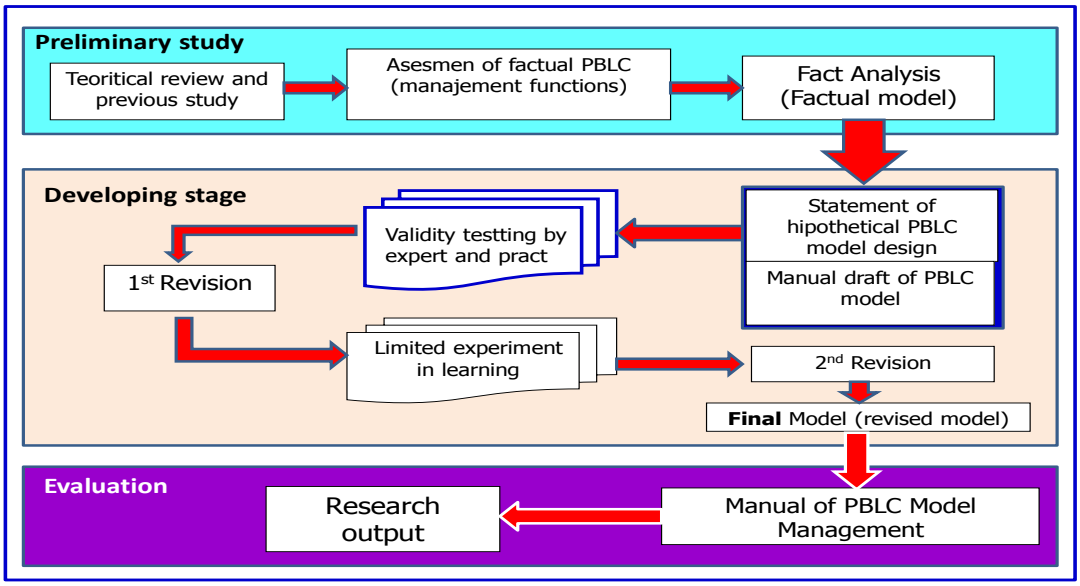

Figure 1. Effective R&D design (modification)

The subjects of this research were all component in the implementing of PBLC in Faculty Public Health Diponegoro University. They were faculty leader, PBLC management, educational staff, the students who had ever learned problem-based learning. The studied variabels were management aspect (planning, implementing, evaluation, and effectiveness of PBLC management). Sampling method was purposive sampling. Qualitative technique was used to collect data regarding with management aspect. And quantitative technique was used to collect data regarding with modell effectiveness. The collected data would be analyzed using ANOVA and Paired T-test at 0.05 level of significance.

Results and Discussion

Management of factual PBLC

The factual PBLC management was shown in Figure 2. Management of factual PBLC consist of planning, organizing, implementing, and evaluation.

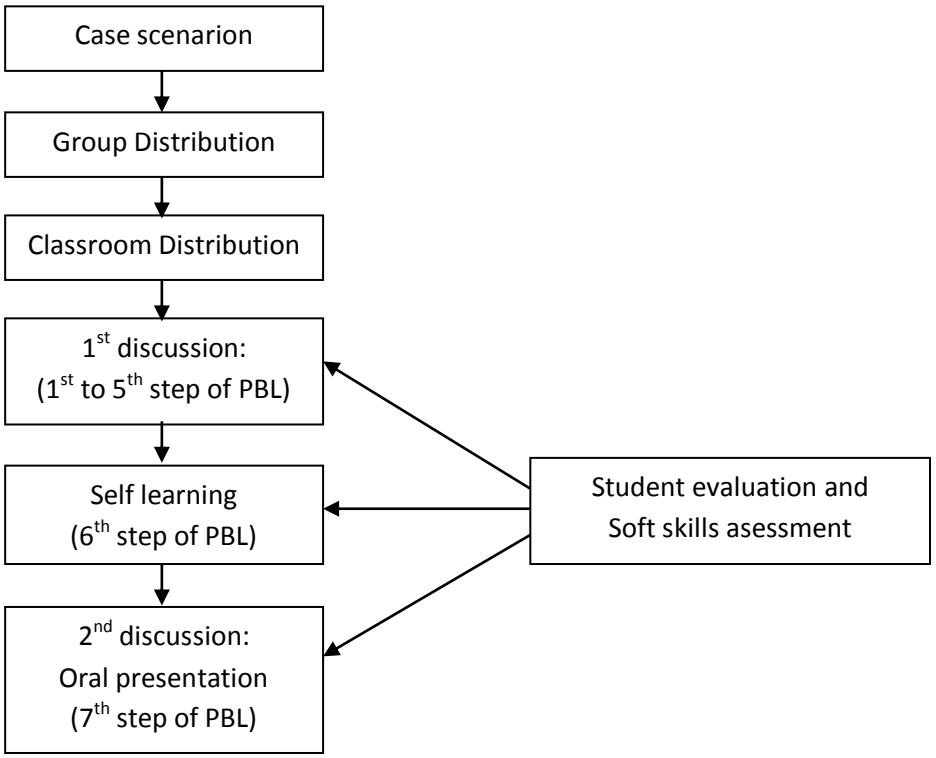

Figure 2. Modell of factual PBLC management

Planning aspect

Planning activities was conducted by Student Centered Learning Unit (SCL Unit) in implementing PBLC consist of: (1) Problem scenario (case scenario); problem scenarion in factual PBLC was set up through discussion followed by course related staff. It was composed in simulation narative statement; (2) Facilitator management, facilitator planning was conducted through workshop which was followed by educational staff who will to be facilitator. It was done periodically for the next learning; (3) Classroom management, In implementing of PBLC, faculty had facilitatted 7 special classroom with students in capacity. Each classroom was installed some equipment i.e: LCD, Wifi internet, AC, CCTV etc; (4) Student management, student learning in a group consist of 15 to 20 persons. They pointed a leader and secretary for discussion prosess.

Organizing aspect

PBLC organizing was conducted by establishing SCL Unit which Its structure of Leader, Secretary, accounting, and class coordinator. All members of SCL Unit had each main task but they worked in team.

Implementing

Implementing PBLC was described briefly as follow: (1) Having a class in clasical; (2) Facilitator coordination; (3) Distribution of PBLC manual for students and facilitators; (4) Doing Problem-Based Learning using “Seven Jump Concept”

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Evaluation

Learning assessment in PBLC was conducted by facilitator in 3 form: *paper & pencil test*, process assessment, and oral oratation. Evaluator are staff and student also evaluate th.em each other. Evaluation in PBLC emphasized process than outcome.

The effectiveness of factual PBLC

There were 6 aspects measured to asses the effectiveness of problem-based learning. They were *good teaching (GT*), *appropriate assessment* (AA), *clear goal (CG*), *generic skill (* GS), *appropriate workloading (*AW), and *independency* (IN). The results of assessment was described in table 1.

The assessment results of PBLC showed that most students stated the quality of learning in PBLC was not different if compared to other method. The students' satisfaction about learning quality of PBLC was still same as before with everage score of 2.87. This level of satisfaction was to be over all indicator of PBLC management. Although few aspect of PBLC had increased student's competencies.

Table 1. The everage score of factual PBLC effectiveness

No.	Aspect of PBLC measured	Everage score
1	*Good teaching (GT)*	2.90
2	*Appropriate Assessment (AA)*	2.82
3	*Clear goal and standart (CG)*	2.87
4	*Generic skill (GS)*	3.78
5	*Appropriate workloading (AW)*	3.46
6	*Independency (IN)*	3.03
7	*Overall satisfaction*	2.87

Good teaching (GT) aspect of factual PBLC did not indicate a good score yet (2.9). A good learning process was determined by some factors. Interaction between staf and students, the easiness in accesing learning resource were to be the main key for the dinamic of learning process in other to create a good teaching. Educational staff as facilitator had to be able to do their role in implementing PBLC. Their roles were how to motivate students for learning, give understanding to the problem, can explain well, and give feedbeck of learning achievement.

Not all facilitator did their role at maximum level in motivating students. This fact was indicated with scor of activity in motivating students (score 3.1). They did not use the available time yet to motivate the students (score 2.98). It happened because of the high load of other learning activities. So, they could not facilitate PBL process in full time.

The role of facilitator to make the PBL proces as a good teaching to be a key for the effectiveness of PBLC management. It met to Barrows (1992) who stated that tutor had two main roles in the implementing of PBLC, namely: facilitating the studeny in thinking how to solve the problem thinking critcally how to learn in order to be self directing learning. Maudsley also stated that the effectiveness of tutorial process was to be a key of the succesness for PBLC activities

(Hung W, no year). Sometimes, facilitator had to shift their role in reconseptualizing in learning. Other role that facilitator could do haw to make learning as a good teaching was varies: 1) faclitate for students' team work, 2) the role of model, 3) give feedback, 4) give information, and 5) to force in developing profesionalism (Aguiar, 2000).

A good teaching condition was also depend on the students' anctivity and creativity. They had to be inisiator of learnig themselves, analyze and solve the problem during the learning process, and not to long as receiver of information. The student not only redetermine their role in learning but they had to change their habit in learning (Hung W, no year). The students had to argue actively over the learning process would create learning environment condusively. They also had to participate actively a long PBLC process although they felt uncomfort and concious in early step. This situation (uncomfot and uncertainness level) would decrease significantly in the of the PBLC process (Schults-Rose and Kaine, 1999).

Issues in students' assessment of PBLC process had to be a concern. This research showed that facilitator gave score of learning achivement was relatively low (2.82). Facilitator gave asseemnet just only in a grede or sign, i.e: active, less active, and no active. This approach was felt not so suit by students. Because of students had learned hard in various activities during PBLC process. They leraned how to understand the problem initially, till syntesize of knowledge from themselves directed learning.

Unproportional assessment could lower students'motivation to increase thei knowledge and skills in the process of learning. Assessment during PBLC cyle could be conducted by students themselves (self assessment = SA), peer assessmnet (PA), and facilitator/tutor assessment (TA). What competencies had to be assessed in PBLC management consisted of two aspect: 1) skills how to discuss, 2) skills how to solve the problem.

Machado (2008) had reported his study in the using of SA, PA, and TA in PBLC process. The results showed that no significantly difference in median score between SA and PA. On the other hand, ther was significantly difference of median score between TA and SA. Machado stated that TA gave score consistenly lower compared to both SA and PA.

The use of PA also gave positive effect on student learning. It indicated that PA caused the students heard in maximum concern on tutorial process (4.06 $\pm$ 0.70) at 5 ponts of Likert Scale, and they became active in supporting group activities (4.06 $\pm$ 0.76). Overall, students satated that PA was usefull (3.79 $\pm$ 0.78, encourage their reponsiility and involvement for work group with the score of 3.94 $\pm$ 0.70 (Hodgson Y and Young R, no year).

The only one aspect of PBLC implementing in Faculty of Public Health Diponegoro University that indicated good score was generic skills (3,78). This indicated that the PBLC process had to be able increasing students' skills. Those skills include: skills in analyze and solve the problem, skills in tean work, and increase their confidence in solving the problems that they did not know before. The factual PBLC cycle was less effective although it could increase the skill in problem solving (besed on students' perception). Problem solving activities in factual PBLC was only conceptual

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study. The students just only compose problem solving alternative conceptually. No chance for students to solve the real problem in the community. The concep of problem solving should be based on fact that student identificated from real world (community). Those fact was determinant factors that studennts were being studied. It was very important because of problem solving skills o one the competency that would be achieved in PBLC management. Hung W. Stated that PBLC had indicated the positive impact on students' ability in aplicating their basic knowledge science and using it to solve the real life problem in the community.

In increasing students' skills had to be oriented on the real life problem and they had to be posed the problem periodically. This concept would give chance for students to increase their skill in communication, team work (group member, community member, and related institution), and skills in problem solving. Solving the problem in the community directly would be usefull for their work in the future. It was met to the competencies belongs to public helath graduate, namely: knowledge, skills, ecperince, and attitude value (Laaser U, 2010).

The developed of PBLC management model

This PBLC management modell would be implemented clasically (indoor) and learning in the community (outdoor). It consists of three component: (1) Planning, the first step in this PBLC management was making a learning plan. It included management components especially material component (book manual, learning facilities, reference source, log book), man (student and facilitator), and problem scenario that the students would study. The main charracteristic of this modell was the use of real life problem as the topic of study. To set this scenario up was making colaboration with Health Service Center (HSC) or Health District Office (HDO); (2) Implementing, the second step was learning organizing through coordinating for all component involved in PBLC management (SCL Unit and facilitators). This activity aimed to get perception equally about task and function for staf and facilitator, how to implement PBLC cycle, assessment tasks during the process.

The important thing had to be a concern in implementing PBLC cycle was facilitators had to explain learning standards that students had to achieve in PBLC. Those standards as follow: (1) Be able to understand the essensial problem they study; (2) Be able to identify risk factors supposed related to problem in the community; (3) Be able to set the health problem solving altervatives; (3) Be able to so solve the health problem in the community directly; (4) Be able to communcate and build team work in problem solving; (5) Be able to evaluate their activities.

Evaluation

The las task of Unit SCL di PBLC management was to evaluate the learning process overall. Evaluation was based on the results of the assessments during PBLC cycle was going. They were conducted by SA, PA, and TA.

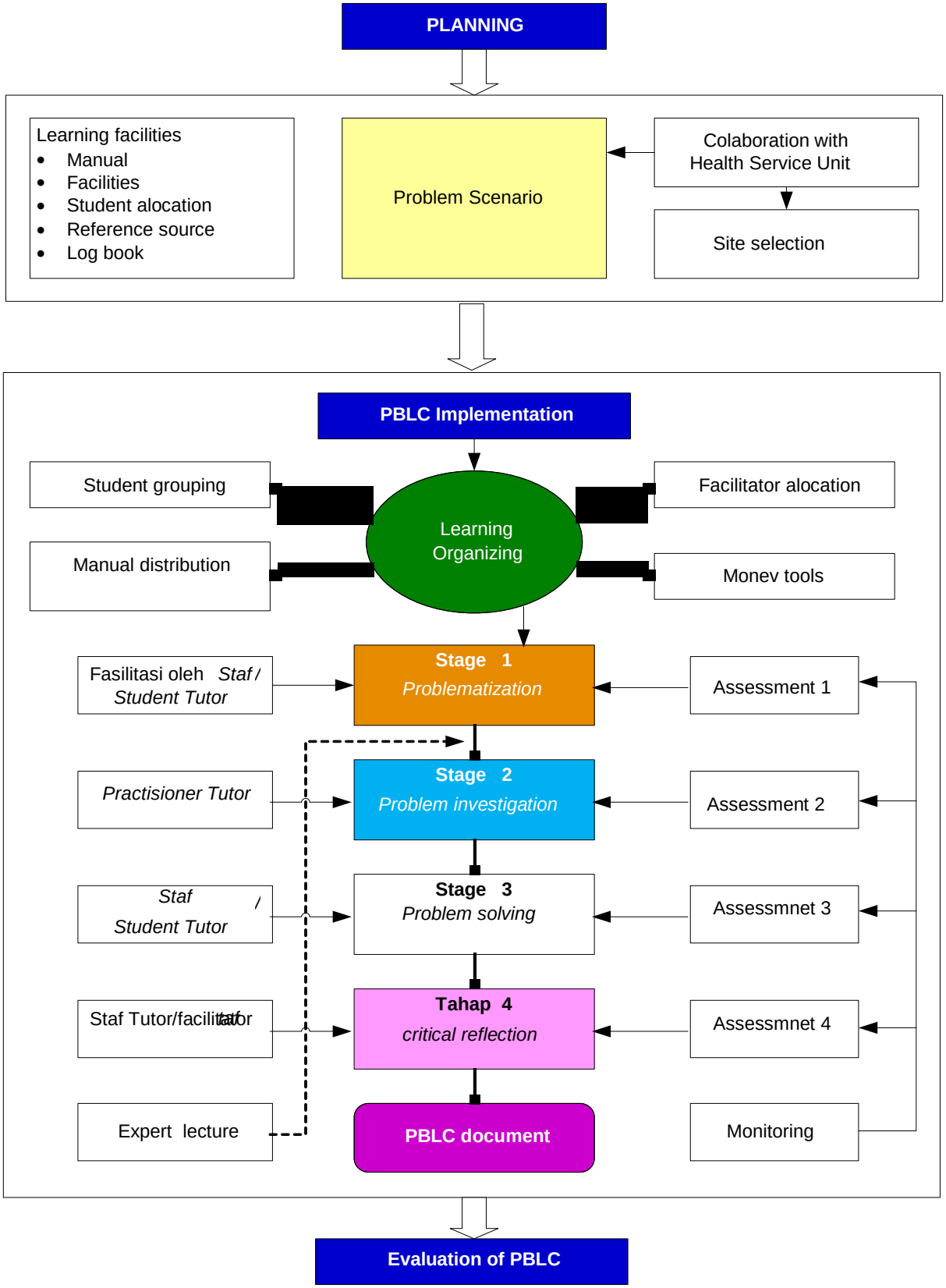

Figure 3. Hypothetical modell of PBLC

The effectiveness of hypothetical model

The assessment of effectiveness was conducted through validation test) by expert and practisioner) and limited experiment test in real learning: (1) Validation test, There were three

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aspects examined in this PBLC management: 1) learning management, 2) effetiveness of process, and 3) effectiveness of PBLC mangement model. Validation test wass assesssed by educational expert and practitioner who had implemented PBLC. The results as follow:

Table 2. The results of validation test

No.	Aspects	Score				Everage
		Expert 1	Expert 2	Pract 1	Pract 2	
1	*Learning management*	3.70	4.14	5.00	4.75	4.3525
2	*Good Teaching (GT)*	4.50	4.33	4.33	4.16	4.3300
3	*Appropriate Assessment (AA)*	5.00	4.33	5.00	4.66	4.7475
4	*Clear Goal and Standart (CG)*	4.00	4.00	4.50	4.50	4.2500
5	*Generic Skill (GS)*	4.16	4.16	4.66	5.00	4.4950
6	*Aprropriate Workloading (AW)*	4.00	4.25	4.25	4.50	4.2500
7	*Independency (IN)*	4.00	4.00	4.60	4.00	4.1500
8	Keefektifan model	3.67	4.00	4.33	4.67	4.1675
	Rerata	4.1287	4.1512	4.5837	4.6550	4.3796

Nb: score in Likert scale (1 to 5)

Table 2 derscribed the various score based on PBLC assessment result. Both expert and practitioner gave score with everage of 4.3796 (range: 4.1287 – 4.6550). It mean that all expert and practitioner were agree with this PBLC management model that consists of planning, organizing, and controlling (moitoring and evaluating).

Practitioners gave higher score relatively compared to experts. To know the difference score between experts and practitioners, It was tested using analysis of variance at 0.05 level of significance. The results as follow:

Table 3. The result of one way anova test

Assessor	Penilai	Mean difference	p-value
Expert 1	Expert 2	-0.0225	0.888
	Practitioner 1	-0.4550(*)	0.008
	Practitioner 2	-0.4013(*)	0.017
Expert 2	Practitioner 1	-0.4325(*)	0.011
	Practitioner 2	-0.3788(*)	0.024
Practitioner 1	Practitioner 2	0.0537	0.737

* Mean significant at α .05

Staatistical test above indicated that there was not significant difference of score mean between expert 1 and expert 2 (p-value=0.888) and also between practitioner 1 and practitioner 2 (p-value=0.737). But, there was significant difference of score mean between expert 1 and practitioner 1 (*p-value* = 0.008), It was also between expert 1 and practitioner 2 (p-value=0.017). This result also showed that there was significant difference between expert 2 and practitioner 1 (p-value=0.011), and also between expert 2 and prarctitioner 2 (p=value=0.024)

The results of validation test both by experts and practitioners was high enough with everage 4.3796. All experts and practitioner gave score more than 4.0 for those three aspect of PBLC management. It could be understood that based on their assessment, the hypothetical PBLC

management model had met the principles of management in implementing. So, using this management model, the learning would go on effectively and It was possible implemented for public health student.

There was an interesting thing of validation test than the score given by practitioners was higher compared to experts. Although there was not diffeence between both expert and practitioner, But, there was a signifificant difference between expert and practitioner. Researcher argued that beside management consideration, practitioner also considered the demand and availability of resouces for PBLC implementation. They also gave coment that this model was suit to be implemented for public healt student.

PBLC management model requires a lot of facilitators, so if there is a problem with the number of facilitators, alternative solutions may be the recruitment of senior students to participate as a student tutor. Senior student (ever attended PBLC cycle activities) can be utilized as a facilitator because they have the knowledge, skills, and experience with problem-based learning. The specific characteristics according to the facilitators needed in PBLC. The effectiveness of the PBLC facilitation skills require the ability to observe, learning strategies, and motor skills (Sadaf S, 2009).

Limited experimental test

Limited experiments carried out through the study to determine the effectiveness of management models PBLC development results at the operational level. Assessment conducted experiments based on students perceptions of the effectiveness of implementation factual PBLC and a hypothetical PBLC. Assessment results as in Table 4.

