International Journal of Turkish Education Sciences,
2026, 14 (1), 238-255
https://doi.org/10.46778/goputeb.1743969

ISSN: 2148-2314

The effect of the individualised instruction model on students' attitudes towards physical education and sport: Experimental study

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ABSTRACT

The aim of this study is to examine the effect of the individualised teaching model on students' attitudes towards physical education and sports. A pre-test and post-test control group model, one of the full experimental models, was used in the research. At the beginning of the study, after matching the groups, 30 students (15 in the experimental group and 15 in the control group) in the 9th grade formed the study group through random assignment. The lessons were conducted over 6 weeks using the basketball unit; the students in the experimental group were taught using the individualised teaching model, while the students in the control group were taught using the direct teaching model. Data collection utilised a unidimensional "Attitude Scale Towards Physical Education and Sports" consisting of 24 items. Data analysis was performed using a 2x2 repeated measures analysis of variance following preliminary analyses. The findings of the study revealed a significant Group x Measurement (Pre-Test/Post-Test) interaction effect. Significant differences were determined in the pre-test and post-test scores of the experimental and control groups. The findings of the retention test revealed that the positive attitude continued for the experimental group, while the negative attitude towards physical education and sports continued for the control group. The results of the study revealed that the individualised teaching model positively affected the attitudes of first-year high school students towards physical education and sports. No findings were obtained indicating that lessons taught using the direct teaching model developed students' attitudes towards physical education and sports. Physical education and sports teachers may be advised to use the individualised teaching model in their lessons to develop attitudes towards physical education and sports.

Article Type
Research

Article Background
Received:
July 16, 2025
Accepted:
November 12, 2025

Keywords
Individualised Teaching Model,
Direct Teaching Model,
Physical Education and Sports,
Attitude,
Experimental Study,
Education

To cite this article: İrhan, G., & Sivrikaya, A. H. (2026). The effect of the individualised instruction model on students' attitudes towards physical education and sport: Experimental study. *International Journal of Turkish Education Sciences, 14* (1), 238-255. https://doi.org/10.46778/goputeb.1743969

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Introduction

In physical education and sports lessons, importance should be given to students' affective domain gains as well as their physical gains (Ministry of National Education [MoNE], 2018). Considering that physical activity positively affects an individual's real life, professional life, mental and physical immunity, or basic individual needs (Hovland et al., 2023), a high-level physical education and sports class should motivate all students to be active and provide the individual skills necessary for students to lead a life in which they feel important (National Association for Sport and Physical Education [NASPE], 2004).

Theoretical Framework for Attitudes in Physical Education and Sport

Numerous definitions of the concept of attitude have been proposed in the literature. Attitude has been characterised as emotional states towards an individual or activity (Safrit & Wood, 1995). Attitude is defined as the process of developing positive or negative responses to an event or phenomenon (Tezbaşaran, 1997).

Students' negative reactions to physical education and sports lessons manifest themselves in situations such as inactivity during games, lethargy, or not taking the lesson seriously (Güllü et al., 2016). The basis for positively influencing attitudes towards physical education and sports lies in the teacher correctly applying and conveying active, enthusiastic, curious, and self-improving innovative teaching methods in their lessons (Karakullukçu & Çakto, 2023). The key to developing attitudes towards the lesson is how the teaching process is conducted (Kangalgil et al., 2006). In this regard, it is predicted that the individualised teaching model, which has been proven to have a positive effect in different areas of sports education, will also affect students' attitudes towards the lesson (Akkaya et al., 2022; Annarino et al., 1979; Cregger & Metzler, 1992; Friskawati et al., 2017; Güneş, 2017; Hannon et al., 2008; Metzler et al., 1989; Metzler, 1984; Metzler, 2005; Pritchard et al., 2012; Sönmez & Mirzeoğlu, 2021).

Factors Affecting Attitudes Towards Physical Education and Sport

The fundamental aim of physical education and sports lessons is to enhance students' fine and gross motor skills, both physically and mentally, while also developing their knowledge levels to foster positive developments in their attitudes towards sports (Demirhan & Altay, 2001). One of the primary conditions for a student's success in a course is their attitude and perspective towards that course, as well as teacher motivation (Demirhan & Altay, 2001). In physical education and sports lessons, the student's attitude towards the lesson is influenced by environmental factors, gender, school relationships, whether they have parents who are athletes, and the negative or positive experiences they have had (Aicinena, 1991; Luke & Cope, 1994). Attitudes towards physical education and sports are influenced by the quality of sports education and physical activities (Zubiaur et al., 2021).

