

Original article

Formation of students' perceptions of physical education

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Abstract

For formative evaluation of teaching, it is essential to consider students' perception of teaching. This study aimed to investigate the effect of the order of units in a physical education class on students' perception. The subjects were 126 freshmen enrolled in a general physical education course. The course units were arranged in the following manner: badminton, volleyball, and basketball. At the end of the course, the students described their thoughts regarding it. We analyzed the documented responses via text mining. The results showed that the order and characteristics of the course units, specially arranged for this study, progressively affected the students' perception.

Introduction

Lesson plans and reflective teaching and learning are what help achieve the effects of physical education. The basic goal of all health and physical education courses is to develop cognitive and social skills related to the body and overall self [1]. In order to achieve this goal, teaching material selection and the sequence of units must be emphasized. In other words, when a teacher designs a class, it is important for him/her to consider the characteristics of the teaching materials. Furthermore, the most noteworthy point

is students' perception of a physical education class. This study aims to investigate students' changing perception throughout the course of a physical education class.

Methods

1. Subjects

The subjects were 126 freshmen from the department of science and engineering enrolled in a general physical education course. The male-to-female ratio was roughly 9:1, with 111 male students (86.5%) and 15 female students (13.5%).

2. Course details

The physical education course was a graduation requirement. The number of students in one class was 40. Class assignments were carried out at random. The course lasted from the end of April to the end of July 2014.

3. Course unit configuration

Siedentop (1983) pointed out the importance of creating a normal course of action during the early stages of the class [2]. Creating a normal course of action helps avoid the risk of the trouble of unexpected action and makes the progress of the instruction easy. In addition, this provides a prospective educational effect [3].

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Iwata (2013) pointed out that there are many decision-making opportunities in a goal sport because players share a court with their teammates and the opposing team and the fluid changes in the space and freedom of action create difficulties for them [4].

Therefore, the course units were arranged considering classroom management and decision-making difficulties. The order of course units and the points of consideration for teaching are shown in Figure 1. Before starting the units, a physical activity readiness questionnaire (PAR-Q) was conducted for screening diseases, which was followed by a fitness test. A badminton unit was conducted first. As it was conducted during the period soon after admission, students were still not familiar with each other. Badminton is a court game that involves a net (net sport); it can be played either one-on-one or two-on-two. While playing doubles badminton requires cooperation with own partner, there is no risk of injury due to contact

with the opposing players. A volleyball unit was conducted next, a month after university admission. As students did not frequently communicate with each other at this stage, their relationship was still limited. A team sport, volleyball is also a court game that involves a net (net sport). In volleyball, players are required to maintain a certain distance from their teammates. Moreover, cooperation among teammates is necessary. There is little risk of injury due to contact with the opposing team's players. A basketball unit was the last one to be conducted. Two months had passed after university admission. Although the students knew each other at this stage, their relationships with each other were still not so intimate. Basketball is also a court game and a team sport that involves scoring baskets (goal sport). In basketball, cooperation is required among teammates. There is a risk of injury due to contact with the opposing team's players, and therefore strict compliance with the rules of the game is required.