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Table 4. The effectiveness value of the learning aspects of the experimental results of management models PBLC Development results

Aspect of learning	n	Min	Max	Mean	Std. Dev
Aspect of *Good Teaching* factual model	20	2.500	3.900	2.99500	0.354631
Aspect of *Good Teaching* development result model	20	3.600	4.700	4.16000	0.305045
Aspect of *Appropriate Assessment* factual model	20	1.667	4.333	3.05000	0.727585
Aspect of *Appropriate Assessmnet* development result model	20	3.333	5.000	4.32080	0.516195
Aspect of *Clear Goal* factual model	20	2.000	3.750	2.76250	0.522362
Aspect of *Clear Goal* development result model	20	3.250	5.000	4.15000	0.439797
Aspect of *Generic Skill* factual model	20	1.750	4.000	2.58225	0.566079
Aspect of *Generic Skill* development result model	20	3.625	5.000	4.38930	0.450918
Aspect of *Appropriate Workloading* factual model	20	2.143	3.714	2.58015	0.367115
Aspect of *Appropriate Workloading* development result model	20	3.429	4.857	4.14270	0.439666
Aspect of *Independency* factual model	20	1.800	3.600	2.68000	0.504297
Aspect of *Independency* development result model	20	3.400	5.000	4.20000	0.550598
Aspek *Overall satisfaction* factual model	20	2.185	3.243	2.79295	0.273040
Aspect of *Overall satisfaction* development result model	20	3.767	4.689	4.27330	0.348672

The data in Table 4 show that the average value of the learning effectiveness of the experimental results of PBLC hypothetical management models increased in all aspects. The mean value for the effectiveness of its previous PBLC 2.79295, while the PBLC hypothetical management model increased to 4.27330. The mean value for the effectiveness of all aspects on hypothetical models is above 4 (measurement scale of 1 to 5).

What is the difference between the mean value of the effectiveness of management modell modell PBLC factual hypothetical PBLC management differ significantly, then the statistical test performed by paired t-test at significance level 0.05. Results of statistical analysis as shown in Table 5.

Table 5. The results of the analysis of the mean difference test between the value of the learning aspects of the management of PBC factual modell modell PBLC hypothetical management

Aspects	Mean difference	*t-value*	*p-value*
Aspect of *Good Teaching* factual model – Aspect of *Good Teaching* development result model	1.165000	11.347	0.000
Aspect of *Appropriate Assessment* factual model – Aspect of *Appropriate Assessment* development result model	1.270800	5.832	0.000
Aspect of *Clear Goal* factual model – Aspect of *Clear Goal* development result model	1.387500	8.275	0.000
Aspect of *Generic Skill* factual model – Aspect of *Generic Skill* development result model	1.807050	9.227	0.000
Aspect of *Appropriate Workloading* factual model – Aspect of *Appropriate Workloading* development result model	1.562550	12.229	0.000
Aspect of *Independency* factual model – Aspect of *Independency* development result model	1.520000	7.888	0.000
Aspect of *Overall Satisfaction* factual model – Aspect of *Overall Satisfaction* development result model	1.480350	13.279	0.000

The data in the table shows that the different test results for all aspects of the obtained p-value less than 0.001. This means that there are significant differences between the mean value of the effectiveness of factual model and development result model. The results of this analysis indicate that the model-developed management PBLC able to significantly improve the effectiveness of problem-based learning for students of public health. The result of the experiment is limited by the learning management PBLC hypothetical model showed an increase in the value of effectiveness in all aspects of learning. The results of this study showed that the average value of the experimental results of the effectiveness of the learning PBLC hypothetical management model increase compared to the model of factual. The mean value for PBLC factual effectiveness of 2.79295, being the PBLC hypothetical management model by 4.27330. The mean value of the effectiveness of all PBLC hypothetical management models is above 4 (measurement scale of 1 to 5).

The results of the analysis of different test with paired t-test on the mean value of the effectiveness of the factual management model and hypothetical management model obtained p-value <0.001. This may imply that there is a difference (increase efficacy score) was significantly between factual models with hypothetical PBLC management model. Increasing in effectiveness can occur as a result of the development of management model PBLC. Students' responses on the implementation of the management model PBLC hypothetical show that students find it easier in the implementation PBLC learn more hypothetical because the topic clearly and cycle stages PBLC simpler and easier to understand. Ease in understanding the stages of the PBLC cycle felt not only by students but also demonstrated from the results of the validation test by experts. For

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example, the use of certain types of diseases as a real life problem gives students easy to understand the problem (in the problematization stage).

Assessment of learning outcomes of the easiest is to provide a test that is indicated by a value. However, it can not describe the actual performance of the results of a study. The most pragmatic approach in the evaluation of adult education is to focus on students' perceptions of their experiences during the learning program, and this approach has been widely used in various studies. The most realistic indicators to measure the success of adult learning programs is the perception held by students on their own learning or *the students' own perception of their learning* (Sybille K. Lechner, 2001).

The aspect of *appropriate assessment* in this PBLC management model to obtain a high value (up to 5). Assessment of learning in this hypothetical model using 3 assessors (*self assessment, peer assessment, dan tutor assessment*) with different weights. The concept of assessment in this model observe the principles of justice, so that the validator says with the sort of assessment is appropriate for problem-based learning. The assessment was conducted more emphasis on the process of learning activities undertaken by students during the running cycle PBLC, rather than on the achievement of knowledge. This is consistent with the suggestion that the teaching model based on learning focus problem is not the acquisition of declarative knowledge. Assessment and evaluation techniques appropriate to the problem based learning model is to assess the students' work produced is the result of their investigation, as observed above discussion capabilities, the ability to use prior knowledge, the ability to formulate problems, ability to work in groups, and observation of student participation in action in solving real problems (Trianto, 2007).

Students also gain new experiences on the implementation of management modell PBLC hypothetical. Students stated that the modell hypothetical Cycle PBLC able to provide insights to participants in PBLC hypothetical PBLC because not only learn theory but also discover facts on the ground (the community). This activity gives students an opportunity to match the cause of the disease based on the theory and the fact that there is in the community. Participants also felt hypothetical cycle PBLC not suppose to solve problems but can intervene based on real facts found in the community.

Closing

This research concluded that the developed PBLC management model was effective for public helath student (score 4.1675). It consist of management function: planning, organizing, and evaluation. Learning was conducted indoor and outdor activities with four steps, namely *problematization, problem investigation, problem solving,* dan *critical reflection.* Paired T-test showed that the n*ew model of PBLC was more effective compared to factual model (p-value<0.05). It was hoped that the developed PBLC management model caould increase the effectivity of learning for public health student.*

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COMMUNITY EMPOWERMENT PLANNING IN THE EXCLUSIVE BREAST FEEDING BY INTERVENTION MAPPING
(Case Studies in Kota Wilayah Selatan Public Health Center of Kediri)

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Abstract

Introduction: Kota Wilayah Selatan Public Health Center of Kediri is a public health center that had less performance achievement in the community empowerment activities of the exclusive breastfeeding, in 2010 was 67% and in 2011 was 35% of the target ≥ 80%.
Methods: The objective of this study was to arrange a recommendation the community empowerment activities planning of the exclusive breastfeeding by intervention mapping in Kota Wilayah Selatan Public Health Center of Kediri. This research was a descriptive study with cross-sectional design. The variables were the evaluation of community empowerment and the PRECEDE model as the community needs approach.
Results: The study results showed the evaluation in the community empowerment of the exclusive breastfeeding that the community participation, the social functioning, the institutional development, the increased capacity and the social capital level were in the low category. Intervention mapping steps resulted detail of activities in the community empowerment program of the exclusive breastfeeding. They were the socialization of the importance of exclusive breastfeeding, the policy advocacy of increased breastfeeding in the region of city, the reactivation team of exclusive breastfeeding support network in the region of Kediri city, the increased capacity of health workers and the implementation of early breastfeeding initiation.

Key Word: Community empowernment, Exclusive Breast Feeding, Intervention mapping.

Introduction

One of the community's health indicators is the Infant Mortality Rate (IMR). IMR can be caused by many factors, namely the level of family education, family socioeconomic circumstances, value systems and customs, hygiene and environmental health, and health services are available, in addition to the factor of infant mortality is also influenced by problems of delivery, breastfeeding (breast milk) and additional food and immunization. One of the goals of Millennium Development Goals (MDGs) 2015 is decreasing in the infant mortality rate (IMR) and kids under five with 23 targets per1.000 live births in 2015 One of the factors that can lower IMR is exclusive breastfeeding.

Breast milk is the first food, main, and best for the baby, which is natural. Breast milk contains nutrients that are needed in the process of growth and development of infants. Related to that, there is a thing that needs to be unfortunate, which is the lack of understanding mothers, families, and communities about the importance of breastfeeding for the baby. As a result, exclusive breastfeeding program does not take place in optimally (Prasetyono, 2009). In addition to reducing mortality among infants and toddlers, breastfeeding can reduce the risk of bleeding that is a major cause of maternal mortality. Exclusive breastfeeding is also one method of preventing an increase in births. This shows the effect of breastfeeding on the mother's health which is the goal of the MDGs (Dinkes Jatim, 2012).

Indonesian data show that breastfeeding not meet the national target of 80%. Based on demographic and health survey of Indonesia 2007-2010, only 48% of mothers who exclusively breastfed. In Indonesia, most of the mothers give only 2 months of exclusive breastfeeding, while formula feeding increased three times more than before. According to the data of Bappenas in

2010, stated that only 31% of infants in Indonesia get exclusive breastfeeding until 6months. And according to the latest data from Health Research (Riskesdas) 2013, breastfeeding in infants aged 6 months just reached 30.2%. in case, Kota Wilayah Selatan Public Health Center of Kediri is a public health center that had less performance achievement in the community empowerment activities of the exclusive breastfeeding, in 2010 was 67% and in 2011 was 35% of the target ≥ 80%.

Construct

Based on Government Regulation (PP) of the Republic of Indonesia Number 33 of 2012 on exclusive breastfeeding, breast milk, Exclusive breast feeding is breast milk given to the baby since birth for 6 (six) months, without adding and/or replacing with food or other beverages. Breastfeeding a baby can bring benefits for infants, mothers, families, communities, and countries. As the most perfect baby food, breast milk is easily digested and absorbed as they contain digestive enzymes.

During this period, ASI exclusive increased by conduct Early breasfeeding initiation and ASI exclusive program. There are three activities in this program that is observation of the situation, dissemination of the observation result, and activities intervention. However, this program in fact is not capable yet in increasing community participation in ASI exclusive because the target groups is only as program's object so they don't feel to have any attachment to ASI exclusive program, and also no evaluation planning in this program so evaluation of program implementation is not noticed to be important.

Indonesia Government's efforts in increasing ASI Exclusive in addition to the program is the Peraturan Pemerintah Nomor 33 Tahun 2012 tentang pemberian ASI Eksklusif. In PP No 33 Tahun 2012 are explained about the responsibility of the Central Government to the regions as well as solutions to face the obstacles of ASI Exclusive that is Donors breast-fed (donors ASI), the use of formula milk and administrative sanctions provided to health workers and health services facilities organizers if they were not support ASI Exclusive. However, this regulations was apparently not thoroughly socialized so both health workers and the community have not been aware of any of these regulations

Qualitative study of the promotion of exclusive breastfeeding were performed by Abba in 2009, showed similar results with a study of 900 mothers around Jabodetabek in 2002, that mothers and families were lack of information about exclusive breastfeeding from health workers so there needs to be an increase in promotional activity by health workers professional and regular supervision by the relevant institutions in an effort to increase exclusive breastfeeding.

According to Siregar (2004), there are various reasons put forward by the mother who does not exclusively breast feed their babies; mothers feel less milk production, difficulty in sucking infants, working mothers, the desire for so-called modern and the influence of advertising/promotion of breast milk substitutes. Meanwhile, the Ministry of Women's Empowerment (2007), a major problem in Indonesia is low breastfeeding is socio-cultural factors, lack of knowledge of the importance of breastfeeding and the promotion of infant formula.

By studying the shortcomings of previous programmes therefore the approaches that can be used to succeed ASI exclusive program is by used bottom up approach that is involving the community not just as objects of the program but also included them in the determination of activities that will be done to succeed ASI exclusive. This approach will use the actual intervention mapping method that has been widely used by other countries to address health problems that emerge.

Intervention Mapping (IM) is based on the health promotion approach, encourages the use of theory and evidence, based on an ecological approach, encourages participation of stakeholders in planning; and it acknowledges that intervention planning is not a static but rather an iterative

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process. The purpose of IM is to provide health promotion program planners with a framework for effective decision making at each step in intervention planning, implementation and evaluation (Bartholomew, et al., 2006).

IM is a tool that assists planners to accomplish these tasks and consists of a number of steps: 1) involvement of relevant stakeholders, 2) needs assessment/situation analysis, 3) specification of programme objectives, 4) programme design, including the use of theory and pre-testing, 5) planning for adoption and implementation, and 6) planning monitoring & evaluation (see in figure 1). These steps are not new and are used in other models as well(Bartholomew, et al., 2006).

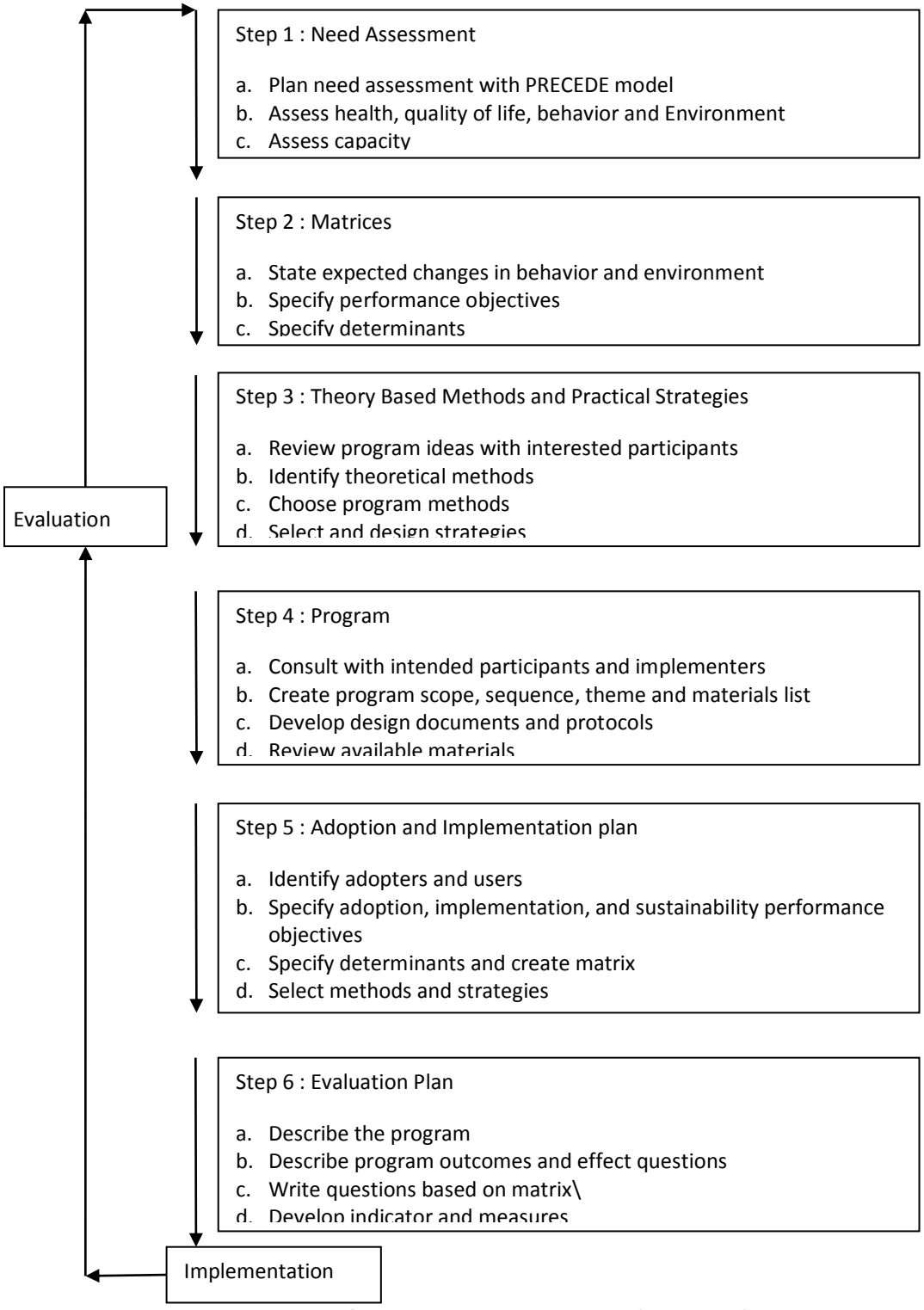

Figure 1 : Proses Intervention Mapping
(Sumber: Bartholomew et al, 2006)

IM starts with an analysis of the needs, problems, capacities and opportunities among the target population, and the wider community (IM Step 1). This analysis addresses people's quality of life, health concerns, behavioural and environmental factors and determinants. And it also explores the capacity within a community and among the target population that are potentially useful in improving people's health (Bartholomew, et al., 2006).

Step 2 in IM addresses the specification of the general program objectives into specific change objectives that explicate who and what will change as a result of the intervention. Change objectives specify what individuals need to learn or what must be changed in the organisational or community environment. They may refer to individual level change, organisational level change, or community level change (Bartholomew, et al., 2006).

The next step in IM is to select theoretically based intervention methods that may be effective in achieving the objectives and to decide upon practical strategies to operationalise these methods. For instance, a theoretical method that describes how to enhance self-efficacy is modelling. A practical strategy for this method could be role-playing and/or watching models on a video. Theoretical intervention methods can be derived from the scientific literature and information about the feasibility and effectiveness of practical strategies can be derived from needs assessments, contacts with other health promoters, collaboration with program implementers and users, and from small-scale pilots (Bartholomew, et al., 2006).

Step 4 in IM is Program. This step involves organising the strategies into a deliverable program with components that are comprehensible and acceptable to program implementers and participants. IM can help developers to specify the scope and sequence of program components, the channels of delivery of intervention strategies, and how each program component will reach program participants (Bartholomew, et al., 2006).

IM step 5 describes how programme planners can set objectives for programme adoption, implementation and maintenance and link these objectives to theoretical methods and practical strategies for promoting adoption and implementation. Thus interventions are required, not only to change individual behaviour, but also to facilitate program adoption and implementation. In addition, programme planning can address the sustainability of the program to encourage institutionalisation of the program to ensure programme impact over an extended period of time.

Finally, IM step 6 focuses on evaluation. Programme planners develop instruments to evaluate the impact of the intervention on behavioural determinants and behaviour. They also specify the time frame appropriate for expected outcomes. These tasks generate a monitoring and evaluation plan (Bartholomew, et al., 2006).

Methods

This research was a descriptive study with cross-sectional design. The variables in this study were the community empowerment and the steps of intervention mapping. The community empowerment were : a) the community participation, b) the social functioning, c) the institutional development d) the increased capacity; e) the social capital level. The steps of mapping intervention were: a) the need assessment, b) the definition of the change objectives matrix, c) the selection of methods and strategies, d) the program planning, e) the adoption and implementation planning, f) the evaluation planning.

Results and Discussion

The results of this study represented the evaluation in the community empowerments of the exclusive breastfeeding was low because the community participation, the social functioning, the institutional development, the increased capacity and the social capital level were in the low category. The first step of intervention mapping was the need assessment, based on PRECEDE model suggested that in the exclusive breastfeeding the public needed belief, the community

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support, the health workers support and the media support, regulations and budget of exclusive breastfeeding program.

The second step of intervention mapping was the objectives matrix in the community empowerment program of the exclusive breastfeeding that resulted performance objectives. They were the community participation, the social functioning, the institutional development, the increased capacity, the social capital level and the determinants of change that were belief, the community support, the health workers support and the media support.

The third step was methods and strategies in community empowerment program of exclusive breastfeeding. Increased belief of exclusive breastfeeding as the determinant of change was used social modelling method, public support in the community empowerment of exclusive breastfeeding program used the advocacy method, health workers support in community empowerment of exclusive breastfeeding used goal setting method and media support in community empowerment of exclusive breastfeeding was media advocacy.

The fourth and fifth steps were program planning, and adoption and implementation planning in community empowerment program of exclusive breastfeeding. They were the socialization of the importance of exclusive breastfeeding, the policy advocacy of increased breastfeeding in the region of city, the reactivation team of exclusive breastfeeding support network in the region of Kediri city, the increased capacity of health workers, the implementation of Early Breastfeeding Initiation.

The sixth step was the evaluation planning in the community empowerment program of the exclusive breastfeeding that include the output evaluation plannings and the process evaluation plannings. The output evaluation plannings were the determinant of community participation, the social functioning, the institutional development, the increased capacity and the social capital level. The process evaluation plannings were the socialization of the importance of exclusive breastfeeding, the policy advocacy of increased breastfeeding in the region of city, the reactivation team of exclusive breastfeeding support network in the region of Kediri city, the increased capacity of health workers, the implementation of Early Breastfeeding Initiation.