Individualised Instruction Model Theoretical Framework

Revising teaching materials to make them more up-to-date and diverse, and processing them for learners using various methods, has been defined as teaching model (Joyce et al., 1973; İrhan, 2025). The individualised teaching model (ITM), developed by Keller (1968), is an

approach that allows students to progress independently, and the most important aspect of ITM is that it directs the student towards the goal of mastery (Güneş, 2017). This is because students cannot move on to another task without mastering the requirements of the current one, making it a model based on a foundation of success (Eyre, 2007; Sönmez & Mirzeoğlu, 2021). When teaching with the individualised teaching model (ITM), no penalties are imposed if students are unable to complete the applications, and there is no decline in their academic achievement scores. (Ektirici, 2023). The goal of the ITM is to ensure that students' progress step by step individually according to their own levels while applying their skills (Güneş, 2017).

Literature Findings

Studies conducted on ITM in physical education and sports pedagogy are generally experimental in nature and aim to reveal its effects on students and athletes. In a study focusing on tennis, it was found that students who continued their lessons with ITM had higher learning levels (Metzler, 1984). It has been reported that ITM, tested on university students, has a positive effect on skill acquisition (Cregger & Metzler, 1992). It has been found that the model saves time in the lessons taught and increases student participation and interest in the lesson (Metzler et al., 1989). Another study titled "The Effect of Distance Education on Academic Learning Time" found that the individualised teaching model has a positive effect (Akkaya et al., 2022). In another study conducted by Sönmez & Mirzeoğlu (2021), it was concluded that the individualised teaching model positively affected some swimming techniques in athletes in the swimming branch. In another study with a sample group of secondary school students, it was determined that the individualised teaching model positively affected students' psychomotor skill acquisition (Esen & Mirzeoğlu, 2019). Other studies in the literature on the positive effect of the individualised teaching model on psychomotor skill acquisition corroborate this finding (Friskawati et al., 2017; Hannon et al., 2008; Prewitt, 2014; Prewitt et al., 2015). In another study comparing the ITM and traditional teaching methods, it was found that the ITM and traditional teaching methods had homogeneous effects on volleyball applications (Yenibertiz & Mirzeoğlu, 2021). A study conducted with secondary school students found that students did not enjoy physical education and sports classes, and that this was due to limited opportunities, inadequate teaching methods, and the lack of fairness in the way the classes were conducted (Carlson, 1994).

Importance of the Study and Problem Statement

According to a study conducted by İnce & Hünük (2010) in the literature, physical education and sports teachers value traditional teaching methods the most and conduct their lessons using these methods, while they value problem-solving and guided discovery methods the least. In traditional teaching approaches, the teacher or coach first demonstrates the skill and then expects the athletes or students to apply these skills in the game. However, it has been found that this situation discourages students or athletes from participating in the game and has a negative impact on their performance (Mitchell et al., 2013). It can be said that new teaching approaches are needed to acquire the characteristics required by the age and to meet the different desires and needs of students. One such approach, the individualised teaching

model, which is considered to be in line with our era, has been proven to be a powerful model for student achievement in both cognitive and psychomotor areas (Cregger & Metzler, 1992; Güneş, 2017; Metzler et al., 1989; Metzler, 1984; Metzler, 2005; Sönmez & Mirzeoğlu, 2021).

Along with this information on the individualised teaching model, the Ministry of National Education's 2018 curriculum for physical education and sports lessons for secondary school students carefully emphasises the importance of individuality and individual differences, as outlined below.

> Teaching programmes have been prepared based on the principle that human development does not end at a certain stage and that development continues throughout life. For this reason, teaching programmes recommend taking supportive measures by considering the developmental characteristics of individuals at every age (MoNE, 2018, p. 8).
>
> Curricula are structured taking into account sensitivities related to individual differences. Individual differences arising from hereditary, environmental and cultural factors are also evident in terms of interests, needs and orientation. On the other hand, this situation also encompasses differences between individuals and within the individual themselves. Individuals differ from others and are also different in terms of their own characteristics. For example, an individual may have strong abstract thinking skills, while the same individual may have weak drawing skills (MoNE, 2018, pp. 8-9).
>
> It is to ensure that students become individuals who are oriented towards a healthy life, possessing self-confidence and self-discipline within the framework of moral integrity and self-awareness, in line with their level of development and individuality, and who have acquired the basic verbal, numerical and scientific reasoning skills, social skills and aesthetic sensitivity they will need in everyday life and can use them effectively. (MoNE, 2018, p. 4).

