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Research Paper

The effect of two teaching strategies on the satisfaction of participating in the Technology course

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ABSTRACT: *The aim of this research was to investigate the effects of two different teaching methods: group collaboration with unguided discovery and group collaboration with guided discovery in student satisfaction regarding the 9th grade during the course of technology. Additionally, another goal of this research was to investigate sex as a differentiation factor. The survey's sample consisted of 103 male (51) and female students (52) that were studying at 4 different classrooms of the 9th grade. The program lasted 12 weeks with a teaching frequency of 1 session per week, with a duration of 45 minutes. For data collection, the Greek version [1] of the "Physical Activity Class Satisfaction Questionnaire" (PACSQ) [2] was used. For the analysis of the data was used: a. descriptive statistics b. Reliability analysis c. t-test for Independent samples d. students' interview. From the analysis of the results, we come to the following conclusions: a. the structural validity of the questionnaire, and the factors were found to have a high degree of internal consistency, b. there were no statistically significant differences in the means per gender of students, c. teaching method applied can become a differentiating agent for the factors «Mastery Experiences», «Teaching», «Fun and Enjoyment», and «Relaxation». Analysis of the research data concludes that a. the gender is not satisfaction's differentiator factor, b. the teaching method is a factor in the differentiation of the degree of satisfaction*
KEYWORDS: *Traditional dance, Technology Course, Cooperative Method, Directed Discovery*

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I. INTRODUCTION

During the middle of the '60s Mosston, through the pages of the book "Teaching Physical Education: From Commando Discovery" [3], introduced the concept of the spectrum of teaching styles. At the same time, he expressed the opinion that teaching is part of a decision-making procedure. The most important criterion which created the base for the modification of teaching styles was the question: «who is going to make the decisions» regarding the organization and the realization of the class.

According to Mosston and Ashworth [4], at least six fundamentals determine the spectrum. The first fundamental is that teaching is part of a chain of decisions. The second fundamental is that the decision-making process determines each teaching style, which is determined by the person that decides the way that the class will be done. There are 3 possibilities regarding decision-making. Either these will be made by the instructor, or by the student, or by both of them together. Additionally, the spectrum reflects two basic human needs: the need for being capable of reproducing knowledge and the need for being capable to produce knowledge. In conclusion, every style is perceived in a different way by each student, so each style impacts differently each student.

According to the authors, the spectrum has consisted of 11 teaching styles which form two large categories. The first category includes the reproductive styles, which represent direct teaching/instruction, and the productive styles which represent indirect teaching [5]. The reproductive teaching styles are considered instructor-centric because the professor makes the decisions regarding the structure of the teaching process. In contrast, the productive styles are considered mainly student-centric due to the reason that the student is

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involved in the decision-making process. As a result, the learning experience starts with the student him/herself [6].

The traditional school due to the way that used to operate until recently has been accused repeatedly that neglected the social aspect of teaching because of the instructor-centric methods that were using. These methods are intended to impart large sums of information to students. According to Matsagouras [7], the traditional school favored competitiveness, and as a result group work that strongly promotes socialization was neglected.

Direct teaching constitutes the most representative and common type of instructor-centric teaching method. In this particular method, the professor is the main person that controls the teaching process and the information that is given. In this case, the students do not participate in the teaching process and are passively attend the class whilst keeping notes.

We could argue that the only positive side of direct teaching is that saves a lot of time, and that the professor is able to teach all the material that is supposed to. Apart from that, we can only observe the negative sides of this particular teaching method since the students are just passive listeners to the information that is given to them without the ability to evaluate it. Additionally, it is a noticeable lack of communication and cooperation between the students. The most important disadvantage of this method is that the teaching pace is the same for every student. As a result, many students are not able to keep up with the fast teaching rhythm and are left behind regarding the learning process [8].

In contrast to that, the group work method has the student as the center of the process. This particular method satisfies the need of the student for being active during the learning process. The students are also actively involved in the teaching process since every member of the group contributes his own ideas regarding each subject and the students have the ability to help or correct each other. Furthermore, the group work method encourages students to participate in the conversation regarding the subject during the class and helps them to express better themselves. Conclusively the most important benefit of this method is the cooperative skills that the students develop through their collaborative work [9].