Closing

Intervention mapping is a method that seems to have not been widely used in Indonesia, and if been used is only limited to research interest. This planning method can be used to increase community participation in health program, one of them is ASI exclusive. ASI exclusive can not increase only by Counseling and consultation during pregnancy examination. The target of this program is not only mother and family but also health workers who help childbirth.

ASI exclusive program often considered to be successful because during pregnancy examination mother has already given information regarding ASI (breast fed),, but This step is less successful because in the fifth month, a baby has received food besides ASI, by reason of limited amount of ASI.

Intervention mapping planning method emphasize the importance of need assessment as the basis of a program that will be conducted . in this Intervention mapping, health workers does not determine the activities of the program but all the approved activities should have derived from the target groups. The involvement of the targets in every stage can bring up a sense of belonging of the program so that the success of programs can be achieved.

A recommendation of this study was a document of the community empowerment activities planning of exclusive breastfeeding by intervention mapping approach in Kowilsel Public Health Center of Kediri. It included detail of activities in the community empowerment program of exclusive breastfeeding that were the socialization of the importance of exclusive breastfeeding, the policy advocacy of increased breastfeeding in the region of city, the reactivation team of exclusive breastfeeding support network in the region of Kediri city, the increased capacity of health workers, the implementation of early breastfeeding initiation.

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MODEL OF FISHING COMMUNITIES WELFARE IN COASTAL AREA IN GORONTALO UTARA DISTRICT

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Abstract

Introduction: The aim of this study is to develop indicators of coastal development on the welfare of fishing communities by environmental factors and economy adaptation in Gorontalo Utara district with Spatial Bayesian SEM and Machine Learning. Specific targets to be achieved is the existence of the development design so that the equalization of poor households in coastal area in Indonesia, especially in Gorontalo Utara district.

Methods: Methods of data analysis used in this study are (1) descriptive and identification of data, (2) develop the coastal area development indicators, environment, economy adaptation, fishing communities walfare with Bayesian CFA methods, and obtaining structural models with Spatial Bayesian SEM to obtain the factors that influence the welfare of fishing communities in coastal area, (3) evaluate the welfare of fishing communities in coastal area by classification accuracy using CART, MARS, Bagging CART and MARS methods, (4) evaluate the classification accuracy of fishing communities in coastal area for out sample data using Bagging CART and MARS methods, (5) compare poor households models with Bagging CART and MARS models to obtain the best model.

Results: The result of this study showed that fishers welfare indicators are ship and fishing tools ownership, housing, income, electricity bills, health, savings, and education.

Keywords: Poverty, CART, MARS, bagging CART

Introduction

Poverty in this era is still a complex problem to solve. Not infrequently the problem of poverty being a reason to evaluate the performance of the government and could even bring down the government because it is considered not being able to improve the lives of people. During poverty are more likely to be associated with economic factors, this is due to the more easily measured, observed and compared. But other factors need to be considered in terms of poverty are social factors, cultural, social, political, environmental, health, education and character. At the community level, infrastructure is a major determinant of poverty. Infrastructure development indicators that are often used in econometric modeling, such as the availability of health facilities, availability of schools, lack of access to electricity, the distance to the center of administration / capital city (World Bank Institute, 2002).

In this time, the Indonesian government efforts aimed at realizing a society that is just and prosperous through development activities, which have been outlined in a strategy called the "Triple Track srategy" to improve people's welfare, namely: Pro-Job: Job creation; Pro-poor growth: economic growth and stability; and Pro-poor: poverty reduction; and within the framework of the Pro-Environment: Handling of climate change (Alisjahbana, 2010). Various government programs to improve the well-being especially coastal communities, made for this percentage is still very small in the amount of 0.02%, which credit institutions and government program focuses on the

development on the mainland, while the maritime sector to be neglected (General Directorate of fisheries , 2010)

Several studies related to the welfare conducted by Santoso & Otok (2009), examines the factors that influence exclusive breastfeeding in poor households with MARS approach. Wahyuningrum (2008) also examined the accuracy of the classification of rural / poor villages in East Kalimantan with MARS approach. In 1995 Faturokhman and Molo examine the characteristics of poor households in Yogyakarta. Rahmawati (1999), examines employment of the poor in Jakarta. Then BPS works closely with Word Bank Institute (2002) developed the basics of the analysis of poverty. Gönner, Chayat, and Haung (2007) examines poverty and household welfare, the result is a guide for the West Kutai, then Suryadarma, et al (2005) examines a family's welfare objective for targeting poverty with PCA (Principal Component Analysis). Furthermore Een & Otok (2009), doing household welfare classification with CART approach.

Results of research conducted by Sjafi'i, Bengen and Gunawan (2001) states that the amount of pressure the population with socio-economic dynamics, as well as the magnitude of the demands of local governments to obtain funding sources for increased the acceleration of development, it has an impact that is less favorable for environmental and natural resources sustainability into capital construction of the present and future. Don Chernichovsky and Oey Astra Meesok (1985) in Masfufah (2000), examines poor households characteristics in Indonesia are: number of household members with a lot of the household head as the backbone of the family, the education level of the household head and members mean low average, frequent job changes and some of them willing to accept another additional job if its offered, most expenditures to consume foods with a percentage of expenditures for most major carbohydrates, mostly main income comes from agriculture and land tenure is still marginal, the house is still very poor condition in the case of water and electricity for lighting. Rusastra and Togar (2007), the general characteristics of the poor are mostly staying in the village, working in the agricultural sector, the informal nature of the job is the job status as well as family workers in pay. Otok, Suhartono, Sutikno, Purhadi and Santi (2012), developed indicators of poor households in the 3 dimension factors of poverty, namely human resources, economics and health. Therefore this study will develop indicators of coastal development on the welfare of fishing communities through environmental and economic adaptation factors in Gorontalo Utara district with spatial Bayesian SEM and machine learning approach.

Research on poverty and welfare described above indicated that many factors that affect poor households in a region. So it is necessary to identify the factors that most affect the poor households in a coastal region of, particularly in Gorontalo Utara District, to be used as a development planning so that development will be more focused on the reduction of poor fishing communities.

SEM is an appropriate tool to measure the research variables unmeasured (latent). The latent variables can be indirectly measured by an indicator variable. SEM can also describe the

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causal relationship between variables that can not be described in ordinary regression analysis, so that it can be seen how well an indicator variable determining the latent variables.

Based on the problems mentioned above, and the opportunity of further research related to the modeling of poor households still open breadthly, so in this study the focus issues to be investigated by researchers is How to model the welfare of fishing communities of an area based on the development of coastal areas, environmental and economic adaptation factors by spatial Bayesian SEM-based?

BPS (2009) defines the poverty line as the value of rupiahs to be issued in one month in order to meet the basic needs of the calorie intake of 2100 kcal / day per capita (food poverty line) plus a minimum non-food needs is someone needs, ie clothing, schools, transportation and other basic needs of the individual household (non-food poverty line).

In explaining the relationship between the response variable with the predictor variables can be used regression curve. Regression curve approach that is often used is a parametric regression approach, which assumed the form of the regression curve (such as linear, quadratic, cubic) based on the theory that can provide connection and error is normally distributed information (Draper and Smith, 1992). However, not all patterns of relationship can be approximated by a parametric approach, in the absence of any information about the relationship shape of the predictor variables and the response variable. If the parametric model assumptions are not met then the regression curve can be predicted using nonparametric regression model approach. Whereas, if not met the normality assumption used bootstrap approach.

Structural Equation Modeling (SEM) is a multivariate technique that combines aspects of the factor analysis and multiple regression analysis that allows researchers to simulate a series of dependent relationships between the measured variables and latent constructs as well as between latent constructs (Hair et al., 2006).

Methods

The study design

Operational definition and measurement of research variables that used in his study are:

Coastal area development.

Coastal area development is the construction carried out in the coastal area which is located in the Gorontalo Utara district. Operational variables of this coastal area development which will be the measurements are: Infrastructure in coastal development, indicator used to measure the infrastructure in coastal area development are: infrastructure, trade area construction, and the port; fishing community income generation programs; capacity and capability building programs. It is to see the results that have been achieved in the development of coastal areas that provide benefits to fishing communities.

Fishing community environment

Fishing community environment is the environment that is around the lives of fishing communities both physical environment, social and economic of fishing communities. Environment operational variable of fishing communities are: environmental quality and environmental services, the availability of alternative business of fishing communities, and the availability of main business supporting of fishing communities.

Welfare of fishing communities

Welfare of fishing communities are all factors that indicate the level of quality of life of the fishing community in the efforts that have been made. Operational variabel of fishering communities welfare used in this study are: income, savings, electricity bills, ownership of boats and fishing equipment, housing, health, education.

The analysis used in this study is the Spatial Bayesian SEM to obtain the factors that affect the welfare of the fishing communities of coastal areas. Spatial Bayesian SEM Analysis Stages are:

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a) Obtaining a model-based concepts and theories that developed to design the measurement model.

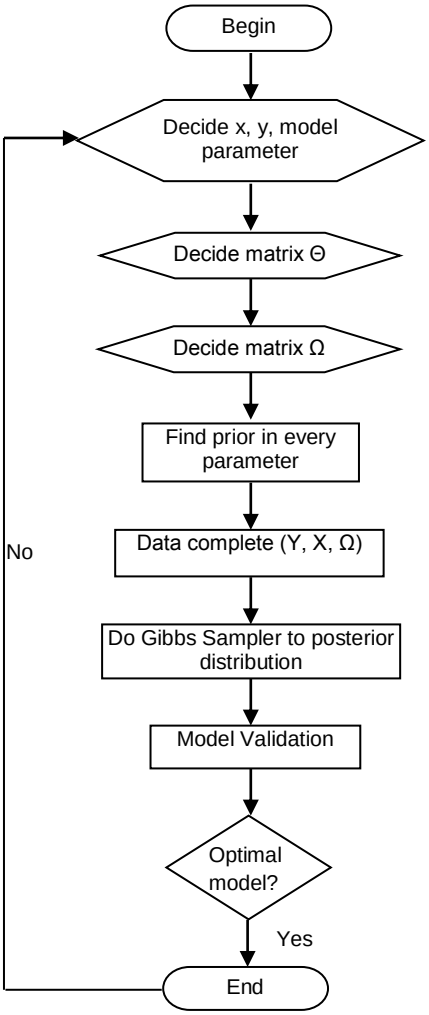

Figure 1. Spatial Bayesian SEM Analysis Stages

b) Creating structural models and pathway diagrams that may explain the pattern of the relationship between latent variable and its indicators and also involving the location effect.
c) Conversing pathway diagram into equation.
d) Estimating the parameters (weights, loading factor, pathway coefficients) and estimating the bootstrap aggregating (bagging).
e) Testing the significance of the measurement model parameters. Testing the significance of the structural model parameters. Determining the goodness of fit model.

Data collection techniques and data sources.

The data used in this study comes from the data collection of the National Socioeconomic Survey (Survei Sosial Ekonomi Nasional (SUSENAS-2010)) of Gorontalo

Utara district. Susenas is a survey designed to collect social data in a very broad scope. The data collected were related to the fields of education, health/nutrition, housing, other socio-economic, socio-cultural activities, consumption/expenditure and household income, travel and public opinion on household welfare. The following are the variables that are used as endogenous variables and exogenous variables. Variables that have been used consists of three endogenous latent variables (η), , one exogenous latent variable (ξ), 13 manifest variables (Y) which the observation is Gorontalo Utara district.

Methods of data analysis

Furthermore, the method of data analysis performed in this study can be explained as follows: (1) Descriptive and identification data. Descriptive aimed to determine the characteristics of the data. Identification includes the identification of the relationship between the response variable with the predictor variables that can be shown on the matrix plot and the value of the correlation; (2) Develop indicators of coastal area development, environmental, economic adaptation, welfare of fishing communities with Bayesian CFA method, and obtain the structural model with the Spatial Bayesian SEM to obtain the factors that affect the welfare of the fishing communities of coastal areas.

Results and Discussion

Validity test

Validity test is intended to determine whether the questions in the questionnaire is quite representative. Validity test is done by using confirmatory factor analysis on coastal area development variable (X1), the environment of coastal communities (Y1), the behavior of the economic adaptation of fishing communities (Y2), and the welfare of fishing communities (Y3) through AMOS 20 program.

Development of coastal area (X1)

Coastal area development (X1) is an exogenous latent variable measured by three (3) variables: capability development program (X1.1), income generation program (X1.2), and the provision of infrastructure (X1.3). So to determine whether coastal area development (X1) is a latent variable, confirmatory factor analysis used and the results by the AMOS program can be seen in the following figure:

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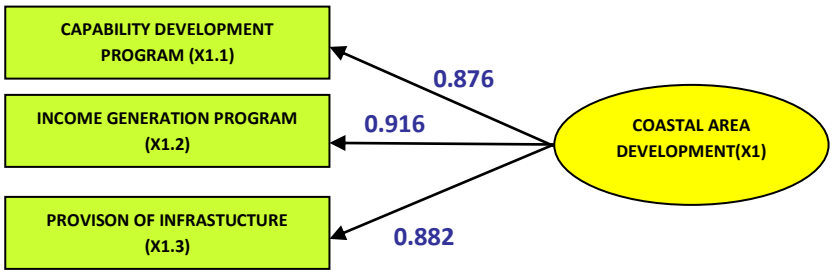

Figure 2. Coastal area development (x1) validity test

The results of such testing presented in Figure 5.1 shows that the value of the factor loading in three indicators above is greater or equal to 0.5. Each of these can be explained as follows:

(1) Loading value 0.876 for the capability development program (X1.1) which means statistically significant in assessing coastal area development (X1) of 0.876, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 on the regression weight;

(2) Loading value 0.916 for income generation program (X1.2) which means statistically significant in assessing coastal development (X1) of 0.916, it can be seen by the value of p= 0.000 which is smaller than α = 0.05 on the regression weight;

(3) Loading the value 0.882 for the provision of infrastructure (X1.3) which means statistically significant in assessing coastal area development (X1) of 0.882, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 in regression weight;

Thus there are three (3) indicators that can be used to measure coastal area development (X1). The three inddicators are capability development program (X1.1), income generation program (X1.2), and the provision of infrastructure (X1.3);

The environment of fishing communities (Y1)

Fishing communities environment (Y1) is the exogenous latent variable measured by 2 (two) variables:environmental quality (Y1.1), and environmental services (Y1.2). So to find out if a fishing community environment (Y1) is a latent variable, confirmatory factor analysis used and the results with the AMOS program can be seen in the following figure:

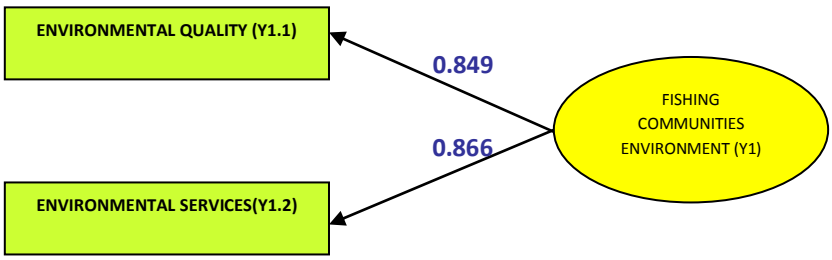

Figure 3. Fishing communities environment (y1) validity test

The results of such testing presented in Figure 3, shows that the of the factor loading value in three indicators is greater or equal to 0.5. Each of these can be explained as follows:

(1) Loading value 0,849 for environmental quality (Y1.1) which means statistically significant in measuring environmental fishing communities (Y1) of 0,849, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 on regression weight;

(2) Loading value 0.866 for environmental services (Y1.2) which means statistically significant in measuring environmental fishing communities (Y1) of 0.866, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 at regression weight.

Thus there are two (2) indicators that can be used to measure the fishing community environment (Y1). The two indicators are the environmental quality (Y1.1), and environmental services (Y1.2).

Economic adaptation behaviour of fishing communities (Y2)

The economic adaptation behavior of the fishing communities (Y2) is the exogenous latent variable measured by 2 (two) variables, namely functional adaptation (Y2.1), and processual adaptation (Y2.2). So as to determine whether the economic adaptation behavior of the fishing communities (Y2) is a latent variable, confirmatory factor analysis has been used and the results with the AMOS program can be seen in the following figure:

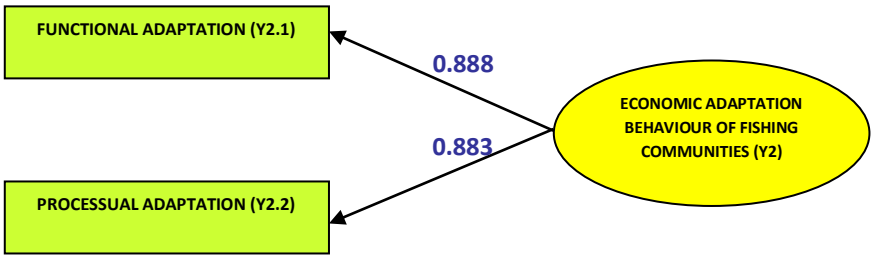

Figure 4. The economic adaptation behaviour of fishing communities (Y2) validity test

The results of such testing presented in Figure 4, shows that the loading value of the three indicator above is greater or equal to 0.5. Each of these can be explained as follows:

(1) Loading value 0,849 for functional adaptation (Y2.1) which means statistically significant in measuring the economic adaptation behavior of the fishing communities (Y2) of 0,849, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 in regression weight;

(2) Loading value of 0.866 for processual adaptation (Y2.2) which means statistically significant in measuring the economic adaptation behavior of the fishing communities (Y2) of 0.866, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 in regression weight

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Thus there are two (2) indicators that can be used to measure the the economic adaptation behavior of the fishing communities (Y2) are a functional adaptation (Y2.1), and processual adaptation (Y2.2).

Fishing communities welfare (Z)

Fishing communities welfare (Z) is the exogenous latent variable are measured by the 7 (seven) such as the income (Z1), savings (Z2), the electric bill (Z3), ownership of boats and fishing equipment (Z4), housing (Z5), education (Z6) and health (Z7). So as to know whether the fishing communities Welfare (Z) is a latent variable, confirmatory factor analysis has been used and the results by using the AMOS program can be seen in the following figure:

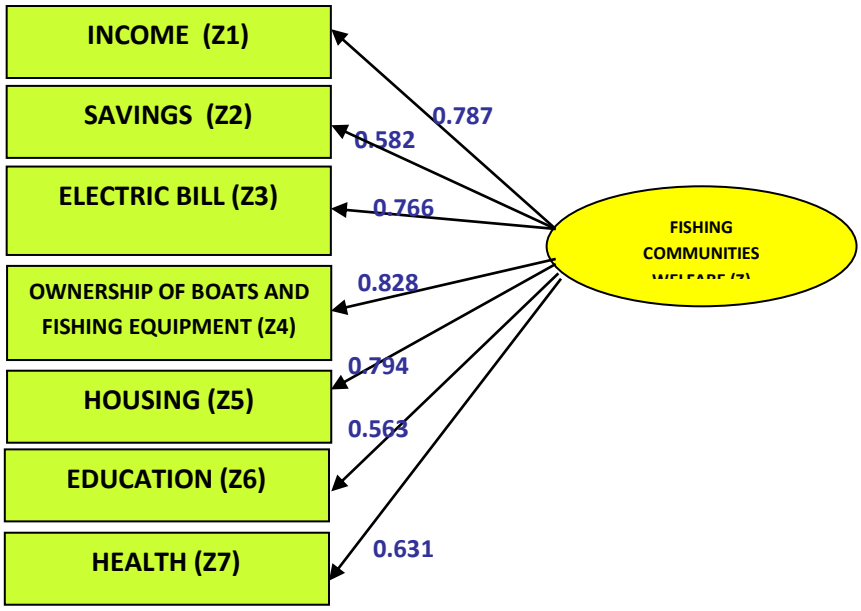

Figure 5. Fishing communities welfare (Y2) validity test

The results of such testing presented in Figure 5 shows that the loading value in seven indicators above is the greater or equal to 0.5. Each of these can be explained as follows

(1) Loading value 0.787 for income (Z1) which means statistically significant in measuring the fishing communities welfare (Z) of 0.787, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 in regression weight;

(2) Loading value of 0.582 for savings (Z2) which means statistically significant in measuring the fishing communities welfare (Z) of 0.582, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 in regression weight;

(3) Loading value of 0.766 for loading electric bill (Z3) which means statistically significant in measuring the fishing communities welfare (Z) of 0.766, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 in regression weight;

(4) Loading value of 0.828 for ownership loading boats and fishing equipment (Z4) which means statistically significant in measuring the fishing communities welfare (Z) of 0.828, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 on the regression weight

(5) Loading value of 0.794 for housing (Z5) which means statistically significant in measuring the fishing communities welfare (Z) of 0.794, it can be seen by the value of p = 0.000 which is smaller than α = 0.05 in regression weight;

(6) Loading value 0.563 for education (Z6) which means statistically significant in measuring the fishing communities welfare (Z) of 0.563, it can be seen from the value of p = 0.000 which is smaller than α = 0.05 in regression weight;

(7) Loading value 0.631 for health (Z7) which means statistically significant in measuring the fishing communities welfare (Z) of 0.876, it can be seen from the value of p = 0.000 which is smaller than α = 0.05 in regression weight;

Thus there are 7 (seven) indicators which can be used to measure the fishing communities welfare (Z) are income (Z1), savings (Z2), the electric bill (Z3), ownership of boats and fishing equipment (Z4), housing (Z5), education (Z6) and health (Z7).