Original Value and Purpose of the Research

It can be said that traditional teaching in physical education and sports lessons has begun to lose its effectiveness in recent years and is unable to meet the needs (Alagül & Gürsel, 2017). Based on all the information given above, it is thought that attitudes towards physical education and sports will not evolve positively with the traditional teaching method. In light of the studies conducted, it is important to reveal the positive or negative effects of comparing the individualised teaching model with the traditional teaching approach, which is the direct teaching model. A literature review revealed that research on the effect of the individualised teaching model on attitudes towards physical education and sports is limited. In light of this information, this study was conducted to determine the effect of the individualised teaching model on students' attitudes towards physical education and sports.

Within this scope, answers were sought to the following questions.

1-) Do the pre-test and post-test scores of the experimental and control group students show significant differences in their attitudes towards physical education and sports?

2-) Are there any significant differences in the post-test and retention test scores of the experimental and control group students regarding their attitudes towards physical education and sports?

Method

Research Model

In this study, a pre-test and post-test control group fully experimental design from quantitative research models was used. In pre-test and post-test control group experimental studies, the researcher controls the variables, and the distinguishing feature from other designs is that the researcher can process and apply the independent variable under control (Karakaya, 2014). The dependent variable of the research is the attitude towards physical education and sports, while the independent variables are the individualised teaching model and the direct teaching model.

Research Group

The study group consisted of year 9 students attending a high school In the in the city of Bolu. Before commencing the research, ethical approval was obtained in accordance with the first article of the 11 January 2023 meeting and decision letter numbered E-26428519-050.99-112383 of the Ethics Committee of the Rectorate of Sakarya University of Applied Sciences. Before commencing the application, an attitude scale was administered to all students (N=116) enrolled in the 9th grade classes at the school to ensure group equivalence. After completing the preliminary analyses to ensure group equivalence, a one-way analysis of variance test was used to determine whether there were any significant differences between the groups, and the experimental and control groups were identified through random assignment. The findings of the tests are reported in Tables 1 and 2.

Table 1

Skewness and Kurtosis Values for the Data

Branches	Mean	Median	Variance	SD	Skewness	Kurtosis
9-A	53.21	50.50*	136.69*	11.69*	0.27*	-1.59*
9-B	58.21*	57.00*	100.24*	10.01*	0.04*	-.73*
9-C	56.89*	56.00*	126.76*	11.25*	-0.17*	-.84*
9-D	56.07*	57.00*	161.92*	12.72*	0.03*	-1.59*

Table 1 shows that the skewness and kurtosis values of the obtained data indicate a normal distribution within the ±3 range (Shao, 2002).

Table 2

One-Way Analysis of Variance (ANOVA)

Branches	Sum of Squares	sd	Mean Squares	F	p
Inter-group	2.759*	4	2.759*	.018*	.894*
Intra-group	4.146.207*	116	153.563*		
Total	4.148.966*				

*p < 0.05

Table 2 shows that no statistically significant differences were found between the groups

(Branches) [F(4.116)= 0.018; p> 0.05)]. Before performing the one-way ANOVA test, Levene's test determined that the variances were homogeneously distributed (p=0.116 > 0.05).

Through random assignment from all branches, Branch 9-B formed the control group and Branch 9-C formed the experimental group. The study group consisted of a total of 30 students, comprising 15 in the experimental group and 15 in the control group.

