

RESEARCH ARTICLE

The Influence of Cooperative Learning Models and Learning Styles on Social Skills in University Student

Fegie Rizkia MULYANA^{*1}, Dicky Tri JUNIAR¹, Arief Abdul MALIK¹, Defri MULYANA¹ and Yulingga Nanda HANIEF²

¹Universitas Siliwangi, Faculty of Teacher Training and Education, Physical Education, Tasikmalaya / Indonesia

²Universitas Negeri Malang, Faculty of Sports Science, Sports Coaching, Malang / Indonesia

*Corresponding author: dickytrijuniar@unsil.ac.id

Abstract

The affective domain is very important in supporting students' social skills as a predictor of academic success. The purpose of this study was to test the effectiveness of the Jigsaw learning model compared to the Student Team Achievement Division (STAD) learning model as an effort to improve students' social skills. The method in this study uses an experimental method with a 2x2 factorial design. The population in this study were 270 students of the Department of Physical Education who contracted the Taekwondo Learning course. The sample involved in this research was 64 people using a cluster random sampling technique. The instruments used were the VARK Questionnaire to determine student learning styles, and the Social Skills Improvement System questionnaire. Data analysis technique using Factorial ANOVA test. The results showed that the value of the main effect on the learning model has a significant value. $0.274 > 0.05$, which means that there is no significant difference in the effect of applying the learning model on students' social skills, but there is an interaction between the learning model and learning styles. The Jigsaw learning model has a significant effect compared to the STAD learning model for students with the Kinesthetic learning style, whereas for students with the Aural learning style there is no significant difference between the two models. Both social skills can be improved through the Jigsaw and STAD learning models, but when students who have a Kinesthetic learning style are more advised to use the Jigsaw learning model.

Keywords

Cooperative Learning Model, Learning Styles, Social Skills

INTRODUCTION

The world of work today demands that university graduates have skills and abilities that go beyond just having a bachelor's degree. In addition, the world of work also expects college graduates to have good and positive attitudes, such as responsibility, discipline, a high work ethic, and a willingness to continue learning and developing themselves. Therefore, university graduates need to prepare themselves by developing these skills and abilities to be able to compete in an increasingly competitive job market. The United Nations Educational, Scientific and Cultural

Organization (UNESCO) has developed the 21st Century Skills Framework, which includes several 21st century skills such as creativity, digital literacy, collaboration, critical thinking, and social and emotional skills (UNESCO, 2017). This competency framework aims to assist education and vocational training institutions around the world in developing and measuring learners' ability to master 21st century skills. 21st century skills are considered important and relevant in the context of education, vocational training and human resource development.

Received: 30 September 2023 ; Revised :20 December 2023 ; Accepted: 21 December 2023; Published: 25 February 2024

How to cite this article: Mulyana, F.R., Juniar, D.T., Malik, A.A., Mulyana, D., and Hanief, Y.N. (2024). The Influence of Cooperative Learning Models and Learning Styles on Social Skills in University Student. *Int J Disabil Sports Health Sci*;7(Special Issue 1):9-18. <https://doi.org/10.33438/ijdshs.1368958>

Therefore, governments and educational institutions in various countries have developed programs and policies that focus on developing 21st century skills. Although there is no specific legal basis for 21st-century skills, the development of these skills can be implemented through education and job training policies, as well as relevant human resource development programs in various countries (Almeida et al., 2012; Li, 2022).

In Indonesia, the government has encouraged the development of 21st-century skills through various programs and policies, such as the 2013 Curriculum which emphasizes the development of 21st-century skills, the independent curriculum with its main concepts of independent learning and the independent campus. The Merdeka Curriculum provides greater freedom and flexibility for schools, teachers and students in developing and implementing a curriculum that is relevant, innovative and in accordance with local needs. The Merdeka Curriculum also aims to strengthen students' skills and knowledge in facing global challenges and prepare them to face an ever-evolving and changing world of work. The independent curriculum has 8 main programs including; student exchanges, internships / practical work, teaching assistance in educational units, research/research, humanitarian projects, entrepreneurial activities, independent project studies, and building villages / thematic real work campuses. All of these programs provide the widest possible experience and new insights for students to explore knowledge outside the study program or in other universities (Fatmawati, 2021; Kepmendikbudristek, 2022; Sopiansyah et al., 2022).