Reliability test

The second measurement tool test (questionnaire) is Reliable, the index which indicates which the measuring instrument is reliable or trustworthy. Reliability is an internal consistency measure of the indicators of a formed variable that indicates the degree to which each indicator that indicates a common formed variable.

In this study in calculating reliability using reliability composite (contruct) with a 0.7 minimum cut-off value. The calculation is as follows:

$$CR = \frac{(\sum \text{standardized loading})^2}{(\sum \text{standardized loading})^2 + \sum e_j}$$

Based on calculations, the latent variable coastal area development (X1) gives the value of CR at 0.732 above its cut-off value of 0.7 so that it can be said coastal area development (X1) reliable. Similarly, on each indicator, all error variance p values less than 0.05 it is said to be reliable. Latent variable fishing communities environment (Y1) gives the value of CR at 0,795 above its cut-off value of 0.7 so that it can be said the fishing community environment (Y1) reliable. Similarly, on each indicator, all error variance p values less than 0.05 it is said to be reliable. Latent variable economic adaptation behavior of fishing communities (Y2) gives the value of CR at 0.780 above its cut-off value of 0.7 so that it can be said the economic adaptation behavior of fishing communities (Y2) reliable. Similarly, on each indicator, all error variance p values less than 0.05 it is said to be reliable. Latent variables fishing communities welfare (Z) gives the value of CR at

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0.808 above its cut-off value of 0.7 so that it can be said fishing communities welfare (Z) reliable. Similarly, on each indicator, all error variance p values less than 0.05 then said to be reliable.

SEM on Coastal Area Development Against the Welfare of The Fishing Communities Through Environmental and Economic Adaptation Behavior of The Fishing community

After having validity and reliability tested on each latent variable, several prerequisites that must be met in structural modeling is the assumption of normal multivariate, assuming the absence of multicollinearity or singularity and outliers

Normality test

Normality of the data is one of the prerequisite for Structural Equation Modeling (SEM). Normality testing emphasis on multivariate data by looking at the value of skewness, kurtosis, and statistically can be seen by the value of Critical Ratio (CR). If you used a significance level of 5 percent, then the value of CR is between -1.96 to 1.96 (-1.96 $\leq \leq$ 1.96 CR) said normal distribution of data, multivariate and univaariat either.

Singularity and multicollinearity test

Singularity can be seen through the determinant of the covariance matrix. Value of the determinant is very small or close to zero indicates the singularity problem, so it can not be used for research. The results of the study provide value Determinant of the sample covariance matrix of 0.042. This almost makes approximately value of zero so that it can be said that there is no singularity problems in the data analyzed. Thus indirectly all latent variables no multicollinearity.

Outlier is an observation that appears to the extreme values by multivariate and uniariate way, that arise due to the combination of its unique characteristics and looks so outlying from other observations. If there is a outlier can be done special treatment but we have to know how the emergence of unknown origin outlier. Outlier test results in this study presented on the Mahalanobis distance or Mahalanobis d-squared. Mahalanobis value greater than the Chi-square table or p1 value <0.01 is said that outlier observation. In this study, no data are outliers, it can be said no outliers occur.

Having the validity and reliability tested of all latent variables, the results are valid and reliable, the data is multivariate is normal, multicollinearity and outliers do not occur below 5 percent, then the latent variables can be continued in the analysis.

Effect of inter-research variables

In a structural equation with many variables and paths between variables there are effect among the variables which include the direct effect, indirect effect and total effect. For it will be discussed in detail each of the above-mentioned effect.

(1) Direct Impact Between Research Variables

A direct relationship between the latent exogenous variables (coastal area development (X)) with the endogenous latent variables mediating/intervening (fishing communities environmental (Y1), economic adaptation behavior of fishing communities (Y2)) and endogenous latent variables (fishing communities welfare (Z)). The following table presents the direct result of the direct relationships that occur between the exogenous and endogenous latent variables:

Table 1. Direct Impact Between Research Variables

Direct Effect		Endogenous Variabel		
		Fishing Communities Environment (Y1)	Economic Adaptation Behavior of Fishing Communities (Y2)	Fishing Communities Welfare (Z)
Exogenous Variabel	Coastal area development (X1)	0,238	0,214	0,264
	Fishing communities environment (Y1)	0,000	0,224	0,261
	The economic adaptation behavior of the fishing communities (Y2)	0,000	0,000	0,237

From the table above, can be explained large direct effect (direct effects) of exogenous latent variables on endogenous latent variables. Coastal area development (X) gives the largest direct effect on the fishing communities welfare (Z), and fishing community environment (Y1).

(2) Indirect Effects Between Research Variables

Indirect relationship between the exogenous latent variables (coastal area Development (X)) with the endogenous latent variables mediating/intervening (fishing communities environmental (Y1), economic adaptation behavior of fishing communities (Y2)) and endogenous latent variables (fishing communities welfare(Z)). The following table presents the results of Indirect regarding the direct relationship between the variables that occur - exogenous and endogenous latent variables:

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Table 2. Indirect effects between research variables

Indirect Effects		Endogenous Variabel		
		Fishing Communities Environment (Y1)	Economic Adaptation Behavior of Fishing Communities (Y2)	Fishing Communities Welfare (Z)
Exogenous Variabel	Coastal area development (X1)	0,000	0,054	0,126
	Fishing communities environment (Y1)	0,000	0,000	0,053
	The economic adaptation behavior of the fishing communities (Y2)	0,000	0,000	0,000

From the table above, can be explained that much influence indirectly (indirect effects) of exogenous latent variables on endogenous latent variables. Fishing communities environment (Y1) and economic adaptation behavior of fishing communities (Y2) gives the largest indirect effect on the coastal area development (X1) on the fishing communities welfare (Z).

(3) Total Effect of Inter- Research Variable

The total effect is the sum of the direct and indirect influence between exogenous latent variables (coastal area development (X)) with the endogenous latent variables mediating/intervening (fishing communities environmental (Y1), the economic adaptation behavior of the fishing communities (Y2) and endogenous latent variables (fishing communities welfare (Z)). The following table presents the results of the total direct and indirect relationships that occur among the exogenous and endogenous latent variables.

Tabel 3. Total effect of inter- research variable

Direct Effect		Endogenous Variabel		
		Fishing Communities Environment (Y1)	Economic Adaptation Behavior of Fishing Communities (Y2)	Fishing Communities Welfare (Z)
Exogenous Variabel	Coastal area development (X1)	0,238	0,267	0,390
	Fishing communities environment (Y1)	0,000	0,224	0,314
	The economic adaptation behavior of the fishing communities (Y2)	0,000	0,000	0,237

From the table above, the total effect can be explained large (total effects) of exogenous latent variables on endogenous latent variables. Coastal area development (X) gives the largest

total effect on the fishing communities welfare (Z), and the next largest total effect on the fishing communities welfare (Z) is a fishing community environment (Y1).

Closing

Fishing communities welfare of an area based on coastal area development, environmental factors and economic adaptation based on spatial Bayesian SEM produces a model with the following values. Factors that affect the fishing communities welfare are coastal development for 0264 with capability development program indicators (0876), income generation program (0.916), and the provision of infrastructure (0.866), the environment (0,849), and environmental services (0.866) and economic adaptations behavioral of fishing communities 0.237 with functional adaptation indicator (0.888), and processual adaptation (0.883). Factors that influence the economic adaptation behavior of fishing communities (Y2) are a coastal area development at 0.214 with a capability development program indicator (0.876), the income generation program (0.916), and the provision of infrastructure (0.882), the fishing communities environment (Y1) of 0.224. With indicators of environmental quality (Y1.1) and environmental services (Y1,2).

Factors that affect the fishing communities environment (Y1) is a coastal area development at 0.238 with a capability development program indicator (0.876), the income generation program (0.916), and the provision of infrastructure (0.882). Fishing communities environment (Y1) and economic adaptation behavior of fishing communities (Y2) gives the largest indirect effect on coastal area development (X) on the fishing communities welfare (Z) is equal to 0.126. Dominant factor mempegaruhi welfare of fishermen (Z) is pemmbangunan coastal area (X) equal to 0.390 and the environment of coastal communities (Y1) of 0.314. Indicators of the welfare of fishermen (Z) is the ownership of boats and fishing equipment (Z4) 0.828; housing (Z5) 0.794; pendapaatan (Z1) 0.787, electric bill (Z3) 0.766, health (Z7) 0.631; savings (Z2) 0.582, and education (Z6) 0.563. Dominant factor that effect fishing communities welfare (Z) is coastal area development (X) equal to 0.390 and the coastal communities environment (Y1) of 0.314. Fishing communities welfare indicators (Z) is the ownership of boats and fishing equipment (Z4) 0.828; housing (Z5) 0.794; income (Z1) 0.787, electric bill (Z3) 0.766, health (Z7) 0.631; savings (Z2) 0.582, and education (Z6) 0.563.

It is expected that the government of Gorontalo Utara district can consider that the dominant factors affecting the fishing communities welfare.

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TOHEREN LIGHTING STANDARD AND FACTORS AFFECTING FATIGUE EYE FOR THE CRAFTSMEN KARAWO IN DISTRICT GORONTALO

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Abstract

Introduction: Lighting conditions in the work environment karawo craftsmen in Gorontalo regency extremely unhelpful to achieve optimal productivity, so most of the craftsmen karawo eyestrain. Toheren standard lighting is used in the production room to help artisans karawo karawo while working in order to avoid eye fatigue.

Methods: This study aims to find the factors that influence the amount of lighting standards and standards based Toheren Flicker fusion measurements, visual acuity and Subjective Complaints for karawo craftsmen in Gorontalo regency. Observations observational probability sampling against 71 people craftsmen karawo in Gorontalo regency. Result obtained by stratified random sampling, divided into predictor variables consisted of craftsmen karawo characteristics, work space, lighting and materials or work materials. The response variable eyestrain by Flicker fusion measurements, visual acuity and Subjective Complaints. Descriptive data analysis, modeling analysis used iferensial Adaptive Regression Spline.

Results: The results showed before working craftsmen karawo not experienced eye fatigue, but after working all craftsmen decreased visual acuity and the eyes become tired. Conclusion: The use of lighting intensity above 270 lux at work craftsmen karawo not cause eye becomes tired that productivity increased.

Key Words: Lighting standards, toheren, eye fatigue and craftsmen karawo.

Introduction

Small industry and handicrafts that are being developed in the province of Gorontalo is karawo craft industry which is usually done by women. Karawo embroidery industry in Gorontalo can be aligned with another craft that developed in Indonesia, so it can be a source of pride and cultural richness of Indonesia. In addition to cultural values, karawo also has considerable potential economic value, therefore it is necessary to empowerment through the promotion and development of small industries.

Karawo is a traditional embroidery. It's a craft that has been passed down from the 17th century around the year 1713. Karawo embroidery comes from the word Mokarawo that meant slicing or hollow. This naming according to the manufacturing technique of karawo embroidery where where yarns fiber embroidered on the fabric as a medium will be sliced or perforated yarn fiber by pulling on the fabric medium to be used.

By looking at data from the Industry and Cooperatives of Gorontalo District in 2010 karawo craftsmen has reached 67 businesses who formed the group of centers aim to facilitate the development of karawo handicraft industry. Based on the above there are basically two main aspects for business development in order to increase the production of the worker and the work environment. The working environment should be handled in such a way that it becomes conducive for workers to carry out activities in a safe and comfortable atmosphere.

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Adequate lighting and well organized will help create a work environment that is comfortable and enjoyable so that the work can maintain the excitement of working. Less lighting impacts are: (1)eye fatigue, so that reduced power and efficiency;(2)soreness Complaints in the eyes and pain around the eyes;(3)Damage of eye senses.

Observations indicate the amount of light intensity in karawo craftsmen working environment is less than 200 lux and 400 lux highest Hiola (2000) found the workspace illumination intensity of karawo craftsmen in Gorontalo city by 96.80%. This figure is below the standard of the Minister Labour Regulation No. 7 of 1964 as well as a significant correlation between the intensity of illumination and eye fatigue.

Lighting is one of the important factors in space designing (Adi, 2006). The 49.8 lux illumination intensity using was and the highest was 223.3 lux using at the administration of PT Indonesia Power UBP Semarang causes 86.4% of workers feel the results in eye fatigue (Febriana, 2012). Symptoms of Computer Vision Syndrome (headache, dizziness, blurred vision, neck pain, red eye, double vision, difficulty focusing the eyes, even fatigue) felt by workers in the layout editor of CV "X" Tembalang Semarang caused by using light intensity of 50 lux and cause glare when using the intensity of 2853 lux illumination (Hikmatyar, 2012). Eye fatigue due to the use of inadequate illumination intensity is also found in the workplace of karawo craftsmen in Gorontalo district.

The term Toheren is a combination of tohe (torch), karawo and Reni (name of researcher) as a lighting term used in indoor of karawo production. This is an effort to determine the ideal lighting standards in karawo production place in the district of Gorontalo based on measurement of flicker fusion, visual acuity and subjective complaints. This Toheren standards determined by measuring the surface area, the volume of work space, room temperature, lighting intensity, work objects, visibility, contrast and direction of light. Ways to meet the needs described above it is necessary to establish a Toheren lighting ideal standard in order to improve the quality of work and maintain craftsmen eye health. By the problems above, it is necessary to examine what factors influence the illumination of the eye fatigue and how to standardize the Toheren size for karawo craftsman. The hypothesis of this study can be formulated as follows: "There is a standard amount of Toheren illumination and factors affecting the eye fatigue by measuring flicker fusion, visual acuity and subjective complaints for karawo craftsmen in Gorontalo District".

Methods

Research design

This research is observational, ie to assess Toheren Standards for craftsmen karawo in Gorontalo district. The design of this study conducted a cross-sectional, which is conducted through four phases: (1) Observation and study of reference regarding karawo craftsman industrial lighting systems; (2) Research on the respondent. At this stage the results of the observation and study of reference in the first stage used as the draft of the interview guide to determine the

Toheren factor variable for the karawo craftsmen in Gorontalo district; (3) Assessment of respondents eyestrain accuracy rate using flicker fussion gauges, Snellen card, and questionnaires; (4) Determine the Toheren lighting standards for karawo craftsmen in Gorontalo district.

Data collection methods and data sources

Based on the results of the initial observation, the number of karawo craftsmen in Gorontalo district totaled 503 people, then adjusted the criteria for the population to be studied, the population of which was taken by 239 people. To determine the sample size that is deemed eligible using Taro Yamane calculation formula:

$$n = \frac{N}{N\,(d)^2 + 1}$$

n = sample size

N = population size

d = Precision

I = sub-units strata

With a precision of 0.1 and a population (N) = 239, then the use of the above formula is: Based on the above formula the sample size can be considered representative of the population using an accuracy error of 0.10 degrees is 71 people. Sample size obtained in this study are at least 71 karawo craftsmen.

Determination of the number of research samples using a sampling technique in probability sampling technique is the stratified random sampling. Stratified random sampling is a sampling technique that is based on a group of subjects and between one group with the other groups appear to be any strata or levels. Reasons for using stratified random sampling is due to have a not homogeneous member or element of the population. Sampling from each district: (1)District of Telaga Biru = 100/239 x 71 = 29.70 = 30 people; (2)District of Limboto = 120/239 x 71 = 35.64 = 36 people; (3)District of Tibawa = 19/239 x 71 = 5.64 = 5 people.

Result and Discussion

Description of research variables

Research variables consist of predictor variables such as characteristic of a craftsman, materials or work materials, lighting and work space, and the response variable that is eyestrain.

Factors affecting toheren lighting sstandards and measurement standards based flicker fusion measurement, visus, and subjective complaints

The mapping process conducted to analyze the factors that affect the Toheren lighting standards based parameters flicker fusion, visual acuity and subjective complaints. The results of the mapping shows that the age factor and the intensity of illumination is a factor that affects the eye fatigue in all three measurements, namely Flicker fusion, Visus, and Subjective Complaints.

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Factors affecting the eye fatigue on the two measurement are work period, working time, temperature and karawo motif.

Characteristics of respondents by age, work period, working time, visus before work, flicker fusion before work, visibility, education level and use of glasses.

The results of a descriptive analysis of the 71 female artisans of karawo craft small industries shows that the average age is 30 years old craftsman with a lifespan of 20-39 years. Average karawo craftsmen working for 2 hours. The working hours are generally adjusted by the number of orders karawo of consumers, if the number of orders increases, the craftsmen working time will also increase and vice versa. Karawo craftsmen have visual acuity values before working an average of 5/9 with 90% efficiency vision included in the category of near-normal vision. The smallest value of 6/24 visual acuity with visual efficiency of 60%, does not cause serious vision problems and the highest visual acuity 6/6 vision with 100% efficiency or also called normal vision. Measurement of flicker fusion before working on karawo craftsmen obtained the smallest value of 0.61 Hz and 1.11 Hz largest with an average of 0.81 Hz. Based on the results of flicker fusion measurements before working known karawo craftsmen not experience eyestrain.

Karawo craftsmen's eye distance to the object work while working is 15 cm to 35 cm with an average of 26 cm. If the eye has a not equal to 25 cm near point and a not the same far point, it is said to be infinite eye disorders (Grandjean, 1997; Hani, 2010). The distance between the eyes with the object of work is also influenced by the size of the motif and karawo craftsmen's individual vision conditions. Karawo craftsmen's educational level consists of 16.90% elementary school, junior high 33.80%, 46.50% high school and 2.80% S1. Karawo craftsmen who use glasses while working as much as 22% and that does not use glasses as much as 49%.

Characteristics of respondents according to eye fatigue measurement results using flicker fusion measurement, visus and subjective complaints before and after work.

Flicker fusion measurements before and after the work showed a decrease of 0,216 Hz, the test results statistically showed significance level of 0.000 which means karawo craftsman experienced eyestrain after work as 88.73% with flicker fusion measured values below 0.6 Hz (tired) and as much as 11.27% above 0.6 Hz (not tired). Fatigue is supported by the lighting used does not match with the physical conditions and the working environment. Using high lighting have a positive effect on the value of the critical flicker frequency (Hsin-Chen, 2012).

By Snellen ototype category measurement, visual acuity measurement results after working was found as much as 87.33% artisan in almost normal vision category with visual efficiency of about 83%; 11.27% of low vision category, eyesight efficiency was 60%; and 1.41% very low vision category. The results of these measurements indicate that the value of decreased visual acuity after working an average of 0.215 and statistical test results showed karawo craftsmen decreased visual acuity after working with a significant level of 0.000.

Before working, all of karawo craftsmen not cause visible symptoms felt due to fatigue, but after the work is found all over (100%) the average karawo craftsman feel headache, irritation of

the eyes, double vision and pain around the eyes. After working as much as 26% of craftsmen who work less than 2 weeks experienced acute fatigue and 45% of workers who work more than 2 weeks of chronic eyestrain. Contact between the eyes with a small object and the work that is continuously refined lead to karawo craftsmen's eye pain. These complaints will increase if the lighting in the karawo craftsmen's work environment is inadequate. Subjective complaints above have the same symptoms as the result of a study of karawo craftsmen (Reni, 2000), elementary and secondary teachers in Hong Kong (Elaine, 2010) and call center workers in the Bank (Chih-Yong, Yen-Hui, Wei-Hsien, and Yu-Chao, 2010).

Factors affecting toheren lightning standards and measurement standards based flicker fusion.

ARS models indicate that the flicker fusion rate after work is influenced by the age which above 26 years karawo craftsmen; work period over 17 years and using the light intensity above 270 lux, no glare; work time is less than 2 hours at a temperature of less than 300C workspace. The results obtained from modeling is the amount of flicker fusion rate after work.

The results of the model Adaptive Regression Spline (ARS) shows that the best age karawo craftsmen based flicker fusion measurements over 26 years. Work experience is an important factor to skills in working karawo. Best work period based on the flicker fusion measurement of Adaptive Regression models Spiline (ARS) is above 17 years, but must be coupled with the use intensity of 270 lux illumination at the top so that the after working flicker fusion rate increases and karawo craftsmen not experience eyestrain.

Each craftsman karawo which has a work period less than 17 years and worked more than 2 hours in glare working condition will reduce flicker fusion rate after work or karawo craftsmen will feel the eye fatigue after work. Therefore, the ideal conditions of karawo craftsmen working time based flicker fusion is less than 2 hours. The existence of a static posture causes muscle fatigue on fingers when working beside the eye muscles because must always be seen the relatively small workpiece and depends on the karawo motive to be embroidered, this workload will be even worse when karawo craftsmen work more than 2 hours.

