



Developing Instructional Material for Sepak Takraw Playing Technique Course Completed with Smart Audiovisual to Improve Competencies of the Students of Sport & Health Education Department Ganesha University of Education



I Ketut Budaya Astra ^a

I Wayan Artanayasa ^b

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Abstract

This study was conducted with the aim to develop major instructional topics and practices/ tasks needed to support the attainment of the expected graduates' competencies. This study was a descriptive qualitative research that adopted Dick and Carey model (1985). The subjects of the study were the third-semester students of Sport and Health Education Department who took up the course. This study used questionnaire and interview guide as the instruments. The data were analyzed descriptively. The results showed that (a) the need for the instructional materials for "Sepak Takraw" Playing Technique was very urgent; (b) there were six major topics in Sepak Takraw Playing Technique course: The history of "sepak takraw", facilities, defending techniques, smashing techniques, service techniques and rules & refereeing; c) there were two types of practice/tasks developed: answering open-ended questions, and demonstration; d) the audiovisual major topics, i.e., audiovisual materials consisted of the implementation of all knowledges, skills, and basic technique skill for playing sepak takraw that has to be mastered by the students as prospective professional teachers and training coaches; e) the practices available in smart audiovisual were responses/judgments of the students on the progress of him/herself and that of other students.

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Author correspondence:

I Ketut Budaya Astra,
Physical Education, Health, and Recreation Department Sport & Health
Faculty Ganesha University of Education, Bali, Indonesia
Email address: budaya.astra@undiksha.ac.id

^a Ganesha University of Education, Bali, Indonesia

^b Ganesha University of Education, Bali, Indonesia

1. Introduction

Instructional material is an important part of the implementation of education at school. Through instructional material, the teacher will find it easier to teach and the students will get help in direct learning (Hutajulu, 2013). Instructional material can be developed in various forms to meet the needs and characteristics of the materials to be taught. Without instructional material, it is impossible for the instruction to be realized since it deals with what materials to be taught to the students. The selection of materials directly determines the attainment of instructional objectives. The suitability of the material for the attainment of the objectives and the competencies expected will determine the attainment or non-attainment of the objectives. The development of instructional material is closely related to the planning of instruction. The development of instructional material needs to consider various aspects such as the condition of the readiness of the students to receive instruction, the materials to be taught, and the readiness of the teacher in relation to the material to be taught in the instructional process (Primaindrayani, 2014). In other words, in planning the instruction, especially in writing the lesson plans the teacher has to consider three things: students, materials, and teacher/ lecturer that form the major components of the instructional activities. The three aspects have to be considered in writing lesson plans and a course book.

This study is related to the importance of selecting appropriate materials for the students that have been investigated by some researchers. Prasetya (2011) did a developmental research in the seventh grade in the first semester at SMP Negeri Malang and stated that as an external factor, instructional material can strengthen the students' internal motivation to learn. An instructional material that has been designed well, which means that there are adequate media and learning resources, will influence the instructional condition.

Astanry (2013) did an instructional material (student's sheets) developmental research in Physical Education Sport and Health teaching and learning process for the fifth grade at SD Islam Ta'allumul Huda Kecamatan Bumiayu in the school year 2012/2013. Astanry's study (2013) concluded that the development of the use of the instructional product (student's sheets) for the fifth grade at SD Islam Ta'allumul Huda Bumiayu was very effective.

The studies above support the claim by Renandya (2013) in Hapsari (2013) that one of the factors that determine the student's motivation in learning is good instructional material in the written and spoken forms that have to be relevant to the students. The material has to be able to stimulate the interest and motivation of the student to learn actively in the teaching and learning process. The material should be able to facilitate the students to develop not only hard skills but also soft skills. Thus, the instructional material should be designed in such a way that it meets the need of the students, is useful, reflects the real life situation and to suit their level.

