Analysis of the Aiken Index to Know the Content Validity of the Lesson Plan Evaluation Instrument on Physical Fitness Materials Viewed from Learning Strategies

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Abstract. This study aims to determine the content validity of the physical fitness lesson plan evaluation instrument regarding learning strategies. The subjects of this study were lecturers and teachers of Physical Education, Sports, and Health. The instrument used is an instrument to measure the evaluation of the physical fitness lesson plan in terms of the learning strategy, which consists of seven indicators, namely: 1) Learning objectives: 2) Learning Materials/ learning materials; 3) learning media; 4) learning strategy; 5) learning activities; 6) Learning resources and 7) Assessment. The research method used is descriptive quantitative based on the results of the validity filled through the Aiken formula. Instrument validity was measured using Aiken analysis involving 7 (seven) raters as assessors. The results of the evaluation of physical fitness lesson plans related to learning strategies showed 22 valid statement items with an Aiken index ≥ 0.82. Based on the results, the content validity of the lesson plan evaluation instrument for physical fitness materials in terms of learning strategies, tested using Aiken's V, scored 0.82. It exhibited that the instruments were applicable since, in terms of their substance and construction, they fulfilled the desired language aspects and the Aiken validity test output indicated that 22 items were valid, thereby being usable for assessing the lesson plan for physical fitness materials in terms of learning strategies.

Keywords: Indeks Aiken, RPP, Physical Fitness

1 Introduction

Physical fitness is one of the learning materials delivered during physical education, sports, and health-learning sessions, commonly called physical education, which puts a great emphasis on functional fitness as a critical consideration in fitness education. Functional fitness refers to the ability to carry out "general exercises possibly conducted either at the home, workplace, or during physical education classes". Fit individuals or students can do school work, go to school, go home from school,

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partake in spare-time activities, respond to emergencies, and perform other daily tasks safely and without feeling tired [1].

Schools, especially because of their role in delivering physical education, are considered the key to enhancing physical activities in students to improve their physical fitness [2]. The characteristics or components of physical fitness are classified into two, i.e., physical fitness as regards physical health and physical fitness as regards skills. Physical fitness as regards health covers body mass index, durability, strength, and flexibility, while physical fitness as regards skills encompasses agility, power, balance, speed, coordination, and reaction time [3].

According to some research, physical fitness can act as a factor in increasing cognitive and academic development during adolescence as it contributes to psychomotor development acceleration, anxiety and stress reduction, and self-confidence boost [4]. Several activities associated with an active lifestyle and physical exercises are highlighted in physical fitness concepts and indicate that individuals have desired health and fitness [5]. Camlico [6] argues that physical education advocates education and training, which allows students to build and strengthen leadership skills, confidence in participating in class activities, self-love, self-appreciation, and community appreciation. The physical education process must also stress attitude, knowledge, and skill aspects and manifests the following learning objections, namely (1) education as body organ development to promote physical health and fitness, (2) education as neuro-muscular development, (3) education as mental-emotional development, (4) education as social development, and (5) education as intellectual development. Physical education and sports are part of the standard curriculum for elementary and secondary educational institutions and, with good management, have a promising effect on students' physical, spiritual, and social growth and development [7].

Considering that physical fitness is crucial for students, teachers must master the materials and choose effective strategies for preparing and implementing learning. Learning strategies are approaches selected and applied by educators/teachers to deliver learning materials and enable students to receive and understand learning materials, thereby achieving physical learning objectives. Planning activities include pre-impact, impact, and post-impact [8]. From a normal learning perspective, teaching strategies, methods, and techniques implemented should focus on a variety of learning domains, e.g., psychomotor, affective, and cognitive. They help teachers deliver learning based on student learning needs. Many different learning domains identify the degree to which students' academic performance in terms of learning skills, behaviors, and attitudes contribute to their academic achievements [9]. Grounded on the issues as elucidated above, this research focuses on analyzing the content validity of the lesson plan evaluation instrument for physical fitness materials in terms of learning strategies using the Aiken Index.

2 Method

2.1 Research Participants

Participants in this development research used documents collected from a range of journals and seven experts.

2.2 Data Collection and Instrumentation

The instrument was in the form of questionnaires with a 1-5 Likert Scale containing some questions covering learning objectives, learning materials, learning media, learning strategies, learning activities, learning sources, and assessment. The indicators of the lesson plan evaluation instrument for physical fitness materials in terms of learning strategies are listed in Table 1.