However, to be able to face and meet the needs and challenges in the field, students must be equipped with several soft skills that can be developed through the learning process. One of the skills that are important to have as a basis for interacting, and collaborating, as well as being able to deal with problems is social and emotional skills. Social skills are important abilities that students need to be successful and happy in their daily lives at school, with their peers, and with their families (Cheung et al., 2017). The development of social and emotional skills can be implicitly formed through the curriculum structure provided through materials and learning experiences, while explicitly can be done by implementing learning models and methods that

encourage peer interaction and collaboration, as well as the efforts of a teacher/lecturer in reflecting and metaphorizing the learning carried out. If a person does not get enough experience in interacting with others, their social skills can become less trained. Because social skills are not inherited but trained through experience and skills that are nurtured from childhood to adulthood (Azlina, 2014). Well-developed social skills contribute to academic success and better learning outcomes for students (Malecki & Elliot, 2002). This is reinforced by previous research conducted (Wentzel, 2009) that there is a meaningful and predictive relationship between social skills and long-term academic achievement. Students who have positive interactions and relationships with their peers are more academically engaged and have higher levels of academic achievement. Students with high social skills know how and when to use these skills appropriately, including tone of voice, hand gestures, facial expressions, posture, cooperating with others, and responding effectively in situations where conflict is likely (Gresham, 2016; Gresham & Elliott, 2008). Conversely, students who experience social skills deficits may experience poor academic performance and may develop serious psychosocial problems and challenges in adulthood, including depression, anxiety, or suicide (Langeveld et al., 2012).

The development of social skill deficit problems is currently affecting society and is a major challenge for teachers, schools, parents, and peers (Gresham, 2016). Reported cases of discipline violations such as bullying, thuggery, stress and performance comparisons between students are among the psychological and social effects that cause hostility between students (Ketabi & Ketabi, 2014), heavy pressure in pursuing grades and achievements through exams (Jumahat et al., 2013). In addition, children with a lack of social skills in verbal and nonverbal communication can face various social challenges in various aspects of their lives. Many factors cause a lack of social skills in a person including a lack of social interaction, developmental disorders that result in a person's ability to interact socially, lack of experience interacting with others, environmental conditions, and lack of understanding and teaching of social norms that apply in the surrounding environment (Diaz-Garolera, Pallisera, & Fullana, 2022; Maag, 2005;

Riney & Bullock, 2012). To overcome these problems, the use of learning models, especially cooperative learning models, can be used as an alternative in developing social skills.

Based on the results of previous studies according to (O'Leary et al., 2018) that there are still shortcomings in the teaching ability of the Jigsaw learning model, and students' problematic social relationships have an impact on the use of the less effective jigsaw learning model. So suggestions for future research consider and prepare for holistic learning and development of students in developing social skills, prepare and choose other cooperative learning strategies or different learning models depending on the psychomotor, social and cognitive development of students. Teachers must be careful in choosing their pedagogical approach, choosing learning models that are able to develop students' affective domain, such as STAD (a learning model based on the idea that learners work together to learn, and are responsible for the group's mastery of the material) and Jigsaw (a learning model that focuses on learners being individually responsible for mastering a section of material to be taught to other members). The main goal of Physical Education (PE) learning is not only to focus on the cognitive, and psychomotor domains, but to prioritize the affective domain (Lubis et al., 2022). However, the affective domain and affective learning has been neglected or under-considered and has been a perennial problem in Physical Education learning for decades (Casey & Rio, 2019). Thus, there is a need for greater emphasis on affective learning in teaching physical education (Rivera, 2014). Through affective learning teachers can measure and assess how students' feelings and attitudes change, in addition to helping students appreciate their own and others' contributions (Casey & Rio, 2019).