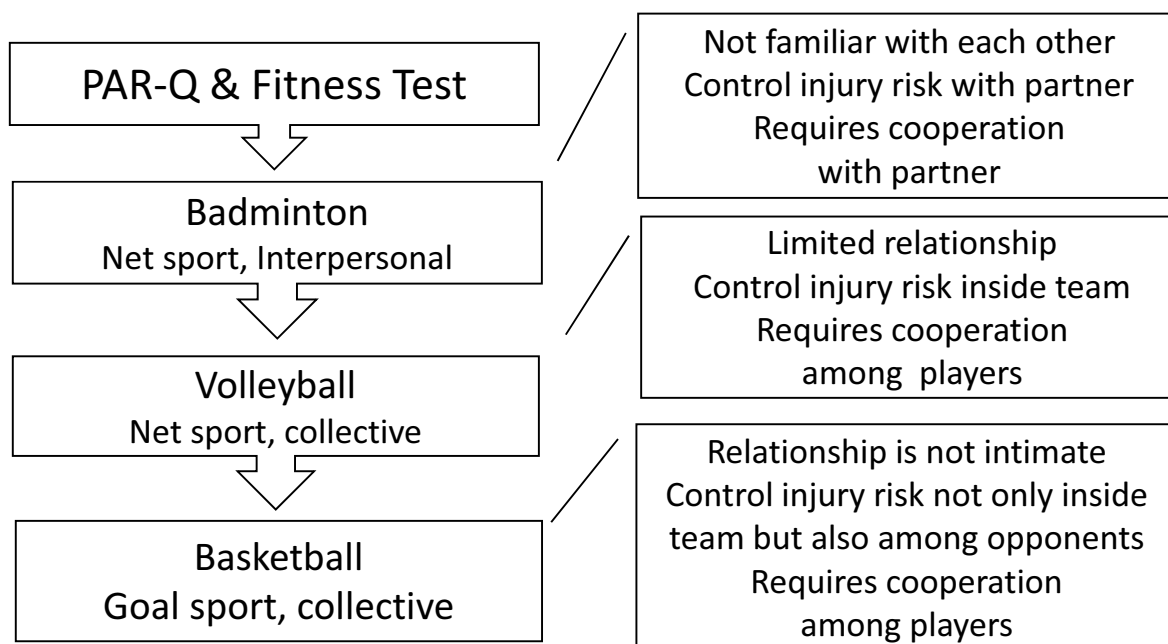


Figure 1. Course unit order and points of consideration for teaching

4. Research protocol

Figure 2 shows the research protocol. We asked the subjects to record simple notes after every class. At the end of the course, they were allowed to refer to these notes while describing their thoughts, which were classified into four categories-one per course unit and one labeled “throughout the course”. We analyzed the documented responses via text mining. KH coder was used for this purpose.

Results

First, we identified the 20 most frequently occurring words, and then isolated 11 words that were common to all four categories; these 11 words were “events”, “think”, “game”, “person”, “fun”, “sports”, “I”, “others”, “practice”, “team” and “lesson”.

Second, we created eight codes corresponding to the most frequently occurring words in the physical education field. These eight codes were:

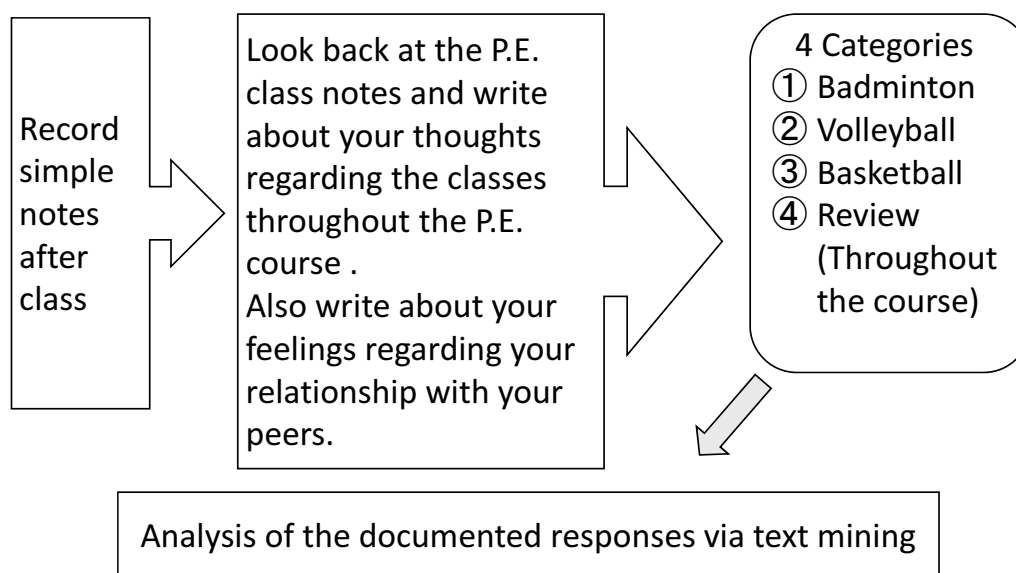


Figure 2. Research protocol

Table 1. Coding rules

Codes	Examples of text
Educational materials	Badminton, Volleyball, Basketball
Group cohesiveness	Team, Group, Fellow, Class
Play skills	Pass, Block, Service, Shoot
Game	Game, Doubles
Interaction	Communicate, Talk, Concern
Others	Opponent, Person
Self	I, Think
Positive emotion	Fun, Happy, Good, Important

“educational materials”, “group cohesiveness”, “play skills”, “game”, “interaction”, “others”, “self” and “positive emotion”. Table 1 displays the coding rules by presenting examples of words for each code.