Table 3

Descriptive Information of the Study Group

Variables	Control	Percentage	Experimental	Percentage
15 Years	13	86.7*	12	80.0*
16 years old	2	13.3*	3	20.0*
Total	15	100.0*	15	100.0*
Male	8	53.3	8	53.3*
Female	7	46.7*	7	46.7*
Total	15	100.0*	15	100.0*

Data Collection Tool

In this study, data were collected using the "Physical Education and Sports Attitude Scale" developed by Demirhan & Altay (2001) and distributed face-to-face using the collect-and-distribute method. The scale's descriptive information form included demographic information such as age and gender that defined the study group. The scale is a 5-point Likert type scale and consists of 24 items on a single dimension. It is scored as follows: 5-strongly agree, 4-agree, 3-undecided, 2-disagree, 1-strongly disagree. The Physical Education and Sports Attitude Scale can be applied to year 9 students, with the lowest possible score being 1 and the highest possible score being 120. As the scores increase, the attitude towards physical education and sports also becomes more positive. A score between 1 and 24 indicates the most negative attitude, a score between 25 and 48 indicates a negative attitude, a score between 49 and 72 indicates a neutral attitude, a score between 73 and 96 indicates a positive attitude, and a score between 97 and 120 indicates the most positive attitude. The Cronbach Alpha reliability coefficient of the scale is 0.93, while the intraclass correlation coefficient is 0.85 and the criterion validity correlation coefficient is 0.83 (Demirhan & Altay, 2001).

Processing Procedure

In the study, a workbook consisting of 31 exercises and covering basketball skills was prepared for the ITM applied to the experimental group. The content of the workbook was developed by two faculty members specializing in physical education and sports teaching, who are employed in the Department of Physical Education and Sports Teaching (Prof. Dr. and Assoc. Prof. Dr.) who are employed in the Department of Physical Education and Sports Teaching and are experts in the field of physical education and sports teaching. Feedback/corrections and opinions were also obtained from two different basketball coaches who are graduates of the coaching department of the Faculty of Sports Sciences and hold a second-level basketball coaching certificate regarding the exercises that constitute the basketball skills included in the workbook. In addition, the plans prepared for the direct teaching model (DTM) applied in the control group were also reviewed by the same experts, and the necessary corrections were

made in line with the opinions and suggestions received. In both the experimental and control groups, the lessons were conducted for 6 weeks by the researcher who carried out the study, who is a graduate of physical education and sports teaching at undergraduate and postgraduate levels, is continuing his doctoral studies in the same field, and holds a basketball coaching certificate. When conducting an experimental study, factors that threaten the intervention should be minimised (Creswell & Plano-Clark, 2007-2020). In this context, to minimize teacher effect, teaching tools were assigned to the subject groups using a random assignment method, and the application time was equalized in both groups. To reduce the effect of individual differences among teachers while conducting the main phase in the field, lesson contents and daily lesson plans were prepared in detail in advance and put in writing (Shadish et al., 2002). Throughout the experimental intervention process, the teacher did not deviate from the pre-prepared content and lesson plan. Students enrolled in Year 9 were included in the study. Classes other than year 9 were excluded. After balancing the groups, 9-B was assigned as the control group and 9-C as the experimental group through random assignment. Pre-tests were administered to both groups before the start of the application. After the 6-week application process, post-tests were administered to both groups. Twenty-five days after the post-test, a retention test was conducted for the experimental and control groups involved in the study, and the results are presented in the findings section.

Experimental Group (Individualised Instruction Model)

Lessons in the experimental group were conducted using the individualised teaching model. At the beginning of the study, a detailed information meeting was held with the experimental group regarding how the lessons would be conducted, how the study would be carried out, the rules to be followed, information about the workbook, and how the evaluation would be conducted. Lessons in the experimental group were held once a week for a total of 6 weeks, with each lesson lasting 80 minutes. Workbooks were distributed to the entire group before each lesson began and collected at the end of each lesson. Different skills and techniques in basketball were covered each week. Students made progress by reading the workbooks, examining the visuals at their own pace, and following the criteria and explanations. The teacher remained in the background during this phase, providing only guidance. Peer assessment, self-assessment, and teacher assessment were carried out in the exercises to ensure a smooth transition from topic to topic. In peer assessment, after applying the skill, the student asked their peer for an explanation. The students assessed themselves in light of the criteria set by the teacher. After correctly applying the steps of the skill (-), they placed a (+) sign in the booklet to indicate that the exercise had been completed and moved on to the next exercise. The student assessed themselves on basic skills such as ball sense and dribbling. The student requested teacher assessment for the evaluation of special and complex techniques. Students observed their progress by filling out the progress chart at the end of each lesson.

Week 1: They practised ball sense, developing contact with the basketball, and dribbling movements for basic basketball skills.