Previous research findings reveal that educators have long recognised the importance of social and behavioural skills, cooperation, self-control and other social skills as critical to achieving academic and behavioural success (Lane, Pierson, & Giver, 2003). Future student success is no longer measured by academic achievement alone but also the development of personal skills such as social skills (Sharma, Goswami, & Gupta, 2016). Therefore, educators should be able to provide meaningful learning experiences by implementing effective learning

strategies and models to realise the objectives and develop students' social skills. Cooperative learning can be used as an alternative in learning because it has been shown to have a significant influence on students' social skills because it allows students to interact in small groups, so there is an increase in basic social skills in the aspects of language, communication, and collaborative skills (Lavasani et al., 2011), the cooperative learning model is an effective strategy for promoting affective learning, focusing on social learning outcomes such as cooperation and the ability of students to encourage each other (Dyson, 2002), so that students' social skills can also be formed through affective learning experiences carried out while implementing the cooperative learning model. Furthermore, one of the things that plays a role in learning success is learning style (Mirza & Khurshid, 2020) revealed that the concept of learning styles is generally divided into 4, namely the VARK Model (Visual, Aural/Auditory, Reading, and Kinesthetic). Visual learning styles require visual stimulation in the form of information boards, videos, films etc. because they will more easily remember and understand information and instructions they receive through visual channels. Aural/Auditory learning style refers to the type of learning through hearing, for example by oral explanation, listening to electromagnetic tapes, lectures, class discussions, peer teaching, or conversing with the teacher. Reading learning style is more of a reading/writing type of learning where learners focus on text-based data such as reports, lecture notes, journals. Kinesthetic learning style focuses on learning through experience, engaging in physical activities in class and games. Each individual has their own learning style in gaining success. However, there are still few studies that examine Learning Models and Learning Style in physical education learning so that researchers try to fill the void

The purpose of this study is to determine the effect of cooperative learning model on students' social skills in terms of students' learning style. This study attempts to answer the following 4 research questions: a) Is there a difference in the effect between the Jigsaw learning model and the Student Team Achievement Division (STAD) learning model on student social skills in Taekwondo learning; b) Is there an interaction between learning models and learning styles on student social skills in Taekwondo learning; c) Is there a

difference in the effect between the Jigsaw learning model and the Student Team Achievement Division (STAD) learning model on student social skills in Taekwondo learning in the kinesthetic learning style group; and, d) Is there a difference in the effect between the Jigsaw learning model and the Student Team Achievement Division (STAD) learning model on student social skills in Taekwondo learning in the Auditory learning style group.

MATERIALS AND METHODS

Study Design

The method used in this research is Experimental research method, while the research design uses 2 by 2 Factorial Design (Fraenkel et al., 2023). This study aims to determine the effect of learning models (Jigsaw Model and STAD Model) and learning styles consisting of Aural/Auditory (a learning style that emphasises the learning process based on hearing as a recipient of information and knowledge) and Kinesthetic (a learning style that emphasises the experience of the physical process of learning).

Table 1. 2 by 2 Factorial Design

<i>Learning Styles</i>	<i>Learning Model</i>	
	Jigsaw (A ₁)	STAD (A ₂)
Aural (B ₁)	(A ₁ B ₁)	(A ₂ B ₁)
Kinesthetic (B ₂)	(A ₁ B ₂)	(A ₂ B ₂)

Information

A1B1: jigsaw learning model with aural learning styles

A1B2: jigsaw learning model with kinesthetic learning styles

A2B1: STAD learning model with aural learning styles

A2B2: STAD learning model with kinesthetic learning styles

Participant

The population in this study were 270 students majoring in physical education in Tasikmalaya, Indonesia, consisting of 6 classes studying in the second semester. While the sample in this study was 64 people selected from 2

classes. The sampling method in this study used cluster random sampling, from 6 classes 2 classes were randomly selected. The number of samples from the two classes involved in this study were 64 people from a total of 83 samples, 51 male students (79.7%) and 13 female students (23.3%). The number of samples was determined based on the characteristics of student learning styles obtained from the results of filling out the VARK questionnaire. Completion of the VARK questionnaire was carried out at the first meeting during the lecture. It is known that 6 students have a Visual learning style, 32 people have an Aural learning style, 9 people have a Read/write learning style, and 36 people have a kinesthetic learning style. The learning styles chosen in this study are only aural and kinesthetic learning styles, because they are close to the number of samples needed in this study. After determining the learning styles used, then the researcher put them into four experimental groups, namely (1) the aural learning style group taught with the jigsaw model, (2) the aural learning style group taught with the STAD model, (3) the kinesthetic learning style group taught with jigsaw model, and (4) kinesthetic learning style group taught with STAD model.