Third, we compared the frequencies of occurrence and non-occurrence across the four categories in each codes after verifying the data through cross tabulation, and using Pearson's chi-squared tests, complemented by adjusted residual analysis, to assess associations between the categories. Results summarized in Table 1 and Table 2 include only frequencies of occurrence.

The amount of significantly high frequencies in the Volleyball unit was compared to the other categories.

The frequency of the code “game” was the highest in the Badminton unit, while the codes “educational materials”, “group cohesiveness” and “self” were the lowest.

The frequencies of the codes “educational materials” and “play skills” were significantly higher in the Volleyball and Basketball units, categorized as “team sports”. The frequency of the code “interaction” was the highest in the Volleyball unit, while the frequency of the code “others” was the lowest in this unit. The frequencies of the codes “interaction” and “positive emotion” were lowest in the Basketball unit, while the code “play skills” had the highest.

The frequencies of the codes “game” and “play skills” were significantly lower in the Review unit. While the code “interaction” displayed higher frequency in the Review unit and the Volleyball unit, the “positive emotion” code had a higher frequency in the Review unit than Basketball unit.

Discussion

1. The units

The eight selected codes were used as a

Table 2. Cross-tabulation of each of eight codes with four categories

	education materials	group cohesiveness	play skills	game	interaction	others	self	positive emotion	total (case)
Badminton	28(22.22%)	54(42.86%)	42(33.33%)	52(41.27%)	45(35.71%)	45(35.71%)	70(55.56%)	80(63.49%)	126
Volleyball	77(61.11%)	89(70.63%)	63(50.00%)	42(33.33%)	73(57.94%)	25(19.84%)	80(63.49%)	71(56.35%)	126
Basketball	73(57.94%)	80(63.49%)	83(65.87%)	48(38.10%)	41(32.54%)	43(34.13%)	84(66.67%)	66(52.38%)	126
Review	55(43.65%)	73(57.94%)	13(10.32%)	16(12.70%)	67(53.17%)	49(38.89%)	92(73.02%)	93(73.81%)	126
Total	233(46.23%)	296(58.73%)	201(39.88%)	158(31.35%)	226(44.84%)	162(32.14%)	326(64.68%)	310(61.51%)	504
Chi-square value	47.72**	21.68**	89.07**	29.02**	24.23**	12.34**	8.72*	14.11**	

n.s. : not significant, * : $p < 0.05$, ** : $p < 0.01$

Table 3. Results of the residual analysis

	education materials	group cohesiveness	play skills	game	interaction	others	self	positive emotion
Badminton	-6.2▽	-4.2▽	-1.7	2.8▲	-2.4▽	1.0	-2.5▽	0.5
Volleyball	3.9▲	3.1▲	2.7▲	0.6	3.4▲	-3.4▽	-0.3	-1.4
Basketball	3.0▲	1.3	6.9▲	1.9	-3.2▽	0.6	0.5	-2.4▽
Review	-0.7	-0.2	-7.8▽	-5.2▽	2.2▲	1.9	2.3▲	3.3▲

▲ significantly high, $p < 0.05$ ▽ significantly low, $p < 0.05$

framework to investigate students' reflection processes in relation to the three units including volleyball, basketball, and badminton.

The results of the Badminton unit, which was the first unit taught in this course, suggest that students were interested in the game without needing to communicate with each other because they were still not familiar with each other. The results from the Volleyball unit, which was taught second in the course, indicate that students' communication was activated and group cohesiveness was promoted through engagement with the unit. Students' increased levels of communication were evident in the results due to the fact that the code "others" showed the lowest frequency.

As the course progressed, results showed that students were only involved in "play skill" in the Basketball unit, which was based on "group cohesiveness", initially constructed in the Volleyball unit.

2. Review of the entire physical education course

The Review unit represents the review of the entire physical education course. The high frequencies of "positive emotion", "interaction" and "self" in the Review unit suggest that students experienced high levels of positive emotion as well as the value of autonomous interaction through the course. Furthermore, the perceptions of the review of the entire physical education course were based on the perceptions expressed in the individual units.

These results showed that the order and characteristics of units affect students' perceptions of the overall course. However, other factors might also be influencing students' perceptions. An appropriate teaching approach based on reflection can foster a favorable perception of education among students [5]. The overall teaching process seemingly caused the high frequency of "positive emotion" identified in the review of the entire course.

A limitation of this study is that the subjects

and facilities were specific to the university where the study was conducted. Furthermore, the sports types that were taught in this course were limited to Badminton, Volleyball, and Basketball because of lack of research materials, skills and knowledge.

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