The intensity of illumination is very influential on all the factors that cause karawo craftsman eyestrain. In addition, eye fatigue will easily occur with karawo craftsmen age. ARS Model showed an increase in the value of the flicker fusion to work period in over 17 years when using the light intensity above 270 lux. The high level of illumination will cause glare and t visual comfort affec, and can have a negative impact not only in physiology, but also on the side of human psychology. Deficiency or excess of light would make human eyes become tired quickly (Manurutng, 2012).

Best workspace temperature estimated by flicker fusion measurements on the model of Adaptive Regression Spline (ARS), indicate when craftsmen who have work period over 17 years, working with the room temperature below 300C and not having the glare then flicker fusion rate after work will increase by 0.034 Hz. In addition, if the age of karawo craftsmen over 26 years and

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works at room temperature under 310C can increase the flicker fusion rate after working at 0,010 Hz.

Based on the Adaptive Regression Spline (ARS) analysis model, workspace temperature factor used karawo craftsmen, apparently interacting with the age and working period. Excessive heat stress is an additional burden that must be considered and taken into account (Annasyiatul, Kurniawati, Sonya, and Sri, 2008). Therefore, ideal conditions at room temperature is based on the measurement of flicker fusion temperatures is below 300C.

Factors affecting toheren lghtning standards and measurement standards based visus.

ARS models indicate that the value of after working visus affected by karawo craftsmen age under 29 years; working period under 13 years; working time over 1 hour; 6/24 visual acuity before work; light intensity above 350 lux, the color pink karawo; and 2, 3, or 4 thread colors karawo motives. The results of the model are expected obtained to maintain the 6/24 before work visus values at the time after work to karawo artisans not experience eyestrain. ARS model is based on the measurement of visus showed best age karawo craftsmen below 29 years. The results of measurements of visus after working an average of 6/24 on karawo craftsmen under the age of 29 years.

Best approximation estimates obtained of the ARS model showed visus impaired when karawo craftsmen have work period over 13 years. ARS model shows karawo craftsmen who have 6/24 value of visus before work will not cause a decrease in visus after work means karawo craftsmen not experience eye fatigue after work. 6/24 visus included in the category of low vision vison with was 60% efficiency vision and does not cause serious problems in vision.

ARS model is based on the measurement of visus showed that using lighting intensity above 350 lux will not cause eyestrain to karawo craftsmen. Distance between the eyes to objects of work and light intervention from around the object resulting light is not focused on the object to be seen. The quantity and quality of good lighting is determined from the level of reflection of light and lighting in the room rate ratio (Chairul, 2006).

Based on the best approach estimates based ARS modeling found that the value of visus will increase when karawo craftsmen working over 1 hour using pink color will improve the value of visus, but visual acuity will decline when the karawo craftsman work using thread more than 2, 3 or 4 color combinations.

According to LIN, Wen-Yang, Chin-Jung, and Feng-Yi, (2008) using four bright colors (red, blue, green and white) on lighting 20 lux and 340 lux, affect the level of eyestrain which subjects chose to tasks under the blue and white lights than green and red. Color perception caused by a complex interaction between the light source, the object of vision and the brain. When the color follow the changes of light then the perception of color and eye mechanism to adapt to a new point object will make the colors look similar to the light. Colors created by the light is a form of energy that can affect the mind (mood) and emotion (Mahnke, H., and Frank, 1947).

Factors affecting toheren lightning standards and measurement standards based on subjective complaints

ARS Model showed that after work subjective complaints is influenced by karawo craftsmen age which more than 20 years or over 34 years; the education level of primary and secondary; volume of the room is less than 101.7 m3; the size of the field of work less than 0.4 m2; light intensity above 270 lux; room temperature under 32,40C; visibility more than 15 cm with 2 colors of yarn karawo motif.

The results of subjective complaints measurements showed that age above 20 years of craftsmen who work using the working field sizes below 0.4 m2 will increase the value of subjective complaints but does not cause the eyes become tired after karawo craftsmen work, in which the power of eye accommodation at the age of 20 years generally has not experienced a decline in the ability and physiology of eye tissue degeneration has not yet occurred. While the age of craftsmen karawo over 34 years which working have to use the intensity of 270 lux illumination so that it can lower the value of subjective complaints that the eyes are not tired after karawo craftsmen work. Elaine (2010) found the percentage of teacher eye fatigue at the age of 21-30 years, while only 21.1% aged over 31 years was 78.9%.

Based on the classification of the type of work and minimal lighting contained in the Decree of the Minister of Health No. 1405 of 2002 on Industry and Office Occupational Health Environmental Requirements, karawo embroidery included in the category of "Routine Work" with a minimum illumination "300 Lux". While the lighting needs based on activity area according to the United Nations Environtment (UNEP), karawo embroider included in the category of " interior general lighting" with lighting needs "200 Lux to 1500 Lux". Seeing both of these standards can be found illumination intensity in the karawo craftsmen workplace which do not meet the minimum requirement of 300 lux was 90.1%, while qualified above 300 lux is only 9.9%. In fact, approximately 43.66% illumination intensity used under 100 lux illumination was a standard for manual labor or simple visual and not used continuously. Lighting source karawo craftsmen used at work, namely aid of sunlight, depending on the seating position and the karawo craftsmen work space used at work. As a result, the intensity of illumination is used unevenly. The minimum amount of lighting intensity in the karawo workplace by 30 lux and 400 lux maximum with an average of 149.01 lux.

Illumination intensity that appropriate the standard very influential for sustainability of karawo craftsmen production processes at work. Effect of light intensity that below or above for karawo craftsmen complaints can lead to eye fatigue caused by excessive contraction of the eye muscles. ARS model based on the measurement of subjective complaints was found that by increasing 270 lux intensity of illumination has been able to provide good lighting at karawo craftsmen at work so it does not cause eye fatigue for karawo craftsman. I Gede's research (2012) found a significant increase in labor productivity amounted to 12.85% when using 282.69 lux intensity of illumination.

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ARS model results based on measurements of subjective complaints showed temperatures below 31,400C using light intensity above 270 lux will increase the value of subjective complaints but does not cause eye fatigue to karawo craftsmen. According to Ilyas and Sidarta (2006) a person difficult to see at close range when he was 40 years old, in this age, accommodation range at the closest point is 25 cm and if using the maximum accommodation would cause the eyes tired. The distance the eye that too near (30 cm to 50 cm) with a working object can cause visual discomfort so that the eye muscles become tired because work continuously and be forced to see objects in the distance is too close (Hsin-Chieh, 2012). Therefore, based on the best models obtained ARS karawo craftsmen using eye distance of 15 cm to a 2 colors of yarn karawo motif work object and use intensity above 270 lux illumination will improve the value of subjective complaints and karawo craftsmen's eyes will not be tired.

Factors affecting toheren lightning standards and measurement standards based flicker fusion, visus, and subjective complaints.

Based on the results description above may be specified factors that can affect the Toheren lighting standards consists of age craftsmen, working period, working time, intensity of illumination, the level of glare, room temperature, visual acuity before work, karawo colors, karawo motifs, and karawo craftsmen eye visibility to work object.

Toheren lighting standard based flicker fusion measurements, visus and subjective complaints is the use of light intensity above 270 lux. Lighting is a necessity of life that is very important for humans. Visus at the age of 60 years need two to three times of light intensity from the age of 20 years whereas the age of 86 years requires five times the level of illumination. Older age generally require better contrast and greater lighting quality to get the same visual quality as experienced people at a younger age.

Any continuous illumination intensity increase with indefinitely will always be followed by a karawo craftsmen eyestrain decrease, but the intensity of illumination that too high is not too good because it will cause glare so karawo craftsmen will try to see by pupil constricting which will result in stress on the muscle accommodation.

Using 600 and 500 lux light intensity provide maximum satisfaction while working in front of a computer screen and 400, 500 and 300 lux on document examination room (Kiattisak, Promrak, and Kulworawanichpong, 2011). This study shows by raising the intensity of illumination can make workers, still within the normal capacity and the risk of eye fatigue can be avoided.

Eye fatigue experienced by karawo craftsmen expected to be reduced and prevented, as well as factors affecting fatigue must be repaired in accordance with the findings discussed above. Ideal conditions that have been found above is expected to be implemented by all karawo craftsmen which in Gorontalo province. The main hope the contribution of local governments to implement and disseminate benefit ratio and ideal conditions are used at work. Law of the Republic of Indonesia Number 36 Year 2009 on health, occupational health organized so that each worker can work in a healthy manner without endangering himself and the people around him, in order to

obtain optimum work productivity, in line with the labor protection program. Occupational health includes occupational health services, occupational disease prevention, and occupational health requirements. Every workplace shall hold an occupational health.

If the rate of incidence of eyestrain karawo craftsman not prevented, the tired eye condition perceived by karawo craftsman will be fatal and the risk of blindness is higher. While the benefits are produced when applying the above ideal conditions, the health status of the karawo craftsmen will increase and result in increase of good karawo craft productivity.

In effect the working conditions should be created with the best possible way to control all the factors and work environment that may affect the work and efficiency of human or machine (Evi, 2009).

Closing

Based on the results of research and discussion, the Toheren standard found as follows: (1) The age average of karawo craftsmen in Gorontalo district is 30 years old, has a work period of 13 years, the working time of 2 hours, the working distance of the eye to the object 26 cm, the majority education level of middle and high school and by large do not use glasses; (2) All the karawo craftsmen eyestrain at the time before and after work so that visus impaired while flicker fusion values decreased after craftsmen do the work; (3) Factors affecting the toheren lighting standard based on the measurement of flicker fusion were age, work period, working, intensity of illumination, glare, and the temperature of the working space; (4) Factors affecting the toheren lighting standard based on the measurement of visus were age, work period, intensity of illumination, the use of fabric colors, and karawo motifs; (5) Factors affecting toheren lighting standards based on the measurement of subjective complaints were age, education level, the volume of the room, the size of the field work, the intensity of illumination, ambient temperature, distance of the eye to areas of work, and karawo motive; (6) Toheren illumination standard based flicker fusion measurements, visus and subjective complaints were using above 270-300 lux light intensity in order to increase the productivity of karawo craftsmen.

New Findings in this study is a Toheren lighting standard for karawo craftsmen in Gorontalo district which has aged 20 years and above, and the intensity of 270 lux illumination above tend to reduce eye fatigue after work; (1) Toheren standard lighting is expected to serve as a guide for entrepreneurs and karawo craftsmen in Gorontalo province; (2) Karawo craftsman expected to conduct eye health examination at an ophthalmologist periodically; (3) Toheren lighting model expected support from the government in order to improve the results of productivity, welfare, and health for entrepreneurs and karawo craftsmen.

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DESCRIPTION OF EATING BEHAVIOR AND THE OCCURANCE OF DIGESTION DISORDERS OF STREET CHILDREN IN SEMARANG

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Abstract

Introduction: Street children is one of the problems children welfare which still happens in Indonesia. Street children has low and irregular income, resulting both low and irregular consumption. Eating behaviour and hygiene personal of street children which risk to caused disorder of gastrointestinal tract. The purpose of this research analyzed eating behaviour and digestive disorders cases of street children in Semarang.

Methods: This study was descriptive quantitative research with survey methode. Technique sampling used accidental sampling. Samples were 41 street children. Location of this research conducted in Semarang include Tugu Muda area, Johar Market, Simpang Lima, Gayamsari Market, and Tlogosari's Traffic Lights.

Results: The results showed that 73,17% of street children don't eat regularly, 92,68 % have poor hand washing habits, 41,46 % consuming alcohol, and 24,40 % consuming more 3 cups coffee a day. Incidende of digestive system disorders include anorexia 68,29 %, dysphagia 34,15 %, heartburn 39,02 %, nausea 70,73 %, vomiting 58,54 %, epigastric pain 17,07 %, abdominal pain 24,39 %, diarrhea 7073 %, and constipation 41,46 %. Disorders gastrointestinal were caused by diet, lifestyle, infection, and disorder of organs.

Key Words *:* Eating behavior; digestive disorders; street children

Introduction

The problem of children welfare still becomes a major concern of the world. It begins with child labor, child abuse, child exploitation, children in conflict with the law, to street children. One of the children welfare issues that are still many occurred is a matter of street children. Street child is any boy or girl who lived on the streets, doing the activity in the streets, and making a living on the streets with no protection, supervision, and guidance of a responsible adult (International Labor Organization (ILO), 2008 : 15).

Based on the data of United Nation (UN) in 2005 the number of street children in the world reached 150 million. This means that 1 of 60 people who live in the world are street children (Berezina E, 2005: 1). The number of street children increased follows the increasing of the number of population in the world for a period in excess 30% from 5.2 billion in 1989 to 6.8 billion in 2009 (Thomas de BS 2011: 4). Ministry of Social Affairs of RI mentioned the number of the street children in Indonesia in 2010 reached 94 356 children. In 2011, the number increased to 135 983 children, increasing 44.12%. In 2012 the numbers are expected to rise back up to 230,000 children.

According to the data of Central Java Social Service, the number of street children in Central Java in 2010 was 5.311 children, in 2011 the number of street children increased

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by 6.084 children or 0,07% of the total population aged 5-18 years (8.517.295 children). In 2012, the number increased by 5,030 children or 0.06% of the population aged 5-18 years (8,474,854 children). It shows that there is a decline of the number of the street children from 2011 to 2012 of 0.01%. In 2013, the number of street children in Central Java recorded 5,030, there were no increasing or decreasing from 2012. Semarang which is the capital city of Central Java province cannot be separated from the problem of street children. The recapitulation data obtained in Social Welfare Department of Central Java government is that the street children of Semarang in 2010 were 806 children. By the year 2011, 2012, and 2013, the number of street children becomes 216 street children in detail 158 male and 58 female children.

Street children have a low and irregular income, so that it has consequences to the lower and also irregular food consumption (Kultum. J, 2010). The style of consumption and risky hygienic behavior such as stale food consumption, unclean food consumption, the habit of eating in outdoors or on the road, as well as the habit of washing hands before eating causing the health problems for street children. The data description of the habit consumption and hygienic behavior of 33 street children in three shelters in Yogyakarta showed 18% of street children eat spoiled food every day, 6% eat unhygienic food, 9% do not have the habit of washing hands before eating, 76% often eat on the side of the road, and 18% never eat at road side (Tommy. S.A., 2012). This behavior causes disorders in many organs and body systems including the digestive system of the child.

Disorders of the digestive system are the most health problems experienced by street children. According to data from the Child Protection Agency (LPA) in West Java in 2004 mentioned that the health problems / diseases are the most common for street children is diarrhea that is equal to 34.72% of the number of street children studied (Prista SS, 2007: 2). In Central Java, particularly in the Semarang city has been no research on the occurrence of digestive system disorders in street children. Digestive or gastrointestinal system disorders include a large number of diseases that causes patients looking for medical attention and the main causal of hospitalization cases. Although the gastrointestinal disorders indirectly cause a death as well as cardiovascular disorders, but it is one of the five major causal of the death.

There are so many efforts of the government that have been made to solve the problem of street children. In line with MDG's in 2015, the central government targeted decreasing the number of street children in Indonesia at least half of the amount in present. Some of these efforts include conducting the raids of street children, the provision of job skills, to the provision of capital assistance for street children and the

parents of street children. However, until now the issue of street children has not been resolved yet. It can be seen by the increasing number of street children every year. This study is aimed to find out the eating behavior and the occurrence of digestion disorders in street children in Semarang

Methods

Type of the research was a descriptive study. Descriptive research is a research method conducted with the main objective to create a picture or description of a situation objectively (Notoatmodjo S, 2005: 138). The type of the method used was a survey method. The sample of the study was chosen by using accidental sampling. Accidental sampling is done by taking a case or respondent accidentally available (Notoatmodjo S., 2002: 89). The population was 216 street children in Semarang in five areas, they are Tugu Muda area, Johar market, Simpang Lima, Gayamsari Market, and in the traffic light of Tlogosari. The number of samples is 41 street children.

The data were collected by using interviews, observations, and documentation, and interview sheet as instrument (questionnaires). The data analysis technique used was the univariate analysis. Univariate analysis is the analysis that is used toward each variable on the results of the study which includes the distribution, frequency, and percentage of each research variable (Notoatmodjo, S, 2002: 188).

Results and Discussion

The characteristic of street children

The results of the research of 41 street children in Semarang based on the age levels showed that most of respondents were aged 14 years, as many as 8 respondents (19.51%), then in the age of 11 years there are 5 respondents, and at least in the age of 7 years as many as 1 respondent (2.44%).

The age of street children can be affected to the eating style. Aged 14-19 years which is adolescent group is the group who are in the puberty. It makes them having uncertain behavior. It can also make them more picky in eating or eating irregularly. Aged 10-13 years who is in the children group who has regular eating habits because this group is still under parental supervision, in addition they are more frequent in eating snack while working.

Besides had an effect on eating behavior, the age can be also affected to the hygiene behavior of street children. Another study carried out by Prista, S Sheizi, (2007) about the relationship of age and personal hygiene behavior of street children in shelters

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of YMS Bandung mentioned that there was a significance behavior between the street children of school age and the street children of adolescence. It is in line with L.Green theory which states that the age factor will affect someone's behavior. School-age children usually have a high dependence on the environment. They still need a lot of attention to be able to fit the existing norms. But if their educational status is low, of course, the child will be influenced by the environment, and did as the greatest effect that they feel.

The results of the research showed that most of street children are male, as many as 34 respondents (82.93%) and female street children, as many as 7 respondents (17.07%). The dominance of these boys is caused that the boys have a more rebellious nature, easily affected by the environment and relatively indifferent, so that it is easy to be influenced by his friends to live and work on the streets. Most of female street children who are still actively working on the streets are under the age of 15 years. This is because the female street children in the aged of 16-18 years who have been no longer in the streets because of embarrassment that prefer to work in a factory (Suhartini T, 2008: 11). The results of this study supports to the results of the study in Semarang which states that 74.51% of male street children in Semarang and 25.49% of female street children (LPPM USM, 2008: 42).

Related to the sex, men need more energy than women so when they do any activity more energy released. It is a little bit more influence on boys' food consumption style. However, boys tend to not be able to manage a regular eating style so that it could have an impact on their health, especially the health of the digestive system.

Last education of street children, namely, elementary school (SD) are 23 respondents (56.9%), junior high school (SMP) are 6 respondents (11.76%), those who do not study at school as many as 12 respondents (29.27%), and there is no respondents from high school education. From the 23 street children of primary school education, there are two respondents who are still active at school, while from 6 children of junior education, 1 child completed education up to graduation and the rest do not.

The last education of street children are, elementary school as many as 23 respondent (56,9%), Junior High School as many as 6 respondent (11,76%), uneducated as many as 12 respondent (29,27%), and there is no respondent that the last education is in Senior high school. Of the 23 street children who attend elementary school, there are 2 respondents who are still active in the school, while 6 children attend the Junior High School, a child completed the education up to graduation and the rest do not.

The low level of education of street children is caused by economic background, in which most of the street children come from poor families that cannot afford the school

fees. It is also expressed by the respondents who claimed not to continue / out of school because of the lack of the cost. In addition, unwillingness factor in learning from the street children themselves also cause them decided to quite from school and prefer to work on the road, such as the recognition of one of the respondents who said that he decided to quit from the school because they are not capable of learning, but parents can afford to pay him in the school. It is not much different from the research conducted by Rosdalina (2007: 99) which states that the street children who are generally the most poorly educated are most of them dropping outs of the school than graduated from elementary school. In Semarang, the educational level of the population is at most in elementary school (328 144 inhabitants), graduated from high school (302 856 inhabitants), and graduated from junior high (291 066 inhabitants).

Someone's education level will help the person to more easily grasp and understand a new knowledge or information. A person who has lower education may make him slow in adopting a new knowledge and applying it in daily behavior. Low levels of education lead the street children not to have the knowledge and skills to get a better job unless working on the road (Rosdalina, 2007: 99). In addition, the low level of education of street children will have much effect on the understanding and awareness of street children toward negative behaviors that they should avoid, such as irregular eating style, poor hygiene sanitation, alcohol consumption, as well as other behaviors that could lead to digestion system disorders.

Street children work as street singers (53.65%), and others (46.35%) include: beggar (21.95%), the mass media seller (12.20%), parking (4.88%), scavengers (4.88%), and street vendors (2.44%). Singing in the street is the most be done because it is faster to make money in easier way and simple capital in which the street children just need to sing with the help of a simple instrument such as kentrung / small guitar. There is no special skill needed, the capital and energy to earn money, such as parking, newspaper vendors, scavengers, and others. The results of the study in Makasar also showed a similar case, where the most work done by street children is street singer (44.8%) and business services (25.3%) (Isbach, et al., 2013: 3).