The participating students was informed about the study protocol, their rights, and the associated risks of participation before providing written informed consent. All procedures were approved by the Head of Research Ethics Committee Universitas Negeri Malang (Approval No. 3.11.1/UN32.20/PB/2023) and conducted by the Helsinki Declaration (1964, revised in 2001). Regarding vulnerable and disadvantaged groups, the authors took into account the needs and priorities of the groups/individuals in which the study was conducted, in accordance with Articles 19 and 20 of the WMA Declaration of Helsinki, and the situation that the study could not be carried out outside these groups and individuals was taken into account. "Additional precautions were taken by the investigator(s) to protect the volunteers in this study."

Data Collection Tools

The data collection instrument in this study used the VARK Learning Style questionnaire (Fleming, 2001; Fleming & Mills, 1992) to determine and categorize students' learning styles. The learning style questionnaire (VARK) consists of 16 statement items, used to identify four types of student learning styles (Visual, Aural,

Read/write, and Kinesthetic). Respondents should select options according to their perception, and if the options do not reflect the perception, they can select more options. The highest score in each learning style indicates the characteristics of the student's learning style. If students score the same in two or more styles, then their learning style is called multimodal. Meanwhile, to measure students' social skills using the Social Skills Improvement System instrument (Gresham & Elliott, 2008).

Statistical analysis

SPSS version 27.0 (SPSS Inc, Chicago, IL) was used in this study to conduct data analysis. Prerequisite tests, namely normality test and homogeneity test, were conducted before conducting hypothesis testing. Furthermore, Two-Way ANOVA test was used to determine the main effect, interaction effect and simple effect. Then further tests using Pairwise Comparisons with LSD (Least Significant Differences) were carried out to determine the effect on each research variable more comprehensively.

RESULTS

To determine the effect of cooperative learning models (Jigsaw and STAD) on social skills in students classified by learning style status

namely aural and kinesthetic, we used parametric procedures of course with experimental methods using a 2x2 factorial design. The procedure in the initial data screening was carried out to determine the accuracy, completeness, and normality/non-normality of all data collected, namely data on learning styles (aural and kinesthetic) and social skills followed by treatment using Jigsaw and STAD cooperative learning models. All classical assumptions for this procedure were assessed and confirmed with no outliers or extreme scores detected, namely testing data normality and data homogeneity. The following are the descriptive and inferential results for each experimental group in the study.

Based on table 2, it can be described that the gain score on the Jigsaw Learning Model is a group of students who have an aural learning style (mean = 4.69, standard deviation = 12.098) and who have a kinesthetic learning style (mean = 8.94, standard deviation = 8.888) with a total number (mean = 6.81, standard deviation = 10.663). The STAD Learning Model has a group of students who have an aural learning style (mean = 7.25, standard deviation = 11.115) and who have a kinesthetic learning style (mean = 0.06, standard deviation = 13.203) with a total number (mean = 3.66, standard deviation = 12.548).

Table 2. Descriptive Statistics

Learning Model	Learning Style	M	SD	N
Jigsaw	Aural	4.69	12.098	16
	Kinesthetic	8.94	8.888	16
	Total	6.81	10.663	32
STAD	Aural	7.25	11.115	16
	Kinesthetic	0.06	13.203	16
	Total	3.66	12.548	32
Total	Aural	5.97	11.502	32
	Kinesthetic	4.5	11.954	32
	Total	5.23	11.66	64

Mean:M, Std. Deviation: SD

In this study, the authors used a two-way ANOVA analysis in which they examined three important things, namely the main effect, interaction effect and simple effect. To analyze using two-way ANOVA, the data has been proven to be normally distributed and homogeneous in each group. The results of the ANOVA analysis can be seen in Table 3.

Based on table 3 shows that the main effect shown in the learning model has a Sig value.