Good instructional materials are certainly needed by Sport and Health Education students for Sepak Takraw Playing Technique course, especially basic techniques for playing sepak takraw. Sepak takraw Playing Technique course is a compulsory course for the third-semester students. This course is one of the courses that distinguish the department from other departments. The competency standard expected of this course is that the students are able to demonstrate basic techniques of playing sepak takraw. This course becomes very important since this course is a compulsory skill course that the prospective teachers of Physical Education and Health need to master to become professional teachers. However, the fact is that the instructional materials and books that have so far been circulating and being used in teaching do not give enough opportunities for the students to be able to do the two things. Sometimes, the instructional materials only contain knowledge, without practices of the skill or the reverse. This is the certainly the problem for the students.

The use of less effective instructional materials was shown by some analyses. The results are as follows: 1) the textbooks used cannot contain all competencies of the graduates that are expected. One of the competencies expected is that the students can understand, master, demonstrate, and later teach students when they become teachers of Physical Education, Health, Sport and Recreation in the future. However, textbooks used as references by the students contain the materials partially. The textbooks only contain basic techniques in general. For specific techniques, there is no explanation. In addition, the books or instructional materials for sepak takraw playing techniques are difficult to find. The textbooks only contain visual need of the students. On the other hand, the result of a test on learning strategies that was conducted with the students showed that the students had also audio learning strategy, in addition to the visual and kinesthetic. The suitability of the textbooks with the students' learning strategies can also improve the students' interest and motivation in learning. Thus, the objectives of the instruction will be attained effectively.

The use of the less effective instructional material will certainly cause problems. The problem that will certainly rise from the ineffectiveness of instructional material is that the objectives of the course cannot be achieved optimally by the students. They can only master part of the competencies that they ought to have.

Based on the explanation above, the writers did a study aimed at developing a course book for Sepak Takraw Playing Techniques course, especially basic techniques of playing sepak takraw. This instructional material does not only contain theories about basic techniques of playing sepak takraw, but it also contains practices and tasks that have to be done by the students to train adequate skills so that at the end the students are able to improve competencies in the basic techniques of playing sepak takraw. This instructional material is also completed with smart audiovisual to accommodate all learning strategies of the students.

2. Materials and Methods

This study was a developmental research. The development model was an adaptation of Dick and Carey (1985, 2001) in Gagné *et al.*, 1992; in Gall *et al.*, 2003). The object was the instructional material used by the fourth-semester students of Sport and Health Education Department. The subjects were fourth-semester students of Sport and Health Education Department of the Ganesha University of Education. The data were collected through questionnaire and interview which were then analyzed descriptively and quantitatively.

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3. Results and Discussions

The description of the need for instructional material for Sepak Takraw Playing Technique course, especially basic techniques for playing sepak takraw for the fourth-semester students at Sport and Health Education Department of the Ganesha University of Education.

To collect data about the need for this instructional material, the researchers used questionnaire and interview with two sepak takraw teachers/ training coaches and all students who took Sepak Takraw Playing Technique course. The data from the teachers/ training coaches were used to find out the competencies that the students who took Sepak Takraw Playing Technique course have to have so that later when they graduate, they can compete and work professionally. On the other hand, the data from the students were used to find out to what extent the students understand Sepak Takraw Playing Technique course, their interest and motivation toward this course, teaching, and learning strategy preferences that they want and their attitude toward this course. This is very important to bridge the gap between expectation and the real condition that the students face so that the lecturer will be able to write instructional material that uses an appropriate and good teaching strategies to help the students to attain the learning objectives.

The following is the result from the questionnaire from each of them.