Street children who mostly work as street singers have an average income of Rp 23800.00 / day. At least, the income is USD 4000.00 / day and the maximum income is Rp 70.000,00 / day. The average income is mostly between Rp 11000.00 to 20000.00. This is consistent with the research by Rosdalina (2007: 72) which states that the daily income of street children is in Rp15000.00 to 20000.00.

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In the study, street children are classified into having a low income. By using their low income, street children spend their money for their daily needs such as foods, buy snacks, cigarettes / drink, given to parents, and saved. Street children spend the money earned from their work to eat, but because of their low income, so they do not measure the content and benefits of the food itself. They had to eat only to satisfy the appetite and eliminate their hunger, they do not pay attention to the type of food, regularity of eating, and food hygiene. The results of the study Purwanto (2010: 24) stated that street children use their own income to spend their secondary needs, such as snacks, drinks, and cigarettes. According to Purwanto, street children become more consumptive because they are accustomed to work and earn their own money. However, based on the results of this study, although street children spend the money earned for their own needs, but most of them still give the money earned to their parents / families and saved.

Street children have the varied amount of income per day. The average of the income per day is Rp 23.800.00. At least, the income is Rp4.000.00 / day and the maximum number is Rp 70.000,00 / day.

Street children have very low and irregular income, so it have consequences to the lower eating consumption and irregularly (Kulstum. J, 2010). In the study, street children classified as having a low income. With such a low income, street children spend their money for daily needs such as food, buy snacks, cigarettes / drink, given to parents, and saved. Street children spend the money earned from their work to eat, but because of their low income, so they do not measure the content and benefits of the food itself. They had to eat only to satisfy the appetite and eliminate their hunger, they do not pay attention to the type of food, regularity of eating, and food hygiene. The results of the study Purwanto (2010: 24) who stated that street children use their own income to spending their secondary needs, such as snacks, drinks, and cigarettes. According to Purwanto, street children become more consumptive because they are accustomed to work and earn their own money. However, based on the results of this study, although street children spend the money earned for their own needs, but most of them still give the money earned to their parents / families and saved.

Eating behavior of street children

Table 1: Eating behavior of street children

Eating Behavior	Frequency	Percentage (%)
Eating Regularity		
Regular (score 18-24)	11	26,83
Irregular (score 6-17)	30	73,17
Food Hygiene		
Cooking		
Buying	13	31,71
Cooking + Buying	21	51,22
Rest	2	4,88
	5	12,19
Hand Washing Habits		
Good (washing hands with soap and water before eating, before handling food, after defecation, after work or play)	3	7,32
Bad	38	92,68
Alcohol Consumption		
Yes	17	41,46
No	24	58,54
Coffee Consumption		
Heavy coffee drinkers (>3 cup/day)	10	24,40
Light coffee drinkers (≤ 3 cup/day)	18	43,90
Not coffee drinkers	13	31,70

Table 1 show that the distribution of street children in Semarang City who have irregular eating is higher than street children who have regular eating, it is shown by 30 respondents (73,17%). They get food from buying (51,22%). Their practice of hand washing is bad (92,68%). Around 17 respondents (41,46%) of street children consuming alcohol. Then, 28 respondents (68,29%) of street children who are already researched had a habit of drinking coffee.

In general, the factor of the irregular eating comes from multi factor. One of the frequent factors that caused irregular eating is the change of street children' eating habit which following the working hours. The uncertain working hours of street children, and also the nomadic working place will make the street children to avoid the eating regularity. Except of working hours, the change of eating habit also influenced by economic factor or income which is got by working at the street.

Irregular eating will trigger the cause of many diseases because of the imbalance body. This irregularity is related to eating time. Usually, he/she is in the condition which he/she really starving but rarely feeling full. Thus, the stomach and the digestion system be disrupted (Hidayah, 2012). It is same with the research conducted by Fitri, *et al* (2013) which showed that having irregular eating will influence gastritis disease.

According to the result of that study, it shows that the food which gets from buying is less of cleanliness because the place and its surrounding also less of cleanliness. Most of the food sellers tend to gain benefit rather than the use and or food safety. The food sellers often use textile dyes, excessive flavoring, unhealthy cooking oil/cooking oil used, chemical additives, artificial

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sweeteners which are generally potential in producing health problem in the future if we consume continuously for a long time. In the other hand, food buying which is unhygienic will be risked by wastewater and dirt from the dirty hands, but not all of the food which is sold by food seller is lack of cleanliness. Differ from cooking, the food cleanliness is well guaranteed. As stated by Sus Widayani, *et al* (1998) in the research of eating habit in family fishing in Pantura, Central Java show that the cleanliness of elementary school children' eating habit is generally low. This term is caused by consuming food from buying which is unhygienic.

Hands washing with soap for most of the society now become daily activity, but for the other society, this activity does not yet become routine activity especially for the children. Hands washing could clean up the virus and bacteria which become the causes of disease, such as a disease that attack the digestive tract; diarrhea. Washing hands is the effective way to defend the spread of diarrhea. Soap is a cleaner and disinfectant which could be used to kill the pathogen bacteria in our hands and tools.

Small alcohol consumption will trigger the production of gastric acid, decrease the appetite, and nauseous. Those are the symptoms of digestion disorder. Furthermore, consuming alcohol in large portion will ruin the gastric mucosa.

The results of this study find that there is digestion disorder towards the street children who consuming coffee. From 28 street children, there are 10 children who consuming coffee a lot, and 18 children who consuming coffee rarely. In the case of the street children who consuming coffee a lot, there are 8 children who have nausea. And 13 children who rarely consuming alcohol, they have nausea. As stated before, caffeine could make gastric acid quickly, and make puffy stomach. And if we consume coffee excessively, it could make nausea in our stomach

Digestion disorder

There are many complaints which are submitted by a person who has digestion disorder. The digestion disorder could be caused by eating habit, living habit, infection, and or internal organs disturbance. The health disturbance and digestion disorder are heterogeneous, but they usually have the same symptom then directly refer to one disease. In the other hand, the symptoms in stomach are not always connected with the digestion disorder. To determine the health disturbance caused by digestion disorder which is endured by a person, we have to do anamnesis. Anamnesis is started by the main symptom; the symptom which is endured by a person. Digestion disorder clinical symptom could be varying such as diarrhea, nauseous, vomiting, anorexia, epigastria pain, etc. Diarrhea is the most digestion disorder which is endured by the street children. Based on the result of the study, the street children who have diarrhea are 29 respondents (70,73%). Diarrhea is one of diseases which have tight relation with eating habit. Most of the street children have bad eating habit which consists of less hygiene food, and bad hands washing habit. This term will make the diarrhea bacteria contamination and cause diarrhea towards the street children.

Furthermore, nauseous is also one of the digestion disorder complaints that are endured by the street children. Based on the result of the study, 29 respondents (70,73%) of the street children have nauseous. Nauseous and vomiting are the basic symptom; they are not specific disease. Nauseous is a feeling to throw up, and vomiting is the action of throw up. This term is caused by the street children' irregularity eating habit, drinking coffee, and also consuming alcohol which can increase gastric acid, then it will produce nausea in the street children' digestive tract.

Moreover, anorexia is one of the symptom which the patient has severe eating disorder. According to the result of the research towards the street children, there are 28 (68,29%) of the street children who have anorexia within 30 days lately. In the other hand, there are 31,71% of street children do not have any anorexia in 30 days. Decreasing appetite is caused by consuming alcohol. Consuming alcohol in little portion will trigger the production of gastric acid and decrease the appetite, and also cause nauseous.

Dysphagia is a symptom caused by esofogus abnormality; the difficulties in swallowing food or water. The result of this study show that 14 respondents (34,15%) have dysphagia, and for the rest do not have dysphagia within 30 days.

Then, Heartburn is one of digestion disorder which the patients feel burnt in their chest. There are 16 of the street children who have heartburn in 30 days lately.

Nausea is feeling of queasy which usually caused by stimulus. In the other hand, vomiting is the condition which the patient throwing up their food through mouth. From 41 respondents, there are 29 respondents who have nausea and 24 respondents have vomiting.

Epigastric pain is feeling of soreness in epigastrum (pain in upper abdomen). Based on the result, it is found that 17,07% respondents have epigastric pain in the last 30 days and 82,93% do not have epigastric pain. In addition, there are only 10 respondents (24,39%) who have stomach pain only.

Constipation is a symptom of difficult in defecation. Hence, they cannot do defecation freely and regularly. In the normal situation, we clear out our colon every 24 hours periodically. We can call it constipation if we cannot do defecation for two days or more. According to the research result, there are 17 respondents who admit that they have constipation in the last 30 days.

Closing

According to the result of this study above, it can be found that 73,17% of the street children in Semarang City have irregular eating habit, amount 51,22% of the street children get food from buying. Their hand washing habit is bad (92,68%), amount 58,54% of the street children do not consume alcohol, most of them (68,28%) are coffee drinkers with the light category ≤ 3 cups per day. Then, the most digestion disorder that they have is nauseous, and for diarrhea is 29 respondents (70,73%).

I hope for the street children foundation in Semarang City could make better approach and try to arrange endeavors to overcome the digestion disorder for the street children. For example,

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by giving them the understanding about how to wash hands clearly and correctly. We also have to give them the meaning of eating regularly, and the dangerous of consuming alcohol. Beside that, the street children can be guided to eat together in shelter every time to take care of their eating regularity and also their food hygiene.

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THE LEADERSHIP OF A SPORTS COACH

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Abstract

Coach is a professional in his field, in this case sports achievements. Coach is a professional coach who is carrying out his duties which has three essential elements that must be owned. Among others are experts in their fields, duties and responsibilities towards his institution or in official main organization. The coach has the task to help enhancing the existing potential in athletes to be more optimal and hoping to become champion. To be able to carry out these tasks, a coach must has leadership qualities in leading a training process.

The leadership of a coach is absolutely necessary in a team or an ongoing training camp. It is important because the training process will not run well and is able to reach the target without sufficient leadership of a coach. A coach must be able to position themselves as a leader who can act in accordance with the training requirements. Leadership style of a coach must be adapted to the current conditions and situation of the field; a coach cannot just use one style of leadership to lead the team, or a process of main training.

Running coaching process does take a lot of time, a coach must be able to lead and act according to the urgent situation. Therefore, there is no absolute required domination that the democratic style of leadership, authoritarian or casual must be used. However, a coach must know when an authoritarian role must be used, when to cooperate and when to be casual, so the emphasis and exercise goals will be achieved.

Key Words: Coach, leadership

Introduction

Today, sport is an activity that is quite a favorite in the community. Public awareness toward the importance of exercise is high enough, it is proved by the many people engaging in sports activities, both in the field and in the clubs official. The purpose of society in exercising are diverse, starting from simply for recreation, health, therapy, body building until more serious one for achievement.

The way society exercise varies according to their personal desire. Some of them think that doing sports is merely moving your body, but many people also do exercise with the help of an instructor. Sports that use an instructor or a coach is often referred as exercise. Exercise is also offering variety of objectives, from one who just want to be able to get achievement or who want to get more benefit from exercise. According to (Rainer, 2004), physical exercise is a special workout routines or steps performed by athletes for the purpose of improving performance.

Exercise is important to improve the ability of the athlete to achieve the highest performance, (Bompa, 1999: 54). According to (Pate, 1993) training is a systematic role while the final goal in training is to improve the performance of athletes. However, others argue that the practice is a systematic process which is done repeatedly day by day increased the number of training load (http. Maafjiwaku). The term exercise comes from English language that can contain multiple

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meanings such as: practice, exercise, and training. However, if those three words are translated into Indonesian, they have different meanings.

Discussion

The process of an exercise could not happen immediately, it needs the intervention from a good and serious coach. The success of an athlete to get the title cannot be separated from the coach's leadership in managing the training process. A coach must have a lot of ways to be able to increase the ability of the athlete and ultimately make him a success in the game. The role of the coach's leadership has a sizeable percentage in terms of training process, even in putting the athletes play in the field. Because of that fact, the leadership of a coach is very importantso that the training process always runs well and as expected.

Coach Leadership Style

A coach's leadership style is different, and the characters are usually carried while doing the task in training the athletes. A coach must have the ability to lead the exercise bothin team and individual sports. In addition, the leadership style of a coach on the field needs to be adjusted to its conditions. The process of training in the field will be colored with some leadership styles of a coach, and is usually divided into three types of leadership styles, such as authoritarian, democratic and casual.

Authoritarian

An authoritarian style of leadership that is often encountered in the field focuses on the achievement or the final result. Authoritarian leadership style is usually found in martial sports where coach always has absolute power on the members. It happens because in martial arts, especially taekwondo, the belt levels will determine seniority.

Coach who embracing authoritarian leadership usually has the following characteristics: 1) the communication that occurs is always forcing or commanding, 2) the main target is the victory, 3) the process is not the main concerned, the important one is end result, 4) difficult when he is given some input or suggestion, 5) everything is centered on the coach. The characteristics of this kind of leadership are not always bad, but there are times when this style is needed in the training process. Authoritarian leadership qualities are necessary in the process of training, especially when applied to martial arts, though not all exercise process should be with authoritarian style.

Democratic

Democratic is a word that in glimpse is very soothing when it heard. Democratic leadership is often becomes the main reference that a coach should be like that. Democratic leadership emphasizes on the harmonious relationship between members within the scope of training in one sport branch. Democratic coaches' attitudes and behavior can make the environment situation more harmonious because of the good communication both between its members, coaches, athletes and managers.

Democratic leadership in sport is believed to be the most preferred style to be applied in Indonesia because it has the following characteristics: 1) the communication is more on the compromise style, 2) athletes as the center of the training process, 3) the process of training is more important than the results, 4) the victory is a collaboration of athletes and coaches, 5) coaching is flexible. The very perfect characteristics of leadership when viewed at a glance mean not so like that for me as a whole idea. This is caused by many factors affecting it in the real field. Therefore, this democratic leadership style cannot be perfectly applied as a whole in the coaching.

Casual

Causal leadership style is a style without pressure. This means that there are a lot of minus at this system if it is applied purely during the training, especially if the goal is the preparation of a championship event. The leadership of the casual coach which is quite relaxed, never has a target, pressure, even the intended target is not clear. The characteristics of the coach who embraces the casual style leadership include: 1) the communication is always just listen to, 2) unclear objectives, 3) the decision is on the athlete, 4) no structured exercise.

In reality, this style is very pity, but it is worth remembering that in the coaching process, we need to see to whom this exercise, when exercise carried out and what training objectives are. Looking into these three things, it is not impossible that this leadership style can be the right choice to be applied, for example, if the fitness exercises for the elderly, of course, that the exercise would be very careful. If applied to the athlete with the achievement targets, it may work, especially during the transition period, or the competition, although not as a whole but in certain parts, such as the athlete's decision when determining when competing in the field.

The Leadership of a Coach

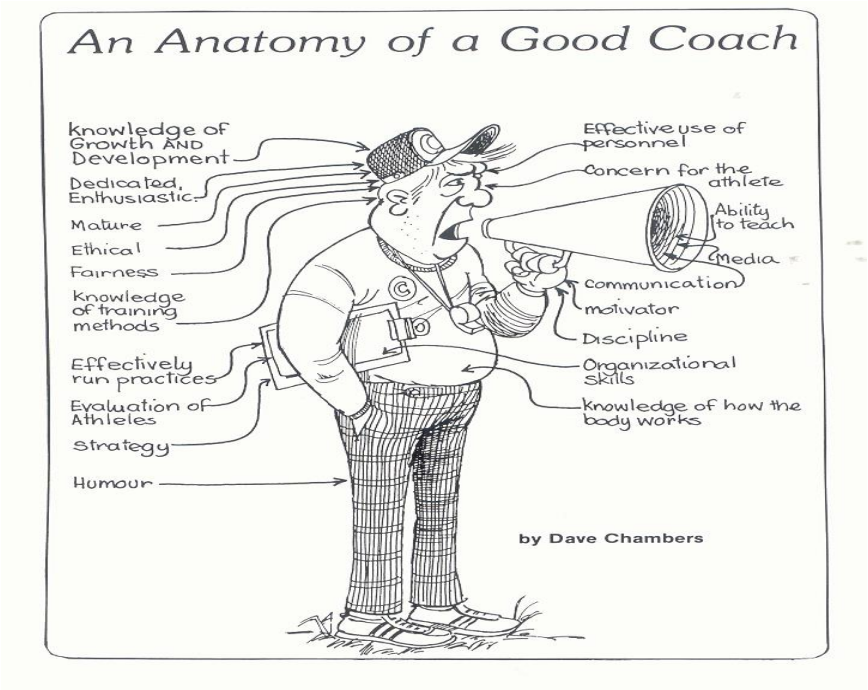

Figure 1. An anatomy of a good coach

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The Leadership is a coach means the coach's leadership when dealing with athletes who facing certain events, both team and individual sports. Coaches who are dealing with a process of training prior to certain events need a strong attitude and careful planning, in order to obtain optimal results. Good preparation other than understanding the above illustration is on how to manageboth good practice material, athlete, training schedules and exercise programs. Conducive or not of a process is determined by the expertise of a coach in managing them, meaning whether the exercise will be run in accordance with the training plan or not.

Sports coaching achievement often ignore things that seem important, such as the emphasis of the coach on certain aspects ofthe athletes, such as giving punishment, or even setting a aside something of a compromise with the athletes. Little things that seem not important in the coaching process actually sometimes be a determinant of whether or not a good exercise process is running. A great training will be happned if exercise is understood and followed by high awareness of the athletes, other than that it is better if the coach can play a role both technically and psychologically. This means that a coach should be able to be a leader who can put himself well in position, when to not compromise, can compromise or what it is.

One way in order to the collective achievementwhich can be improved is through the coaching process which refers to the coaches' belief that they have the ability to contribute to the training and the performance of members (Feltz et al., 1999 in Mark r. Beauchamp and Mark A. Eys; 2007). Looking atFeltzeta'sl opinion, a good coach should have high confidence and ability to contribute to the training process, especially in leading the ongoing process.

Good coach is if he is someone who can be flexible portraying himself into a different figure in every situation and period that they have been. The attitude of authoritarian leadership of a coach must be there and must be applied in the training process, especially if the physical exercise or important exercise that is to be done by the athlete. It is important for coaches to implement this authoritarian leadership style, for example, when physical exercise that emphasizes endurance, athletes are usually lazy or even having reason to reject the practice, well at this time, an absolute authoritarian leadership is really needed by a coach. In such conditions the cooperative and casual leadership is inappropriately used.

Cooperative leadership will be very good to use for a coach when planning an exercise program, corrective exercise techniques, tactics and strategies, certain physical and mental, although one in a time, the authoritarian leadership style should also be applied. The cooperative leadership style is suitable for the practice, because of the cooperative nature which can be compromise to train it. For example rectification technique, a coach must communicate with athletes, why can such a technique, the athletes, by knowing the reason of the athlete then the coach can analyze and give the therapy exercise for the right one . Not only that, the program training session that day could change with the communication between coaches and athletes, for example, if the athletes today are ill or exhausted to travel long distances, it can change the practice session in order to remain useful.

Casual leadership of a coach is in fact has just a little portion applied in practice, because it is not having clear goals, no emphasis, and tend not to have clear goals. Nevertheless, in the process of training, there is a part named period which called as transition time. At this time, an athlete is currently having some rest after joining a championship. In transition period, the coach cannot give any pressure to the athlete. The willingness of the athlete must be heard even though he still need to have certain limitation so that the athlete is not being as what he want or even harm the coach.

Conclusion

Leadership of a coach determinesthe success or failure of a team or athlete who is facing a championship. The coach will be the one who guard the athlete from the prior championship until the event takes place.Therefore knowledge, leadership and leadership are very important. The leadership of the coach can bring a team into success both on the process until the game, if the coach is able to playhis role to when acting as authoritarian, being cooperative and of course, being casual. If the coach has been able to play these expected role, we hope that the optimal achievement can be achieved.

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POSTER PRESENTATIONS

KNOWLEDGE LEVEL STUDENTS OF PJKR 2011 FIK UNY FORCE ON CONCEPTS AND TEACHING MATERIALS COURSE TARGET GAMES TGfU

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Abstract

Introduction: This study aims to provide of student knowledge Prodi PJKR FIK UNY class of 2011 to the concepts and teaching materials TGfU target games. Approach tactics as new innovations that enrich a variety of approaches to learning the game and sport that has been helpful as well as for teachers and prospective teachers in developing a learning model PE in school.

Methods: This research is descriptive quantitative. The method used in this study is a survey method. The population in this study were all students Prodi PJKR FIK UNY class of 2011, the determination of the sample taken by proportional random sampling totaled 102 students. Data collection techniques in this study using a test of knowledge about the target concept in TGfU games. The form of the test used is included tests true-foul. Data collected from the study corrected then counted the number correctly. Furthermore, these results were statistically analyzed quantitative descriptive return to determine the amount or frequency and persentage.

Results: The results showed that the knowledge students Prodi PJKR FIK UNY class of 2011 on the concept and the target game TGfU teaching materials, are in both categories with a number of 86 children, and then in the follow category is not well with the number of 11 children, and the very good category with the number 5 children . From these results the majority of students Prodi PJKR 84.3% FIK UNY Force in 2011 had a good level of knowledge.