Week 2: Dribbling skills were practised, including low, waist-level, and high dribbling.

Week 3: Topics covered included changing hands and direction while dribbling, followed by pivoting and passing techniques.

Week 4: Topics such as screening and shooting drills were covered.

Week 5: Shooting drills, lay-ups, and jumping exercises were practised in basketball.

Week 6 and final week: Rebounding and combination drills in basketball were performed. Each lesson consisted of a 15-minute warm-up, a 50-minute main session, and a 15-minute cool-down at the end of the lesson. When students arrived for class, booklets were distributed at the beginning of the lesson. Support and feedback/corrections were provided to students as needed during the lesson, and the booklets were collected at the end of the lesson.

Control Group (Direct Instruction Model)

Lessons in the control group were conducted using the direct teaching model. Before the lesson, students were informed about the lesson's objective, structure, implementation, and assessment. As the lessons were teacher-centred and conducted using the direct teaching model, prior knowledge was assessed before each lesson, and the lesson began with a review of the previous week's topics. After warm-up exercises, the teacher explained the new topic and demonstrated the steps of the movements, which were then practised. The second exercise was not taught until the first exercise was completed. At this stage, the teacher provided continuous feedback and corrections to the students. Subsequently, students were asked to practise the exercises independently, and the teacher provided continuous feedback/ corrections. At the end of the lesson, each skill was assessed by the teacher. The control group lessons were conducted over a total of 6 weeks, once a week, with each lesson lasting 80 minutes.

Week 1: Students were taught and practised topics related to developing ball sense, contact with the basketball, and dribbling in basketball.

Week 2: Topics such as dribbling, low dribbling, waist-level dribbling, and high dribbling were covered.

Week 3: Topics involving hand and direction changes while dribbling, followed by pivoting and passing techniques, were practised.

Week 4: Screening and shooting drills were conducted.

Week 5: Topics related to shooting drills in basketball, developing lay-up and jumping skills were covered.

Week 6 and final week: Basketball rebounding, combination drills, and double-basket games were conducted, concluding the lessons with final tests. For the control group, different topics were determined each week, covering techniques related to basketball skills. The first 15 minutes of the lesson involved warm-up, the main phase lasted 50 minutes, and the final 15 minutes included cool-down exercises.

Data Analysis

The data obtained in the study were analysed using the SPSS 26.0 software package. After preliminary analyses and assumption checks, the data were analysed using two-factor analysis

of variance in repeated measurements. (Group: Experimental/control and measurement: Pre-test/post-test; post-test/retest) The statistical significance level of the study was accepted at a 95% confidence interval with p< 0.05.

Findings

Within the framework of the research problems, the pre-test and post-test data and persistence test data of the experimental and control groups were compared using two-factor analysis of variance in repeated measurements, and the results are reported in the tables below.

Table 4

Comparison of Pre-Test and Post-Test Attitude Scores of the Experimental and Control Groups

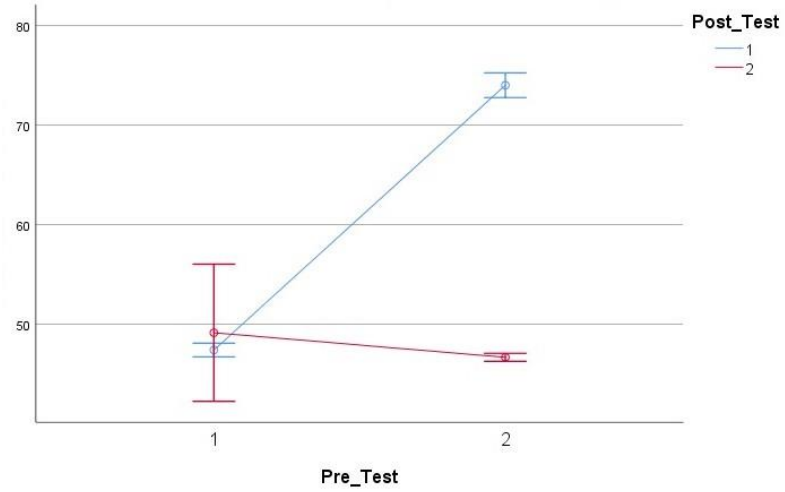
			Pre-test		Post-test				
	Group	n	X̄	Sd	X̄	Sd	F	p	η2
Group	Experiment	15	49.13*	12.443*	74.00*	2.236*	49.443*	0.000*	.779*
	Control	15	47.40*	1.242*	46.67*	.724*			
Measurement	Experiment	15	49.13*	12.443*	74.00*	2.236*	92.363*	0.000*	.868*
	Control	15	47.40*	1.242*	46.67*	.724*			
Group x	Experiment	15	49.13*	12.443*	74.00*	2.236*	52.218*	**0.000***	**0.789***
Measurement	Control	15	47.40*	1.242*	46.67*	.724*			