Table 1
Results from Questionnaire with Sepak takraw Players

Subject	Statement	Very important	Important	Not Important	Really not important	Remark
1 and 2	Understanding the nature of learning Sepak Takraw Playing Technique	√				
	Understanding the history of sepak takraw	√				
	Understanding basic techniques in playing sepak takraw	√				

Ability to demonstrate well and accurately basic techniques in playing sepak takraw.	√
Understanding rules in playing and refereeing sepak takraw	√

Table 2

Table based on the Results of Questionnaire with Students who took Sepak takraw Playing Technique Course

Subject	Statement	SA	A	DA	SDA
1,2,3,4,5,6 7,8,9,10,11,12 14,15,16,18,19,20, 21,22,23,24, 25,26,27,28 13,17, 25,28	I like Sepak Takraw Playing Technique Course	√			
1,5,6 7,8,9,10,11,12,13,15,16,17,18,19,20 ,21,22,23,24,25,27,28 2,3,4,14,26 10	I want to become a professional sepak takraw player	√	√		
1,2,3,4,5,6,7,8 9,11,12,13,14,16,17,20 21,22,23,24, 26,27,28 15,16,18,19	I know basic sepak takraw playing techniques	√		√	
1,7 2,3,4,5,6,7,8 9,10,11,12,13,14,16,20 21,22,23,24, 25,26 15,17,18,19,27,28	I can demonstrate basic sepak takraw playing techniques	√	√		√
2,3,4,6,7,8,9,10 11,13,14,15,16 17,18,20,21,22, 23,24,28	I like to learn by listening and seeing directly	√			√
1,5,12,19,26,27 ,3,4,6,7,8,9,10 11,13,14,15,16 17,18,20,21,22, 23,24, 25,26,27,28	I like to learn by reading books		√		√
1,5,12,19 1,3,4,6,7,8,9,10 11,13,14,15,16 17,18,20,21,22, 23,24,25	I like to study alone	√			√
2,5,12,19, 26,27,28 1,2,3,4,6,7,8,9,10 11,19,13,14,15,16 17,18,120,21,22, 23,24,25,26,27,28 5,12,17	I like to study in group	√ √			
All subjects	I like to do practices and practical tasks	√		√	

Major Topics in Sepak takraw Playing Technique Course

The major topics in Sepak Takraw Playing Technique Course were designed by considering inputs from various sources like Sepak takraw players, students, lecturer, curriculum, and learner characteristics. Then the major topics of Sepak Takraw Playing Technique course were organized for the course as follows.

Table 3
Major Topics in Sepak Takraw Playing Technique Course

Major Topics	Competency Standard and Basic Competencies	Indicator	Instructional Material
The Concept of Sepak takraw	Students understand the concept of sepak takraw game	Students can explain the concept of sepak takraw game	The nature of the concept of sepak takraw game
History of Sepak takraw	Students understand the history of sepak takraw game	Students can explain the history of sepak takraw game	History of sepak takraw game
Kicking Techniques in Sepak takraw game.	Students understand and can demonstrate kicking techniques in Sepak takraw game.	Students understand and can demonstrate kicking techniques in Sepak takraw game correctly and appropriately	Kicking techniques in sepak takraw game
Servicing Techniques in Sepak takraw game	Students understand and can demonstrate servicing techniques in sepak takraw game.	Students can understand and demonstrate servicing techniques in sepak takraw game correctly and appropriately	Servicing techniques in sepak takraw game
Blocking techniques (<i>block</i>) in sepak takraw game	Students understand and demonstrate blocking techniques and in sepak takraw game	Students can understand and demonstrate blocking techniques in sepak takraw game correctly and appropriately	Blocking techniques in sepak takraw
Smashing techniques in sepak takraw game	Students can understand and demonstrate smashing techniques in sepak takraw game	Students can understand and demonstrate smashing techniques in sepak takraw game correctly and appropriately	Smashing techniques in sepak takraw game

Various practices and also tasks developed show the ratio of the portion of each major topic that has been organized, material i.e. knowledge, procedural skill, and verbal communication. Based on this consideration than the students' practices and tasks can be seen in table 4 below.