Key Words: Knowledge, target games, TgfU

Introduction

Approach to learning tactics is a learning approach that emphasizes learning skills and tactics play in the play situation. Concept-based learning tactics Teaching Games for Understanding (TGfU) also emphasizes the involvement of the student. Students are able to develop not only the majority of psychomotor but also the affective and cognitive well developed. Approach tactics as new innovations that enrich a variety of approaches to learning the game and sport that has been helpful as well as for teachers and prospective teachers in developing a learning model PE in school. Tactic approach as a new learning model, conceived as a learning model that is currently widely physical education experts to enhance the skills of students who play often known as the TGfU approach.

TGfU is an approach to student learning that fosters awareness of tactics and skill learning. This learning approach requires students to understand the tactics and strategy of playing the sport first before learning about the techniques used. The concept of learning TGfU also put more pressure on the student activity. Students not only develop psychomotor but also the affective and

cognitive well developed. Target games need to be packaged in the form of a game. The game can be interpreted with two senses. First, the game is a pure play activities that seek pleasure without looking to win or lose. Secondly, the game play is defined as an activity that is performed in order to find pleasure and satisfaction, but characterized the search win-lose. The game is if the business itself (though the mind and physical exercise) is very useful for the improvement and development of motivation, performance, and achievements in carrying out the duties and interests of the organization better.

The game as an activity that helps children achieve full development, physical, intellectual, social, moral, and emotional. However, the problems that arise in the course of learning the target games are still many students PJKR FIK UNY still wrong to interpret the concept of the target games. For example, there are some students who take any kind of game that no target is included in the target form games. Diverse knowledge of students can be understood as a form of knowledge that is not the same among students, even when lectures get the same material. Student knowledge about the target that is not the same game that is the problem in this research. It can be seen from the experience of the researcher in the course of teaching the target games, when asked the target concept problem games are still many students who are in the interpret it wrong. From the above, the researcher needs to be looked at on a study of student knowledge PJKR FIK UNY class of 2011 to the concepts and teaching materials in the target game TGfU.

Knowledge

According Jujun Suriasumantri (1993: 104), "Knowledge is essentially all of what we know about a objects belong to it is a science". In simple terms the overall knowledge is basically information and ideas contained in statements made about something symptoms or events that are scientific, social or individual (The Liang Gie, 1987: 66). Knowledge is the result of a human knows, that just answering the question "what", what is natural, what is human, and so on (Notoatmodjo, 2005). Knowledge is the result of human sensing or know someone on the results of the object through its senses (eyes, nose, ears and so on). By itself the sensing time to generate such knowledge is strongly influenced by the intensity of attention and perception of the object (Notoatmodjo, 2005). According to the Ministry of Education in Indonesian Dictionary (2002: 1121) is the knowledge of everything that is known. Knowledge is also interpreted everything that is known with respect to (the subjects). Acquisition of knowledge is very important, because knowledge is what makes a person would be assessed and valued intellectual. Soerjono Soekanto (2009: 6) argues that knowledge is the impression in the minds of men as a result of the use of the five senses, which is quite different from the beliefs, superstitions, and enlightened false (misinformations).

Nature of physical education

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Nixon and Jawett in Arma Abdoellah (1994: 5) mentions "physical education is one aspect of the overall educational process with respect to the development and use of motor skills of individuals who volunteer and are useful as well as directly related to the response of mental, emotional, and social". Based on the above statement, then the overall physical education affects not only the physical aspects, but the physical education a person is able to develop the overall personality. From the above opinion could be interpreted if one will achieve what is expected departure from the intention of the man himself, due to a change in his life came from learning to develop all their potential. Rusli Lutan (2001: 1) physical education is a process of education through physical activities to achieve educational goals. Moreover, in another opinion by Suherman Adang (2000: 22) notion of physical education in the traditional view considers the Man consists of two main components that can be sorted out, the physical and spiritual (dichotomy). Therefore, physical education is defined as a process of education for harmony between body growth and later development of the soul. The modern view considers humans as one unified whole (holistic). Therefore, physical education is a process of education through physical activity and education as well as a process for improving physical ability. Learning in physical education must be able to arouse the child's interest to explore its potential in terms of motion, so that the child should be encouraged to constantly explore his capabilities. Physical education lessons is one of the places to improve children's understanding of the basic concepts of movement skills. The ability of this understanding will be useful very useful for students and also a lot of learning in the sport when they become adults. In fact, this ability can be transferred to other fields understand and can also be passed on to younger siblings later.

Characteristics of Students PJKR

Faculty of Sport Sciences has three courses. sport education program (POR), sport coaching education (PKL) and health education and recreation (PKR). While four courses (Prodi) covers health department of physical education and recreation (PJKR), elementary school physical education teacher (PGSD penjas), sports coaching education study program (PKO) and the department of sport science (IKORA). Prodi PJKR and PGSD penjas into the physical education majors (POR). From the fourth Prodi all have undergraduate level (S1). Of course the three of them are educational programs (PJKR, PGSD penjas and PKO) and onenon-educational programs (IKORA). Student of health physical education and recreation (Prodi PJKR) class of 2011 are students who use the curriculum 2009 Where curriculum has been developed with the characteristics of Common Ground. Common ground program provides the opportunity for graduates to obtain a double degree. Students must complete 144 semester credit system (SKS) in order to obtain a bachelor degree (S1) by taking two routes, namely through the final project thesis (TAS) and a final project instead of a thesis (TABS). To complete the 144 credits must be taken through the process of learning. Matakuliah- learning with subjects that have been compiled into categories of activity theory (T) of 58.33% - 63.89%, practice (P) of 30.56% - 36.81%, and the

pitch (L) 4.17 % - 6, 94%. The subjects are grouped according to their nature, which is required to pass, as the prerequisite courses required to pass another, and choice. Determination of the type of activity and the nature of the course is tailored to the characteristics of each study program.

Concepts and teaching materials

Woodruff (in Amin, 1987) explains the concept definition into 3 namely:

The concept can be defined as an idea/ideas are relatively perfect and meaningful, The concept is understanding of an object,

The concept is subjective product derived from how a person makes sense of the objects or the objects through experience (after doing the perception of the object/objects). The concept is usually used to describe the empirical world observed by researchers, both in the form of objects or a particular social phenomenon which is abstract. Teaching materials consist of two words that matter and teaching. According to the Ministry of Education in Indonesian Dictionary (2002) defined the material objects; materials; everything looks. While defined by the instructions given to the so known (be followed). Based on the meaning of the word, teaching materials defined by something that looks as instructions given to students in the form of material that will be accepted by learners. On the other hand, the definition of teaching materials is almost the same as the definition of learning materials. In the Learning Materials Development Guide (MONE, 2008) explained that the learning materials are the knowledge, skills, and attitudes that students must master in order to meet the standards of competence specified.

Learning Teaching Games for Understanding (TGfU) Learning Teaching Games for Understanding (TGfU) can not be separated from the concept of Tactical Games Approach in which both play in the application of the approach to learning. In teaching the game, teachers need to linking tactics and techniques that emphasize skill game timing precision engineering practice and application in the context of game tactics. In the case of the teacher is necessary for connecting the tactics of how the concept is applied to the supported technique to play sports games. In addition, teacher materials design games using tactical issues, so that the teacher can teach the game in accordance with the child's development. Play approach to introduce tactics and techniques that are indispensable to the current physical education teacher. Teaching Games for Understanding (TGfU) emphasizes tactics in achieving the objectives of physical education. Where the approach through playing aspects, all students are exposed to the problem to solve the problem with the tactical ability of a student. The concept of learning Teaching Games for Understanding (TGfU) emphasizes the involvement of the student in the learning process of physical education.

A similar opinion was expressed by Metzler mention Teaching Games for Understanding (TGfU) is a learning model that focuses on the development of students in the ability to play the

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game. A statement that can be drawn in the concept of learning Teaching Games for Understanding (TGfU) is flexibility where students are taught according to ability in the development of the game play. That effort because if the student has not mastered the game but forced to play, then the consequences arising is insecurity. Disbelief that the students will be move, and the ultimate goal of teaching physical education will not be achieved. In the model the concept of Teaching Games for Understanding (TGfU) assume that the sport and the game will be fun, educational, and challenging and can improve the health and self-satisfaction. Materials are broken down into tactical issues not technical but does not remove the element of technique, so that students can solve problems that are designed in such a way and students can move to solve the problem. Teaching games for understanding is a learning model that focuses on developing students' ability to play the game to improve performance in physical activities. TGfU involves four categories and sub-categories are invasion games, net games/wall, striking a target games and / fielding. Based on the four categories that can be described as follows:

(1) Target game (game targets) are of games where a player will get a score when the ball is thrown or similar and both will hit the targets that have been determined;
(2) Invasion games (game attack) is a team of games where the score obtained when the player is able to manipulate the ball in teams or the like to be entered into the opponent's goal or particular stricken more than the opponent and is able to maintain the area for not conceded by the opponent;
(3) Net game (game net) is a team or individual games or where the scores obtained when able to give a ball or something falling on the ground so as not to bias dikembalaikan opponent with the ball or the like skipping through the net with a certain height;
(4) Striking / fielding games (at-catch game-run) is a way to get games or the team that scores by hitting the ball or the like to be placed on an empty area so as not to be caught by a player is able to keep that bat and ran toward a secure area around to re-theplaceofthe original.

Methods

Research Design This research is descriptive. In general, non-descriptive research is a research hypothesis, so that the step does not require the research hypothesis but describe what they are on a variable, symptoms or circumstances. The variables in this study were students Prodi PJKR Knowledge FIK UNY class of 2011 against the target concept in TGfU games. This study was conducted in May and June 2012, while the location or place of study on campus UNY.

Population and sample

The population in this study were all students Prodi PJKR FIK UNY class of 2011, samples were taken by proportional random sampling. Samples were taken from five classes at PJKR Prodi

UNY class of 2011 as many as 105 students of the details of each class of 21 students is taken. But at the time received 102 questionnaires returned, so the sample used in this study amounted to 102 students.

Instruments and data collection techniques

Data collection techniques in this study using a test of knowledge about the target concept in TGfU games. The tests used are the true test-foul. Data collected from the study corrected then calculated the amount of right or wrong. Furthermore, these results were statistically analyzed quantitative descriptive return to determine the amount or frequency and then percentage.

Data analysis techniques

The research data in the form of student test scores is Knowledge Prodi PJKR FIK UNY class of 2011 against the target concept TGfU games in the quantitative data. The data obtained were then analyzed and expressed in the form of a percentage.

Table 1. The percentage of the assessment categories

No	Percentage	creteria
1.	81 % - 100 %	• Very good
2.	61 % - 80 %	• Good
3.	41 % - 60 %	• Not good
4.	< 40 %	• Not very good

Results and Discussion

Knowledge Students Prodi PJKR 2011 UNY Concepts and Teaching Materials Against Target Games TGfU measured with a questionnaire which amounts to 25 of the questions. Once the data is tabulated, scored, and analyzed with the help of MS Exel softwere and SPSS 16.0, the value of the minimum = 12; maximum value = 21; average (mean) = 17.44; median = 17; mode at = 17; standard deviation = 1.85.

Table 2. Description of the results of these studies can be categorized as follows

Interval	Kategori	Absolute	%
81 % - 100%	Sangat Baik	5	4.9
61 – 80 %	Baik	86	84.3
41 – 60 %	Tidak Baik	11	10.8
< 40 %	Sangat Tidak Baik	0	0
Jumlah		102	100

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From the above tables and figures known knowledge students Prodi PJKR FIK 2011 UNY Force on game concepts and targets TGfU teaching materials, most of which are in the good category by the number of 86 children, and then in the follow category is not well with the number of 11 children, and the very good category with the number 5 children. From these results the majority of students Prodi PJKR 84.3% UNY Force 2011 has a good level of knowledge.

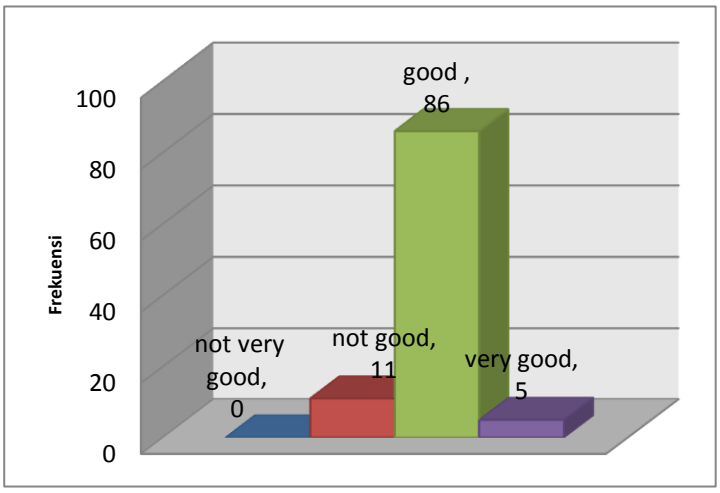

Figure 1. Diagram level of knowledge

Knowledge Factor

Knowledge of factors measured by questionnaire totaled 9 points of the question. Once the data is tabulated, scored, and analyzed with the help of MS Exel softwere and SPSS 16.0, the results obtained from the minimum value = 3; maximum value = 9; average (mean) = 6.22; median = 6; mode at = 6; standard deviation = 1.08

Table 3. Description of the results of these studies

Interval	Category	Absolute	%
81 % - 100%	Very good	8	7.8
61 – 80 %	Good	74	72.5
41 – 60 %	Not good	18	17.6
< 40 %	Not very good	2	2.0
Jumlah		102	100

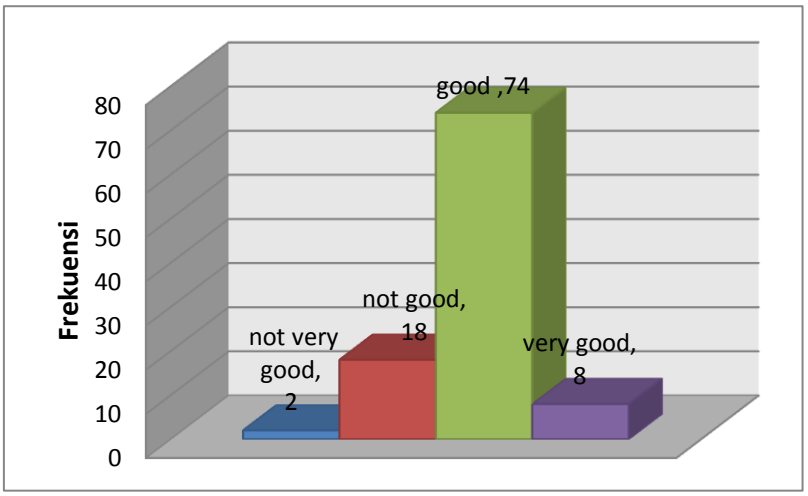

Figure 2. Dislayed in the from of a diagram

Factor Concept

The concept of factors measured by questionnaire items were 8 questions. Once the data is tabulated, scored, and analyzed with the help of MS Exel softwere and SPSS 16.0, the results obtained from the minimum value = 3; maximum value = 8; average (mean) = 5.49; median = 5; mode of = 5; standard deviation = 1.09.

Table 4. Description of the results of these studies

Interval	Category	Absolute	%
81 % - 100%	Very good	17	16.7
61 – 80 %	Good	68	66.7
41 – 60 %	Not good	14	13.7
< 40 %	Not very good	3	2.9
		102	100

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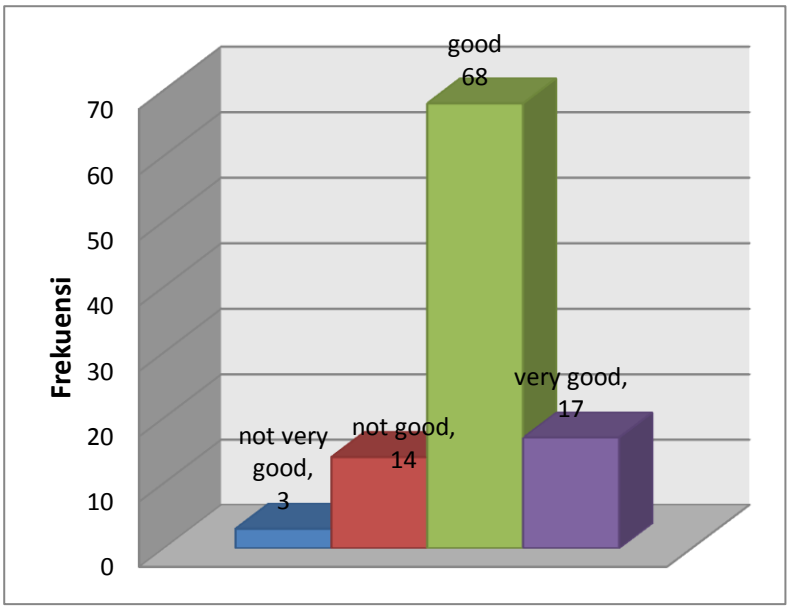

Figure 3. Displayed in the form of a diagram

From the table and figure above research results on factors known concept mostly located in either category by the number of 68 children, then follow the excellent category with 17 children, the categories are not good as much as 14 categories of children and does very well with the number of 3 children.

Factors Teaching Materials

Teaching material factors measured by questionnaire items were 8 questions. Once the data is tabulated, scored, and analyzed with the help of MS Exel softwere and SPSS 16.0, the results obtained from the minimum value = 3; maximum value = 8; average (mean) = 5.72; median = 6; mode of = 5; standard deviation = 1.14

Table 5. Describe the results of these studies

Interval	Category	Absolute	%
81 % - 100%	Very good	34	33.3
61 – 80 %	Good	54	52.9
41 – 60 %	Not good	13	12.7
< 40 %	Not very good	1	1.0
		102	**100**

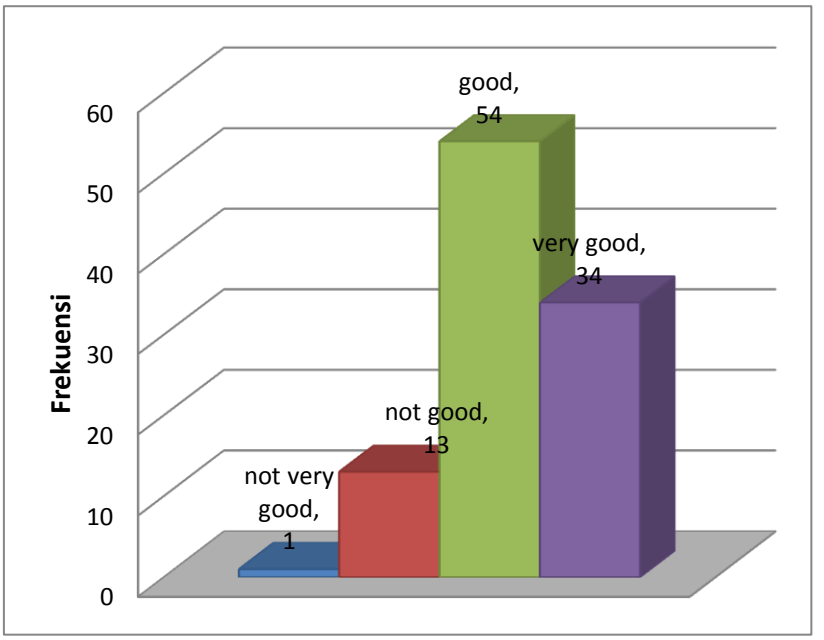

Figure 4. Displayed in the form of a diagram

From the above tables and figures are known Teaching Materials, mostly located in both categories with a number of 54 children, then follow the excellent category with a number of 34 children, the categories are not good as much as 13 categories of children and does very well with the number 1 children.

Closing

Based on the results obtained knowledge students Prodi PJKR FIK UNY Force 2011 on the concept and the target game TGfU teaching materials, most of which are in the good category by the number of 86 children, and then in the follow category is not well with the number of 11 children, and the very good category with the number of 5 children. From these results the majority of students Prodi PJKR 84.3% FIK UNY Force in 2011 had a good level of knowledge.

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ROLE OF WOMEN IN WATER RESOURCES UTILIZATION EDUCATION FOR CHILDREN

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Abstract

Water has so many benefits in everyday life. The presence of fresh water resources in some areas might have been veryhard to find, especially in thedry season. The basis of education is from the family,the mother's role will greatly affect children's behavior. Mother and child in everyday life are mostin need of water, so children need tobe educated in the use of water. This paper aims to examine the role of mothers in educating the use of water resources to the child.

Education for the use of water resources is important to be delivered to children from an early age. Mothers have an important role in this thing. Mother and water might be seen as inseparable thing in everyday activities. Maternal behavior in the utilization of water resources will affect the day-to-day behavior.

Education utilization of water resources in the family is strongly influenced by maternal behavior. Mother is the one who likes to use water and then it will be used as a role model for her kids, so that a mother should give the right example. Wise usage of water in the family scope is a part of health education especially in the field of environmental health. Water management properly means maintaining the health and environmental sustainability.