Table 1. Indicators of the lesson plan evaluation instrument for physical fitness materials

No.	Indicator	Statements
1	Learning objective	1. Suitability for Basic Competencies/learning achievements
		2. Suitability for attitude, knowledge, and skill aspects
2	Learning material	3. Suitability for Basic Competencies/learning achievements
		4. Correctness in terms of the substance
		5. Suitability for student characteristics
3	Learning media	6. Learning media suitability for Basic Competencies/learning achievements
		7. Learning media suitability for student characteristics
		8. Learning media suitability for the substance and information-technology integration
4	Learning strategy	9. Approach suitability for Basic Competencies/learning achievements
		10. Approach suitability for student characteristics
		11. Method suitability for the materials and student characteristics
		12. Facility and infrastructure suitability for the materials and student characteristics
5	Learning activity	13. Activity suitability for learning phases
		14. Activity suitability for the content, pedagogy, and information technology
		15. Activity suitability for learning strategies (models, methods, facilities, and infrastructures)
		16. Activity suitability for student characteristics
6	Learning source	17. Learning source suitability for Basic Competencies/learning achievements

7	Assessment	18. Learning source suitability for student characteristics 19. Learning source suitability for the materials 20. Learning source suitability for information technology 21. Assessment suitability for Basic Competencies/learning achievements 22. Containing the instrument and rubric for assessing attitudes, knowledge, and skills

In this assessment, the lesson plan validation sheet was used, composed of some assessment aspects we developed and several indicators to assess device validity and reliability by expert validators who gave a score on a scale of 1-5.

2.3 Statistical Analysis

The data analysis technique deployed in this research used Aiken [10]. Measuring the learning device validity was based on the learning device validity sheet, then analyzed using the Aiken V coefficient to test the validity of each learning device component using the following formula:

$$V = \Sigma s / [n (c - 1)]$$
$$s = r - lo$$

Where:
V = the overall validation average
Σs = the output of the rater score reduced by the lowest score
lo = the lowest validity assessment score
c = the highest validity assessment score
r = the score given by raters

3 Result

Measuring the content validity of soccer playing task commitment instrument items used the Aiken formula and relied on seven experts' evaluations. The content validity of each lesson plan evaluation item aspect is demonstrated in Table 2.

Table 2. Aiken Coefficient Categories

Indicator	Item	Aiken Coefficient Average	Category
1	Learning objective	0.95	High
2	Learning material	0.95	High
3	Learning media	0.94	High
4	Learning strategy	0.97	High
5	Learning activity	0.98	High

6	Learning source	0.96	High
7	Assessment	0.98	High
	V (overall average)	0.96	High
	Category	Valid	High

As required by Aiken (1980), the content validity coefficient, with seven raters and five answer categories, was good if the minimum validity coefficient was 0.82. Our calculation results exhibited that the content validity of each instrument item was all 0.82. The highest Aiken Index for validity was 0.98, while the lowest was 0.94. Accordingly, all task commitment instrument items fulfilled the criteria. The overall average was 0.96.

Grounded on data on the validity of each learning device component, there were a slight difference between the lowest and the highest indexes in each device component and a consistent validity level given by raters. The instruments could hence be categorized as Very Valid theoretically.

4 Discussions

Based on the results, the lesson plan evaluation instrument for physical fitness materials in terms of learning strategies came with a high validity level. The Aiken Index score (V Index) indicated raters' agreement concerning item suitability for indicators which had to be measured using the items. The closer the Aiken Index score to a score of 1, the better the item in that it was more relevant to the indicators [11].

The results were aligned with the results of several literature studies. Using eight raters and four answer categories, as conveyed by Aiken, question item validity was good if the Aiken Index was higher or equal to 0.75 [12]. Yuliarto posited that the content validity coefficient, with six raters and five answer categories, was good if the minimum validity coefficient was 0.79. Our calculation results pointed out that the content validity of each instrument item was all above 0.79, showing that all task commitment instrument items met the criteria [13]. Content validity was examined to investigate the extent to which instrument content could measure what should be measured and to what extent questions in the developed instrument and their scores could measure skills to be measured [14]. If validity, measured using Aiken, scored high, the use of Aiken administered good validity and reliability levels [15]. Results demonstrated that the lesson plan evaluation instrument for physical fitness materials in terms of learning strategies was valid. The instrument, needless to say, was effective in analyzing learning devices, specifically learning strategies. A learning design was an integral part of candidate teacher evaluation to prepare quality learning. A suitable learning device would bring about a quality learning process [16][17].

5 Conclusion

Based on the results, we could draw the following conclusions, which were 1) The content validity of the lesson plan evaluation instrument for physical fitness materials

in terms of learning strategies, tested using Aiken's V, scored 0.82. It exhibited that the instruments were applicable since, in terms of their substance and construction, they fulfilled the desired language aspects, and 2) The Aiken validity test output indicated that 22 items were valid, thereby being usable for assessing the lesson plan for physical fitness materials in terms of learning strategies.

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