Discovery teaching is one of the most student-centric forms of teaching. Either in the form of free discovery or in the form of guided discovery, it encourages the students that have difficulties with their social skills to participate in the conversation and the learning process. Simultaneously the study of the subject from different points of view helps students to listen to opinions opposite to their own. According to Lazaridis [10], the discovery of the knowledge leads to a better understanding of it, and that increases the confidence of the student. The satisfaction that every student gains from the learning process is one of the criteria of a successful teaching method. According to the student from Kenya Kukubo Barasam, a successful teacher is a teacher that makes the learning process enjoyable for the students [11].

II. METHOD

Participants

The sample of the survey consisted of 103 students (male (51) and (52) female) that attended four different classes of the 9thgrade. The students after a random selection were split into two groups. Two classes with 26 males and 26 females were taught using the group work method with the free discovery form and two classes with 25 males and 26 females were taught with the group work method and the guided discovery form

Measurement process

This research is included in the spectrum of action researches and is targeting the ascertainment of the positive and negative points of the professor. The detailed program of the 9thgrade includes the introduction of the student to the concept of research and the stages that goes into it. After the students are taught the theoretical part, they are requested to choose a subject to make their own research.

This particular year the students chose Greek traditional dance as their subject. More specifically they decided to depict theatrically the position of the woman in Greek traditional society and how that position is reflected through Greek traditional dance. The first stage of the research was the literature review of articles related to the researches subject. This literature review was done using the group work method but with the implementation of two different approaches. Every class was split into four groups mixed regarding the sex and the students' performance [12].

As it was mentioned earlier, after random selection 2 classes were taught using the group work method with the free discovery form and two classes were taught with the group work method and the guided discovery form. In the first group in each class, the subject was given, and the students worked on their own trying to get through their assessment. They were free to choose the pace and the way that they would work. Whilst in the second group the professor was at the students' disposal all the time to help them as well as guide them in a certain direction.

The program lasted 12 weeks with a teaching frequency of 1 session with a duration of 45 minutes per week.

Instrument

For data collection, the Greek version [1] of the "Physical Activity Class Satisfaction Questionnaire" (PACSQ) [2] was used. This questionnaire consists of forty-five (45) questions researching the nine factors of satisfaction. These factors are a. "Mastery Experiences" b. "Cognitive Development" c. "Teaching" d. "Normative Success" e. "Interaction with Others» f. "Fun and Enjoyment" g. "Improvement of Health & Fitness" h. "Diversionary Experiences" and j. "Relaxation".

In this particular research were used 7 factors and two - "Normative Success" and "Improvement of Health & Fitness"- were not used since they did not fit in the researchers' character. The answers were given on a 5-point scale from 1 (no satisfaction) to 5 (very satisfying).

Statistical analysis

The following statistical analyses were carried out:

a. descriptive statistics were calculated to broadly examine the degree of satisfaction

b. Reliability analysis (Cronbach's alpha)

c. t-test for Independent samples was used to examine if the gender and the participation in teaching program differences on satisfaction

d. Interviews were taken by the students of both groups for a better understanding of the position of the students. The students that took part in the interviews were random. The level of statistical significance was set at $p<.05$.

III. RESULTS

Reliability analysis

The internal consistency of the questionnaire was checked with Cronbach's α test. The results support the structural validity of the factors that were found to have a high degree of internal consistency (Table 1).

Table 1. M, SD & Cronbach's alpha

Factors	M	SD	Cronbach's alpha
Diversionary Experiences	4.38	.56	.91
Mastery Experiences	4.26	.62	.89
Cognitive Development	4.22	.61	.89
Teaching	4.02	.58	.90
Interaction with Others	3.98	.62	.86
Fun and Enjoyment	3.92	.70	.88
Relaxation	3.44	.84	.82

For the investigation, if there are statistically significant differences in the factors between male and female students, the t-test for independent samples was conducted. From the results, it seems that there were no statistically significant differences ($p>.005$) in the means per gender of students for any of the seven factors.