***Key Words**: Role, water resource utilization, education*

Introduction

Water resources are needed to support human life, plants and animals,therefore water resources need to be managed well, so as to meet the needs of development. Lack of water can lead to dry nessand the impact on the lives of living things in general, and humans in particular, resulting in the declining health. Lack of water,in this case for human, might lead them easily having some disease, because the human body is basically made up of water. The body needs at least eight glasses of water in a day, to meet the needs of their body fluids, the rebyit avoids dehydration.

The research done by National Resilience Institute of Indonesia (2013: 2-3) proved that heachievement for the compliance of finest water quality for the Indonesian citizens reached 47.71% (in 2009) and it is targeted by 2015 should reach 68.87%. Meeting the needs of clean water that is still acking is affected also because of rapid population growth. Water resources are diminishing, and rapid population growth will further add to the increasing consumption of water in the community.

Indonesiais ranked fourth in the world in population, after China (RRC), India, United States. The population of Indonesia reaches 237 641 326, with a ratio of the percentage of the population of menand women in 1000: 986 (Statistik.ptkpt, 2014). This great number of residents will affect the use and consumption of water in each day as the citizens need it more.

Preservation of water resources should always be done so that the water is not on the wane. It can be started from the family. Family is the most basic education, in addition to the family in this

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case more women using water to meet daily needs. Starting from the mother's behavior in exploiting and using water wisely, children will in directly mimica mother's habits. Women have agreater role in the care of the house hold members and provide education in side the house. A woman,in this case the mother,in culcates the habit and she becomes a role model for the kids to manage the environment especially for water resources management. According to Dian.,et all (2009: 5-9) in their study, 30 respondents indicate that the person who needs the most of wateris the mother (15 respondents), for fathers and mothers (13 respondents), while the restare children (11 respondents). Wateris used mainly for cooking, washing and cleaning the house.

Based on these results it is clear that more women using water for domestic purposes. So many activities in which families use water course should be limited and managed, thus it saves water resources. Management of water resources if it is clearly linked to the behavior will be associated with the behavior of the health care environment. Thus it is clear that the behavior of processing water resources will determine the degree of a healthy society. Water resources management includes the use of clean water and used water utilization for other purposes.Maternal behavior in the management of water resources is expected to encourage habits for children to always live a healthy life, through the use offi nest water. This paper will discuss the role of women in the educational aspect of water resources to the child.

The Role of Women

The woman is the figure that has the characteristics such as having menstruation, pregnancy, and giving birth. On the one hand,the powers and duties of women will differ with the task of husband. Woman gives the hard work, compassion, and care for his children. According to Suwondo in Gurniwan (5) the duties of women in the family and society are as a function of internal and external, among others; 1) as a wife, in order to accompany her husband as alover and friends to get together to build a happy family. 2) as an educator and the mother of the younger generation, so that children will be equipped with spiritual and physical strength in the face of all the challenges of the times, and be useful for the home land. 3) as a regulator of the house hold, the house hold that is safe and orderly place for the whole family. 4) as the labor and the professions, working in government, private companies, politics, self-employed and so to increase the revenue.5) as members of civil society organizations, particularly in women's organizations, social agencies and others, to contribute to the community

Some tasks of the mother should be run as well as possible so that the family will be well managed. Yet,the task of women is not really important as it is mentioned in point two, which is as an educator of her children who will become the future generation. Family education is very important because it will be the continuation of further education. In addition to being a mother, a woman might work as maid. Women who take this job not only to take care of house hold needs, but they also serve the care of children. This is due to the increasing emancipation of women so that many wives have to work to meet daily needs.

Women as mothers and women as domestic workers in charge of taking care of the child should have a higher education because of the need of parenting knowledge. Table.1 shows that girls at the age of 15 to 17 years in Indonesia have been working to meet the needs of the house hold and help their parents (129.21700). Thus it is clear that women are basically working earlier compared with the boys.

Table 1. Estimation for the number of kids doing household jobs based on ages and gender, 2008

Ages and Gender	Household Jobs	Kids Working	Persentage of Kids Working on Household Jobs
5-11 tahun	3,514,000	91,024,000	3.8
Male	1,430,000	49,490,000	2.9
Female	2,084,000 0	41,534,000	5,0
12-114 tahun	3,880,000	85,428,000	4.4
Male	1,069,000	49,679,000	2.2
Female	2,811,000	35,749,000	7.9
15-17 tahun	8,131,000	129,217,000	5.9
Male	1,694,000	76,608,000	2.2
Female	52,609,000	6,436,000	12.2
Total 5-17 tahun	15,525,000	305,669,000	4.8
Male	4,193,000	175,777,000	2.4
Female	11,331,000	129,892,000	8.6

Women in many countries including Indonesia choose to be housewives or becoming maids or servants for other people. For example, Table 2 as a result of research at the Indian women dominate as a maid or housekeeper. Other jobs such as cooks, gardeners, gatekeepers, nannies and baby sitters, women still dominate. Women of course should have a good knowledge when they become the baby sitters, because the child will tend to mimic the behavior of the nannies.

Table 2. Jobs based on industrial sub-category and genders,

Jobs On Division 95: Hoesehold Things	Both Gender	Female	Male
Maid	2.312.200	2.011.300	300.800
Cooks	123.400	89.300	34.200
Gardener	4.200	19.300	15.100
Gate Keeper	135.700	128.600	7.000
Nanny	87.700	62.800	24.900
Others	1.528.400	780.600	747.800
TOTAL	4.206.700	2.955.200	1.251.400
Total estimation for the Job	408.246.900	135.834.000	272.412.900
Household Workers in percentages	1,0%	2,2%	0,5%

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Water Resources

Water is essential for human life. Humans will die faster from lack of water than lack of food. The human body is mostly made up of water. The body of an adult, approximately consists of 55-60% liters water per day body weight, while the children around 65%, and about 80% for the infants. Human need for water is very complex, among others, for drinking, cooking, bathing, and washing. According to the WHO in developed countries everyone requires between 60-120 liters of water per day. While in developing countries, including Indonesia, each person requires between 30-60 liters of water per day. Water utilities are the main thing is for drinking (Soekidjo Notoatmodjo, 2007:175).

Natural resource that must be properly managed is the water. The earth's surface is composed of 71% water, but in some countries in the world, and some areas in Indonesia there is still a case of lack of water. Water resources management in Indonesia is already set in the legislation, so that people should be able to use it wisely. Law of the Republic of Indonesia No.7 of 2004 on water resources said that in the face of an imbalance between water availability and water demand tends to decrease the growing, water resources must be managed with due regard to the social function, economic and environmental harmony. Management of water resources need to be directed to achieve synergy and harmonious integration between regions, between sectors, and between generations, and that is in line with the spirit of democratization, decentralization, and openness in the life of society, nation, and state, communities need to be given a role in water resources management.

The participation of the society is of course very important for water resources management as it aims to minimize water short ages. In chapter 23,it will be explained more about the management of water resources. The management of water quality and water pollution control intended to maintain and restore the quality of the existing sources of the water. Water quality management is done by improving the water quality in water resources and water resources infrastructure. Mean while, the water pollution control is done by preventing then try of water pollution on water resources and water resources infrastructure. In detail,the Law of the Republic of Indonesia No.7 of 2004 on water resources, set priorities utilization, conservation, control, ban the destruction of water, use water permit, the obligation to pay if the damage, and also includes the amount of penal provisions in case of violation.

Water is not only used for the house hold, but it is used for irrigation,and for the industry even factories as well. According to Yonky.R.et al., (2013: 600) ,for the provision of clean water, water environmental services in KSA/KPA Merapi area will also be used for irrigation and agricultural associations who are members of Farmer Water User (P3A). Utilization of the water environmental services should be able to take place on an on going basis. The benefit scan be felt not only now but also for the future generations. Increased demand supply of the water must be concerned so that it can support the needs of people in the present and future.

Role of women in water resources utilization educationto children

Participation of women in water resources management is very important. The control over water resources that sustainlife are still largely out of reach of the hands of women. Women's daily activities cannot be separated from the use of water, especially for the cleanwater. Water use in the family is allocated for cooking, drinking, using water to clean clothes, kitchen appliances, furniture, mopping and watering the plants.

Water resources that are managed properly will create environmental health and the health of the use of water. Most of the water is used by human, and most widely used is the women. According to July. S (2011: 158-159) women and children use the most water. Women using water for daily needs, such as bathing, washing, drinking, washing clothes, cleaning the house, garden, washing the vehicle, praying,and others.

The presence of a clean water source that can beutilized by the public,is of course,very helpful. It simplifies and lightens the burden of the life of society in general and women in particular. A mother in the management of water will pick, take, store, maintain, and utilize water, indirectly and it will become a habit that is imitated by children. If the circumstances and attitudes of his parents, especially mothers, to the environment in general and water are in particular good, healthy, sanitary, then the children will be welling rained the habit anyway. Parents in instilling a state of water resources management are also influenced by education attained. The higher the education the more science and knowledge gained so that it will be easier to educate and nurture the children.

According to Nanang M (2012: 194-195), education is an effort to pass on values, which will be a helper and decisive in the running life of mankind, as well as to improve the lot of human beings and civilization. Education, if it is neglected, it is believed that human at this time will not be much different from the past generations, so it will be seen that man now are left so far behind in terms of the quality of life and empowerment processes. The function of education as an agent of change can be used as an educational tool for the cultivation of values in individuals, so that individuals can change the mindset and it can provide insight on individual about things that had not been widely known by the society.

Efforts to pass values through the education needs to be done early, starting from the family as the first educational environment for the children. According to Schaefer, RT(2012: 50), family is a group of people who are connected by blood, marriage or other relationship agreed, or adoption by sharing the basic responsibility for the reproduction and maintenance of community members. There are many factors that complicate the transition in care and home care. First, it is very few to anticipate socialization for social roles and parenting. Second, it is only a little learning occurs during pregnancy. Third, the transition to parenthood is too sudden. So, the duty of care cannot be run in stages.

Environmental management is important to be implemented because it will support the life of all living beings in the world, especially human beings. Great sustainable management will provide

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a legacy for the lives of generations. Environment management policy is contained in the legislation of the Republic of Indonesia No.23 of 1997, Article 5, which states that natural resources should be managed in a sustainable manner.

Table. 3. Percentage of the Habits in Utilizing Some Wastewaterin Household Based on the Provinces in Indonesia

Province	Never	Sometimes	Often
Aceh	91,13	7,31	1,56
Sumatera Utara	83,33	11,39	5,29
Sumatera Barat	91,47	6,86	1,67
Riau	85,42	10,12	4,46
Jambi	89,93	8,05	2,02
Sumatera Selatan	91,46	6,86	1,69
Bengkulu	92,80	4,96	2,25
Lampung	89,28	8,16	2,57
Kep. Bangka Belitung	79,77	12,96	7,27
Kepulauan Riau	81,19	11,79	7,02
DKI Jakarta	82,48	12,80	4,73
Jawa Barat	85,48	10,97	3,55
Jawa Tengah	88,97	7,99	3,04
DI Yogyakarta	83,45	8,72	7,83
Jawa Timur	90,92	7,07	2,01
Banten	89,42	7,95	2,63
Bali	65,15	10,04	24,81
Nusa Tenggara Barat	86,24	10,97	2,80
Nusa Tenggara Timur	51,32	19,40	29,28
Kalimantan Barat	89,69	7,93	2,38
Kalimantan Tengah	94,12	4,43	1,45
Kalimantan Selatan	91,95	6,85	1,20
Kalimantan Timur	86,77	10,66	2,56
Sulawesi Utara	85,24	7,61	7,15
Sulawesi Tengah	90,49	5,76	3,75
Sulawesi Selatan	89,46	6,73	3,81
Sulawesi Tenggara	91,93	6,55	1,52
Gorontalo	89,32	7,49	3,19
Sulawesi Barat	87,71	7,19	5,10
Maluku	84,94	9,68	5,38
Maluku Utara	87,95	9,77	2,28
Papua Barat	88,45	6,74	4,81
Papua	88,25	7,47	4,28
Indonesia	**87,01**	**8,98**	**4,00**

Overview of the percentage of house holds by province and the habits in using the waste water can be seen in the table. Percentage of house holds by province and former habit of using the water for other purposes shows that a large percentage of people in Indonesia did not use the waste water for the purpose of utilizing the water. This data indicates 87.01, 8.98 times, and often 4.00. The percentage figures prove that Indonesian society is still relatively low in the water used to explo it the utilization for other purposes.

Domestic waste water can be put to good use by the family. Utilization can be done for example by watering the yard premises used water rinse wash, be it washing dishes, clothes,

motorcycles, cars, and so forth. Families that can utilize water wisely can save water and electricity, so it can be stated that the use of well water can save energy sources, namely electrical energy. Management of water resources management in the use of covers also used water in the house hold.

Early education in the processing of water resources can be started from the family through the habits or behaviors of all family members. Figure 1. about health behavior sex plained that the interaction can be started from the closest environment. The interaction starts from the family environment, the environment is limited and the last common environment or society. Management of water resources is a part of the health behaviors.

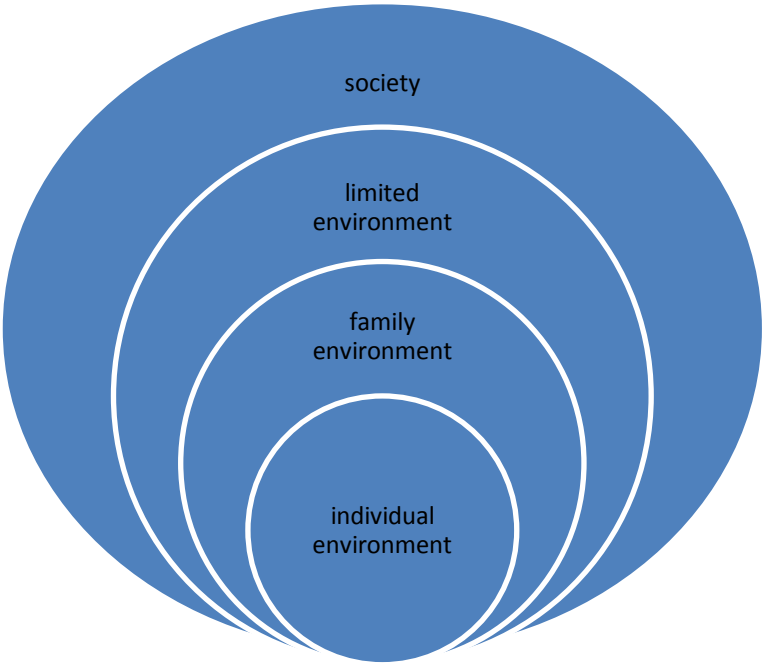

Figure 1. Interaction of Healthy Behavior
(Sumber: Soekidjo Notoatmodjo, 2007: 144)

(1) The behavior of the individual's health attitudes and habits of individuals are closely related to the environment;
(2) Family environment; habits of each member of the family about the health;
(3) Limited environment; traditions, customs and beliefs with respect to public health;
(4) The general environment or society; government policies in the field of health;

Utilization of water resources in the best possible family environmentis a form of healthy behaviors. Healthy behaviors will be able to run well when it is supported by a good education too. Education may be obtained from parents to their children through a parent's behavior in the use of water in everyday life.

According to Soekidjo Notoatmodjo (2007: 133), the behavioris an activity or activities of the organism in this case concerned the behavior of living things. The behaviors of living things, especially humans, are basically an action or activity of the man himself. Activity of parents,

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especially mothers who have primary parenting role, is very influential in the child's behavior in everyday. The act of another in performing everyday activities will certainly serve as an example or model of his children in everyday life. Like the saying goes "the fruit does not fall far from the tree", it means that the child's behavior will not be much different from the behavior of their parents".

Management of water resources is a part of health education especially healthy behaviors. Healthy behavior is a person's response or responses to stimuli associated with illness and disease, health care system, food, and environment. Healthy behaviors include

(1) Behavior of the person again stillness and disease heatlh promotion behavior, health prevention behavior, health seeking behavior, and health rehabilitation behavior.

(2) The behavior of the health care system: it concerns the response behavior of the service facilities, how to care, health care workers, and their medicines are embodied in knowledge, perceptions, attitudes and use of facilities, personnel, and drugs

(3) Individual's response to food as a major and vital need for life

(4) Behavior of the health of the environment (environmental health behavior). Is one response to the environment as a determinant of human health. This behavior includes; a) Behavior as sociated with cleanwater (component, benefits, and the use of clean water for health reasons); b) Behavior that relates to the disposal of dirty water (includes aspects hygiene maintenance technique and its use); c) Behavior with respect to waste (garbage disposal system and waste water, as well as the impact of the manufacture of waste properly; d) Behavior with respect to a healthy home (ventilation, lighting, flooring, and so on); e) Behavior with respect to cleaning mosquito nests, and so on (Soekidjo Notoatmodjo, 2007:139-142).

Health education in the family of a mother to her children is part of a behavior change because children will mimic their mother. Mother is used as a model by her kids in performing daily activities. According to Bandura in Hergenhahn, BR, &Olson, MH, (2008: 376-378), influence of the behavior from the model to the copy cat can be divided into three types, such as:

(1) Modeling effect, it is the impersonator performs a new behavior through association so that it fits with the behavior of the model. Modeling can also increase creativity in adopting various characteristics or style.

(2) Inhibition dan disinhibition, in which behavior that is inconsistent with the behavior of the model inhibited the onset, where as behavior that corresponds to the behavior of the model eliminated the obstacles that arise behavior can be a real

(3) Facilitation effect, behavior that has been studied by imitators easierre surfaced by observing the behavior of the model

Behavior management of water resources need to be invested to the children since childhood period. Planting the habit to the children do not suffer from such interactions that influence behavior. There are three interactions that affect the behavior of the person, environment, and behavior. All three of these interactions can be described as follows:

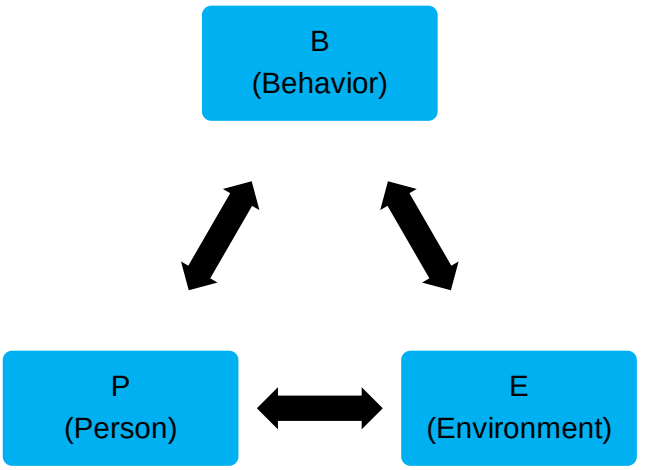

Figure 2. Reciprocal determinism
(Source: Hergenhahn, B.R.,& Olson, M.H., 2008: 368)

The picture above (reciprocal determinism) explained that the behavior affects a person's condition and the environment, or otherwise it influences the behavior of people. Thus the behavior in the management of water resources in the family is affected by habit, people, and environment. The role of women in the management of water resources in the family is seen well through the habits in the use of water. Woman is not only a mother but also the child nanny. The use of water for the children needs to be considered well, because children love to play the water. It is clear that the persons who use the water the most are the mother, son, and father.

Child's behavior was not much of a pattern of behavior and how the nannies show. It is important to focus on how to educate a child properly. Children will also learn from the environment where the child is located and the habits of the child in every day. Education about the management of water resources can be started with small things, such assetting up water, or preparing drinking water for consumption. For everyday purposes such as bathing, washing and for the toilets, a woman can give a lesson in what way in order to really save water usage.

Clean water supplies in some areas might be hard to find, and there are some people who must buy it. Preservation of water resources would have to be maintained by each person, starting from the family by providing a good education on how to manage water resources wisely to all members of the family in general, and children in particular.

Management of water resources should be done wisely. National Resilience Institute of Indonesia (2013: 10-12) states that water as an abiotic element in the earth. The existence and sustainability of water really depends on what is done by humans. Technology-related conservation and utilization of water resources has been developed. However, the most important factor in the successful management of water resources is the human factor as the user.

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Preservation of local wisdom has been entrenched for generations in the management of water resources.

Efforts to build national-level water resistance should be a national agenda. The number of growing population and increasing water demand, making the presence of water is increasingly important. Water availability becomes a vital factor and simultaneously determines the success of development of a nation. Water use should be concerned with elements of sustainability and preservation of special areas for water.

Closing

Availability of water resources is dwindling, and the population of Indonesian people is growing fast. It needs to manage the water resources wisely. Family as the basic education and maternal environment as most water users should be able to utilize the water and provide water management education to their children. Indirectly parents as models to be imitated as a child process of knowledge transfer. Water resources management is not only individual responsibility, but it is the responsibility of all people as well. Thus, the water resources should be maintained continuously, and it can be passed down for generations.

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