Table 4
Practices and Tasks Developed

Subject	Type of Practice and Task	Yes	No	Remark
All subjects	Answer open-ended questions about a text that contains the lecture material	√		

Description of Smart Audiovisual Instructional Material

The audiovisual instructional material is in CD which contains the implementation of all knowledge and skills on basic techniques in sepak takraw game which covers kick, service, block and smash. The major topics in the CD are shown in table 03. The smart audiovisual instructional material is completed with decision supporting system which can identify students who are the best in basic techniques in sepak takraw game.

Practices in Audiovisual Instructional Material

Practices provided in the audio-visual instructional material have examples of the implementation of basic technical skills of right kicks, services, blocks and smash in sepak takraw and also examples of wrong implementation processes that have to be avoided by the students.

Need for Sepak takraw Playing Technique Instructional Material

From the results presented in table 01 and table 02 above, we can see that sepak takraw playing technique instructional material has to be produced soon. This can be seen from the result of the questionnaire on need analysis answered by sepak takraw players and students who took Sepak takraw Playing Technique course.

From the data from the sepak takraw players it can conclude that to become a sepak takraw player or a professional sepak takraw coach, a person has to: a) understand the history of sepak takraw; b) understand sepak takraw facilities; c) understand and be able to demonstrate defending techniques in sepak takraw game; d) understand and be able to demonstrate smash techniques in sepak takraw game; e) understand and be able to demonstrate service techniques in sepak takraw game; and f) understand and be able to demonstrate rules and refereeing in sepak takraw game.

On the other hand, the condition of the students who take sepak takraw playing technique course does not meet the criteria. This can be seen from the result of the questionnaire in which only 0.042% (1 student) stated that he has the knowledge and be able to demonstrate sepak takraw basic techniques of playing sepak takraw. Through an interview, data was obtained that the student was a graduate from SMA 1 Kubutambahan, and had learned this material before since he studied at elementary school and had continued studying at the high school. However, 0.958% (27 students) stated that they do not have knowledge about basic techniques of playing sepak takraw. From this data, it can be concluded that instructional material in sepak takraw basic techniques becomes a basic need of almost all of the students who study Sepak Takraw Playing Technique course. The instructional material is very important since through a good instructional material (designed based on the students' need) the instructional objectives will be optimally reached as expected. One thing that makes us happy from the result from the questionnaire answered by the students is that all of them stated that they like Sepak takraw Playing Technique Course and want to become professional sepak takraw players and coaches. An informal interview with the students showed that they like this course because of two factors. The first factor is the internal factor: they really want to engage in sports, especially in sepak takraw and the second factor is the external one: they like the lecturer. They admit that they like the way how the lecturer of Sepak Takraw Playing Technique course teaches. By having a very high motivation and enthusiasm it will be easy for the students to understand the material. Thus, the competence standard that has been established as the requirement for graduation will be met.

Major topics in Sepak takraw Playing Technique Course

As shown in table 4.3, there are some major topics that the students of semester IIIc have to master at Sport and Health Education Department. In general, the major topics are 6 parts, i.e., a) the history of sepak takraw; b) sepak takraw facilities; c) blocking techniques in playing sepak takraw; d) smash techniques in playing sepak takraw; e) service techniques in sepak takraw; and f) rules and refereeing in playing sepak takraw.

The first major topic included in this instructional material is the history of sepak takraw, both in Indonesia and over the world. It includes the development of sepak takraw in the 1945-1999 period. The history of sepak takraw development is very important for the students to know as prospective professional players and training coaches.

The second major topic included in the instructional material is take away facilities. As prospective players and training coaches, the students have to understand and know well the facilities in playing sepak takraw, including standard net that has to be used, standard costumes and shoes, a standard building that has to be used when carrying out the instruction or training. All of these are very important in achieving the objectives.

The third major topic that is not less important to be included in the instructional material is service techniques in sepak takraw. There are a variety of services in sepak takraw such as bottom service, side service, sole of foot service, and the hardest one is back of foot service. In the previous syllabus, this major topic was not included. On the other hand back of foot service is the service in sepak takraw that easily gets the point to win. This is based on the input from players who said that back of foot service is needed by a sepak takraw player, especially in a taking position to be able to get as many points as possible.