Table 2. Means, Standard Deviation, and Statistically Significant Differences Between Boys and Girl

Factors	Male		Female		Differences	
	M	SD	M	SD	t	p
Diversionary Experiences	4.40	.54	4.36	.58	$t_{(101)}=.465$	.42
Mastery Experiences	4.24	.64	4.28	.60	$t_{(101)}=.464$	.46
Cognitive Development	4.20	.64	4.24	.58	$t_{(101)}=.662$	.94
Teaching	3.98	.62	4.04	.54	$t_{(101)}=.424$	.25
Interaction with Others	4.01	.58	3.95	.64	$t_{(101)}=.470$	.24
Fun and Enjoyment	3.91	.71	3.93	.69	$t_{(101)}=.242$	.75
Relaxation	3.42	.88	3.46	.80	$t_{(101)}=.458$	.75

To investigate any differences due to the teaching method applied, seven T-tests were carried out, on independent samples. The results show that the teaching method applied can become a differentiating agent for the factors «Mastery Experiences», «Teaching», «Fun and Enjoyment», και «Relaxation». On the contrary, there are no statistically significant differences for the factors «Diversionary Experiences», «Cognitive Development», and «Interaction with Others» (Table 3). More specifically, the students of the classes that the group work method with guided discovery was implemented scored higher in every factor compared to the students of the classes that the group work method with free discovery was implemented.

Table 3. Means, Standard Deviation, and Statistically Significant Differences Between the two Teaching Methods

Factors	Free discovery		Directed discovery		Differences	
	M	SD	M	SD	t	p
Diversionary Experiences	4.36	.60	4.40	.52	$t_{(101)}$=.275	.785
Mastery Experiences	4.02	.74	4.48**	.50	$t_{(101)}$=3.75	<.001
Cognitive Development	4.22	.62	4.22	.60	$t_{(101)}$=.175	.820
Teaching	3.84	.55	4.20**	.53	$t_{(101)}$=5.27	<.001
Interaction with Others	3.96	.61	4.00	.63	$t_{(101)}$=.152	.880
Fun and Enjoyment	3.74	.74	4.10**	.66	$t_{(101)}$=4.27	<.001
Relaxation	3.28	.88	3.60*	.80	$t_{(101)}$=2.05	<.005

IV. DISCUSSION

There are many complaints by students regarding boring classes that fail to attract their attention. The same complaints are expressed from the professors as well. Phrases like «it is a big deal if 2 students out of the whole class were paying attention to the class» or «I was saying things, and nobody was hearing them» are common among teachers and professors.

The course of technology is taught in every grade of junior high school targeting the introduction of the students to different accomplishments of technology through the ages. More specifically during the 9th grade, the goal was to introduce students to how research is made, all the way from the theoretical point of view to the actual process.

From the statistical analysis of the data is ascertained that both of the teaching methods were seen positively from the students. The answers of the students confirmed the findings of other researches according to which the teaching method contributes to the students' involvement, or the lack of it in the learning process [8; 9; 10]. Additionally, the observation of Lazaridis [10], according to whom the discovery of knowledge contributes to the better understanding of it was confirmed.

There were observed statistical differences that were justified as the result of the different teaching method that was implemented. The students that were taught by the method of guided discovery were more satisfied with the teaching process in comparison to the students that were taught with the method of free discovery. It was observed that the main differences were mostly related to the factors that had to do with the teaching and learning process. According to the students, the difference was the presence of the professor/instructor in one of the methods and the lack of it in the other. The presence of the professor was inspiring a certain amount of confidence and certainty that they were working in the correct direction. The students that were taught with the free discovery method were feeling lost at certain points on whether or not their choices were correct. This lack of confidence was reflected in the way they organized the theatrical act with the traditional dances. The most important was their reaction when they heard that the result of their research was excellent, which showcased that this positive result was unexpected.

On the contrary, it was not observed any significant statistical difference on the factors "Diversionary Experiences", "Cognitive Development" and "Interaction with Others". This means that most of the students acknowledged that the new experiences that these teaching methods offered them. At the start of the school year, when the program was announced the reaction of the students was positive but at the same time, they did not believe what they were hearing. That was the result of the two previous years that the class was a monologue of the professor. The studying process included the study of the previous teaching way and the presentation of the new method. The students had the ability to form the conditions of the class and influence the way they were taught according to each student's needs. The result was that every student participated in the learning process, and no one stayed inactive and indifferent [8]. Conclusively, thanks to these new methods the goal of the school to get the students to work and cooperate with each other were achieved [9].

Finally, the results showed that there were no significant differences between the sexes regarding the levels of satisfaction. This showcases that the methods were adequate for both sexes.

V. CONCLUSION

The conclusions are:

a. The survey "Physical Activity Class Satisfaction Questionnaire" is appropriate and useful to researchers that investigate the satisfaction of the students from their participation in the teaching and learning process.

b. The student, both males, and females were open to new teaching methods that are getting away from the ordinary practices.

c. Important to the choice of the teaching method is the safety that the students feel by the presence of the instructor/professor.

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