*p < .05

Table 4 shows that the interaction effect of the dependent and independent variables is statistically significant at the 99.9% confidence level (p<0.001). There is a statistically significant difference between the pre-test and post-test scores of the experimental and control groups at a 99.9% confidence interval (p<0.001). The effect size of the independent variables on the dependent variable was found to be high (η2=.789 ~ 1.00). When the pre-test and post-test scores of the control group, whose lessons were conducted using the direct teaching model, were examined, their attitudes towards physical education and sports did not change and were negative (Pre-test: X̄= 47.40; Sd=1.242; Post-test: X̄=46.67; Sd=.724). A score between 25 and 48 on the scale indicates a negative attitude). It was determined that the direct teaching model did not positively affect the attitudes of 9th grade students towards physical education and sports. When the post-test scores of the experimental group, whose lessons were conducted using the individualised teaching model, were examined, their attitudes towards physical education and sports were positively improved compared to their pre-test scores (Pre-test: X̄=49.13; Sd=12.443; Post-test: X̄=74.00; Sd=2.236). A score between 73 and 96 on the scale indicates a positive attitude. It was concluded that the individualised teaching model positively affected the attitudes of first-year high school students towards physical education and sports. The pre-test and post-test comparisons of the experimental and control groups are presented in the graph below.

Graph 1

Comparison of Pre-Test and Post-Test Attitude Scores for the Experimental and Control Groups



Graph 1 shows the comparison of the pre-test and post-test attitude scores of the experimental and control groups. 1 (blue): Represents the changes in the experimental group, 2 (red): Represents the changes in the control group.

Table 5

Comparison of Attitude Scores in the Post-Test Persistence Test for the Experimental and Control Groups

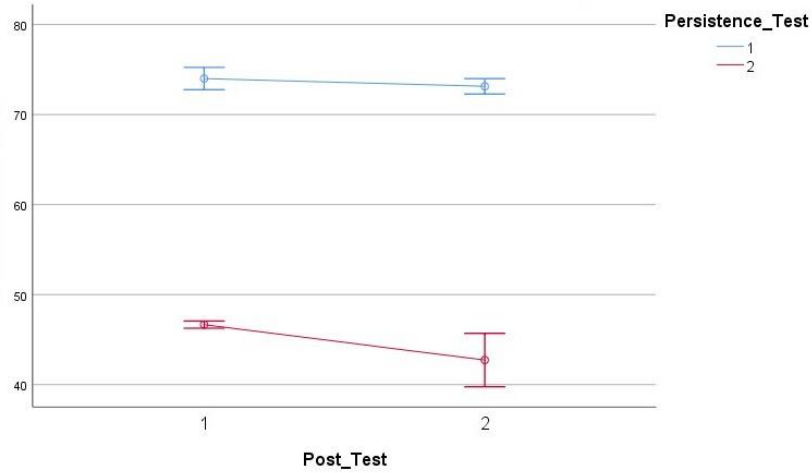
			Post-test		Persistence test				
	Group	n	X̄	Sd	X̄	Sd	F	p	η2
Group	Experiment	15	74.00*	2.236*	73.13*	1.552*	9.517*	0.008*	0.405*
	Control	15	46.67*	.724*	42.73*	5.364*			
Measurement	Experiment	15	74.00*	2.236*	73.13*	1.552*	965.549*	0.000*	.986*
	Control	15	46.67*	.724*	42.73*	5.364*			
Group x	Experiment	15	74.00*	2.236*	73.13*	1.552*	6.393*	0.024*	.313*
Measurement	Control	15	46.67*	.724*	42.73*	5.364*			