The fourth major topic that is also not less important is blocking technique in playing sepak takraw. Block in sepak takraw has a lot of variations such as the back of foot block and block with one-foot jump. In the previous syllabus, the block was not included. On the other hand, the block is very important in sepak takraw, when doing a good block the player will easily get a point. This is also based on the input from a player who said that block is very important in sepak takraw, especially for a player in the left side position.

The fifth major topic which is also not less in importance is smash technique in sepak takraw. Smash in sepak takraw has a lot of variations: smash *kedeng*, straight smash, scissors smash, foot smash, rolling smash. In the previous syllabus, scissors smash and rolling smash were not included. In fact, scissors smash and rolling smash are very important in sepak takraw, perhaps because these smashes have the very high complexity of movement. This is also based on the input from players who stated that rolling smash and scissors smash are needed very badly by sepak takraw players, both in the *apit kanan* position and *apit kiri* position.

The sixth major topic is rules and refereeing in sepak takraw. The students have to understand well the rules and refereeing. Then they have to practice playing and becoming referees in the process of teaching and learning. This is very important for the students to know as prospective teachers who can become players, training coaches. They have to know the rules of the game and can be relied on to lead a competition.

Practices and tasks developed

The practices and tasks developed in the instructional material are shown in Table 04 are as follows.

Answering open-ended questions are given in the material

At the end of every major topic, there are questions inserted aiming at giving feedbacks about to what extent the students have mastered the contents of the material that has been taught. The questions have to do with the material being discussed. The examples for Unit 3 for the topic sepak takraw service. In this topic, the students, the students are expected to be able to mention and explain various types of service in sepak takraw. The examples of the questions are as follows.

Questions

1. Mention and explain various services in sepak takraw!
2. Mention and explain various smashes in sepak takraw!

Demonstration

In this task, the students are asked to practice all the knowledge, techniques and basic techniques of sepak takraw, both individually and in the group. The more often the basic techniques are practiced over and over again, the more quickly the skills will be mastered by the students.

Major topics in the Audiovisual Material for Sepak takraw Playing Technique Course

As explained in the part about the results of the study, the audiovisual instructional material was produced in CD format containing basic techniques that the students have to master in sepak takraw as prospective professional players and training coaches. The major topics are shown in Table 03. This audiovisual material is added as the complement to sepak takraw playing technique course. This audiovisual material is very important to be produced since the questionnaire result showed that 22 out of 28 students stated that they prefer learning through listening to

learning through visual media. To accommodate the students' learning styles, then this audiovisual aid is very useful to help in optimizing their learning achievement.

Practices Developed in Smart Audiovisual Instructional Material

Practices Provided in Smart Audiovisual material

The practices provided in the smart audiovisual material is to demonstrate self-practices for the students that were produced/ recorded directly both with handy cam and mobile phone that shows improvement in ability in learning basic techniques in sepak takraw. Here, the students can individually or in group evaluate their ability and also the ability of other students in learning basic techniques in sepak takraw.

In addition, through this smart audiovisual the scores of all students can be recorded and then it can determine the rank so that a student with the best ability can be identified.

The results obtained (using 5 samples) are as follows.

Table 5
Best Results

Student's Name	Criterion			
	C1	C2	C3	C4
I Nyoman	80	82	90	75
Budi	70	72	85	81
Wati	75	80	81	78
Tono	86	79	80	83
Iwan	87	82	84	80

Note:

C1: Kicking

C2 : Service

C3: Block

C4: Smash

The weight for making a decision for each criterion is as follows.

C1: 5

C2 :4

C3: 3

C4: 4

The method used to make a decision is **Weighted Product**, using the formula as follows.

With $i=1,2,\dots,m$; in which $\sum w_j = 1$.

w_j is the positive exponent for advantage attribute and the negative exponent for cost attribute.