*p < .05

Upon examining Table 5, a statistically significant difference was found between the interaction effect of the final test and retention test attitude scores of the experimental and control groups ($p<0.05$). According to the retention test findings of the experimental group, whose lessons were conducted using the individualised teaching model, their attitude towards physical education and sports continues to be positively favourable (Post test: X̄=74.00; Sd=2.236; Persistence test: X̄=73.13; Sd=1.552). A score between 73 and 96 on the scale indicates a positive attitude. The retention test also revealed that the individualised teaching model is more beneficial than the direct teaching model in developing students' attitudes towards physical education and sports. The control group, whose lessons were conducted using the direct teaching model, also showed a negative attitude towards physical education and sports in the retention test (Post test: X̄=46.67; Sd=.724; Persistence test: X̄=42.73 Sd=5.364). A score between 25 and 48 on the scale indicates a negative attitude. Comparisons of the post test-Persistence test scores for the experimental and control groups are presented in Graph 2.

Graph 2

Comparison of the Post-Test Persistence Test Attitude Scores of the Experimental and Control Groups



Graph 2 shows the comparison of the post test and persistence test attitude scores of the experimental and control groups. 1 (blue): Represents the changes in the experimental group, 2 (red): Represents the changes in the control group.

Discussion and Conclusion

This research was conducted to determine the effect of the individualised teaching model applied in the basketball unit of physical education and sports lessons on the attitudes of first-year high school students towards physical education and sports.

The literature indicates that physical education and sports teachers in Turkey focus on winning and competition rather than rational efforts to teach skills to students in their lessons (Aksoy & Gürsel, 2017; Sezen & Yıldıran, 2007). The two most important characteristics of a learning experience are the level of difficulty perceived by the individual and their abilities (Csikszentmihalyi, 2014; Ektirici, 2020). If skills challenge the individual by requiring performance beyond their capacity, they may approach the situation with prejudice, become bored with the activity, and feel anxious. (Csikszentmihalyi, 2014; Ektirici, 2020). In this context, a workbook consisting of 31 basketball skill development exercises, including warm-up and cool-down exercises, has been prepared to facilitate the implementation of the individualised teaching model. The content of the workbook flows from basic to advanced. Due to the structure of the model, one cannot move on to another exercise without completing the current one. The workbook required for the implementation of the model (Metzler, 2000) is like an educational video. For example, just as one can pause a video, rewind it, and watch a missed or skipped part again and again, the ITM workbook is similar to this example. Students cannot move on to another task without completing a task in the ITM workbook. They can reach the mastery stage by repeating the skills and can theoretically integrate the exercises in the book by reading them. In this context, the ITM workbook can also contribute to students' physical literacy level.

The experimental group students, who had low levels of attitude towards physical education

and sports in the pre-test, stated that they found the model interesting in the first weeks. However, after starting the application, the students perceived each skill, applied it independently, and managed to take responsibility. They felt that they and their work were important and stated that they enjoyed the model. It was observed that they approached each new task with enthusiasm. During the application, it was seen in the workbook progress chart that female students progressed more slowly than males in the practice tasks. In the following weeks, the progress in the practice tasks was balanced in terms of gender. It was observed that the experimental group students adopted a serious attitude towards physical education and sports lessons as early as the second week, as evidenced by their movements and behaviour. It was observed that the experimental group students, whose lessons were conducted using ITM, expressed themselves much more clearly and effectively than the control group by the third week, as evidenced by their verbal behaviour.

In the direct teaching model, lessons are conducted with the entire group, so the opportunity to engage with each student individually is limited. In this context, it is thought that this negatively affects the student's skill development. However, in the individualised teaching model, feedback has been received from students that the workbook creates the feeling that the teacher is engaging with them individually. In the ITM, each student progressed at their own pace by reading the explanations and criteria according to the topic and content, then examining the visuals and working through each movement step by step, thus transitioning to the mastery stage of the skill. As they did not compete with any of their peers, they were able to identify their mistakes. In the direct teaching model, the teacher's commands were effective, and the students learned the skills according to these commands. Therefore, it was observed that students lost their seriousness and motivation towards the lesson over time and began to feel like robots that were simply given commands.

It was observed that the experimental group, which worked on lessons using the individualised teaching model (ITM), conducted lessons more fluently compared to the control group, which worked on lessons using the direct teaching model (DTM). Having all the details in the workbook for lessons taught using the ITM saved time compared to lessons taught using the DTM. This is because, in DTM, when a student cannot apply a skill, they ask their teacher. The teacher continues to provide support until the skill is performed correctly, which can lead to a loss of time. The individualised teaching model has a structure that teaches students planned work and why they are doing it in a clear manner, compared to the direct teaching model. In this context, it is thought that the individualised teaching model will be reflected in students' real lives and contribute to their academic careers.

When the pre-test and post-test scores of the first-year high school experimental group students were examined in this study, it was found that the individualised teaching model provided a significant benefit in developing their attitudes towards physical education and sports. This result regarding the experimental group is supported by other studies conducted in different subjects and branches in the field of sports where ITM was used (Akkaya et al., 2022; Annarino et al., 1976; Ektirici, 2020; Friskawati et al., 2017; Hannon et al., 2008; Pritchard et al., 2012; Sönmez & Mirzeoğlu, 2021). This finding is supported by an experimental study by Yenibertiz & Mirzeoğlu (2021), who used an individualised teaching model. The literature includes a study titled Model-Based Practice, which concludes that Model-Based Practice is

beneficial and desired by students, and provides information on supporting teachers with multiple teaching models (Casey, 2014). An experimental study with pre-test and post-test control groups was conducted at a school in eastern Spain with students aged 13 to 18, and it was found that sports education interventions can improve attitudes (Morales-Ortiz, 2021). According to another study by Subramaniam & Silverman (2000), physical education and sports lessons affect attitudes depending on the methods and models used. Another study conducted on secondary school students found that increasing excitement, awareness, and diversity in lesson content positively affected attitudes (Rikard & Banville, 2006). Another study conducted on middle school students examined happiness and attitude levels and proved that students' participation in school teams positively affected their attitude and happiness levels (Uslu & Kurtuluş, 2022). A limited number of studies contradict these research findings which show that no significant difference emerged in the final tests of the ITM (Prewitt et al., 2015). This contradiction may be related to how the model was applied and how the workbook content was prepared.

When examining the pre-test and post-test scores of the control group, whose lessons were conducted using the direct teaching model, no change was observed in their attitudes towards physical education and sport. A study examining pre-test and post-test control group attitudes towards physical education and sports concluded that no difference was found in the control group in lessons taught using the DTM, supporting the results of this study (Alp & Süngü, 2016). The lack of a significant difference in attitude in lessons taught using the DTM can be attributed to teachers emphasising instructional methods such as commands and demonstration (İnce & Hünük, 2010), students continuing to learn skills in a conventional manner, and the DTM failing to generate interest and excitement in the lesson.

In conclusion, it was determined that the individualised teaching model improved the attitudes of year 9 students towards physical education and sports. It was concluded that the direct teaching model was insufficient for improving attitudes towards physical education and sports.

Recommendations

Physical education and sports teachers can use the individualised teaching model in their lessons to develop attitudes towards physical education and sports.

Before preparing the workbook, it is recommended to visit the area where the application will be carried out, check the equipment, and prepare the workbook accordingly.

Before preparing the workbook, it is recommended to meet with the experimental and control group students and to structure the book content accordingly by checking their prior knowledge of the branch to be applied.

All skills and details in the workbook should be supported by visuals, and the communication established with the student in the book content should cover basic interaction skills. It is recommended that the book be printed in colour for the progress and quality of the application.

The area where the application is carried out should be checked before the lesson and it is recommended that the application be carried out in an area free from outside noise.

The teacher should continuously monitor the experimental group. This is because students have been observed to skip steps during warm-up and cool-down exercises. Immediate warnings have been issued. Attention should be paid to such situations.

Declarations

Ethics statement: Ethical approval for the study was granted by the Sakarya University of Applied Sciences Rectorate Ethics Committee (Ref: E-26428519-050.99-112383, Date: 11.01.2023).

Author Contributions (CRediT): G. İrhan: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Validation, Visualization, Writing – original draft, Writing – review & editing. A. H. Sivrikaya: Supervision, Review & Editing.

Funding: Our study did not receive any financial support.

Conflict of Interest: Author have approved the manuscript and there is no conflict of interest to declare.

AI Tools Disclosure: The authors did not use artificial intelligence in any part of the study.

Data Availability Statement: The data may be obtained from the relevant author upon reasonable request.

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