The complete calculation to obtain the decision result can be explained as follows. First a correction of weight is done such as $\sum w = 1$. Thus, it is obtained that $w_1 = 0,3125$; $w_2 = 0,2500$; $w_3 = 0,1875$; and $w_4 = 0,2500$.

Category of each criterion:

- 1) Criterion C1 (kick) is an advantage criterion.
- 2) Criterion C2 (block) is an advantage criterion.
- 3) Criterion C3 (smash) is an advantage criterion.

The vector S can be calculated as follows:

$$S_1 = (80^{0.3125})(82^{0.2500})(90^{0.1875})(75^{0.2500}) = 80.976$$

$$S_2 = (70^{0.3125})(72^{0.2500})(85^{0.1875})(81^{0.2500}) = 75.825$$

$$S_3 = (75^{0.3125})(80^{0.2500})(81^{0.1875})(78^{0.2500}) = 78.090$$

$$S_4 = (86^{0.3125})(79^{0.2500})(80^{0.1875})(83^{0.2500}) = 82.326$$

$$S_5 = (87^{0.3125})(82^{0.2500})(84^{0.1875})(80^{0.2500}) = 83.393$$

The value of vector V to be used for ranking can be calculated as follows.

$$V_1 = \frac{80.976}{80.976+75.825+78.090+82.326+83.393} = 0.202$$

$$V_2 = \frac{75.825}{80.976+75.825+78.090+82.326+83.393} = 0.189$$

$$V_3 = \frac{78.090}{80.976+75.825+78.090+82.326+83.393} = 0.195$$

$$V_4 = \frac{82.326}{80.976+75.825+78.090+82.326+83.393} = 0.206$$

$$V_5 = \frac{83.393}{80.976+75.825+78.090+82.326+83.393} = 0.208$$

The greatest value is found in V_5 so that Iwan was selected as the student with the best ability in learning the basic technique in sepak takraw.

4. Conclusion

Based on the previous explanation, then it can be concluded as follows. a) the need for sepak takraw playing technique material is urgent. This is proven by the gap between players' expectation and the real situation faced by the students; b) there are six major topics in sepak takraw playing technique course: 1) the history of sepak takraw; 2) sepak takraw facilities; 3) block techniques in sepak takraw; 4) smash techniques in sepak takraw; 5) service techniques in sepak takraw; and 6) rules and refereeing in sepak takraw; c) there are two types of practices/tasks developed: answering open-ended questions, and demonstration; d) Major topics in audiovisual, i.e., implementation of all knowledge, skills and basic techniques in playing sepak takraw that the students have to have as prospective professional teachers, and training coaches. e) Practices found in the smart audiovisual instructional material are responses/ evaluation of the students of the progress in self-practice and also the progress of other students that are recorded both by Handycam and mobile phone. In addition, through the smart audiovisual one can record all scores obtained by all of the students who have shown abilities in learning basic techniques in playing sepak takraw and then determines the ranking so that the student with the best ability can be identified.

Referring to the background, theoretical review, methods, results, and discussion in this study, then the writers suggest the followings. a) The lecturer and teachers are expected to have abilities to always develop instructional material and b) Before developing the instructional material, it is the best practice to analyze the curriculum first so that the instructional material being developed does not deviate too far from the curriculum.

Conflict of interest statement and funding sources

The author(s) declared that (s)he/they have no competing interest. The study was financed by the authors.

Statement of authorship

The author(s) have a responsibility for the conception and design of the study. The author(s) have approved the final article.



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Biography of Authors

	<p>I Ketut Budaya Astra, S.Pd., M.Or., was born in Bengkulu, April 8th, 1968. He worked as Lecturer of Sport & Health Education at the Ganesha University of Education. <i>Email: budaya.astra@undiksha.ac.id</i></p>
	<p>Dr. I Wayan Artanayasa, S.Pd., M.Pd., was born in Manikliyu, September 26th, 1973. He worked as Lecturer of Sport & Health Education at the Ganesha University of Education.</p>