$0.274 > 0.05$, this means that the effect of the learning model on social skills is not significant and is evidenced by the partial eta squared value of 0.02 which means the amount of support is 0.2%. The interaction effect shown between Model * Style has a value of Sig. $0.05 = 0.05$ this means that the interaction of the learning model used and the learning style possessed by students is significant and is evidenced by the partial eta squared value of 0.063 which means that the

amount of support is 6.3%. The interaction can be seen in Figure 1 below.

Table 3. Two-Way ANOVA

(Placeholder1)	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	717.172a	3	239.057	1.828	0.152	0.084
Intercept	1753.516	1	1753.516	13.41	0.001	0.183
Learning Model	159.391	1	159.391	1.219	0.274	0.02
Learning Style	34.516	1	34.516	0.264	0.609	0.004
Model * Style	523.266	1	523.266	4	0.05	0.063
Error	7848.313	60	130.805			
Total	10319	64				
Corrected Total	8565.484	63				

^a R Squared = .084 (Adjusted R Squared = .038)

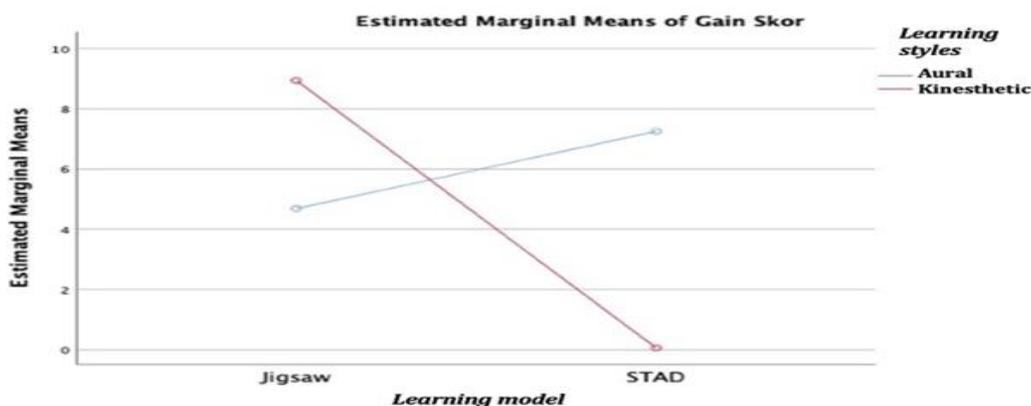


Figure 1. Estimated marginal means of Gain Score

Based on the picture, the lines intersect each other. This is further evidence that there is an interaction that occurs in the learning model used with the learning style of students on their social skills.

Based on table 4 to shows the simple effect of each group that gives its influence on social skills, it is found that the group of students using the Jigsaw model that has an aural style (Jig_Aural) has an insignificant difference with the STAD model group that has an aural style (STAD_Aural), as evidenced by the Sig value.

0,529> 0,05. The Jigsaw model group that has a kinesthetic style (Jig_Kin) has a significant difference from the STAD model group that has a kinesthetic style (STAD_Kin), as evidenced by the Sig value. 0,050 = 0,05. Groups using the Jigsaw model that have aural (Jig_Aural) and kinesthetic (Jig_Kin) styles also have insignificant differences, as evidenced by the Sig value. 0,297> 0,05. Likewise, the STAD model group that has aural (STAD_Aural) and kinesthetic (STAD_Kin) styles have insignificant differences, as evidenced by the Sig value. 0,081> 0,05.

Table 4. Pairwise Comparisons with LSD (Least Significant Differences)

Dependent Variable: Gain Skor		Mean Difference (I-J)	Std. Error	Sig. ^a
Jigsaw	STAD	3.156	2.859	0.274
Aural	Kinesthetic	1.469	2.859	0.609
Jig_Aural	STAD_Aural	-2.562	4.044	0.529
Jig_Kin	STAD_Kin	8.875*	4.044	0.032
Jig_Aural	Jig_Kin	-4.25	4.044	0.297
STAD_Aural	STAD_Kin	7.188	4.044	0.081

^aR Squared = .084 (Adjusted R Squared = .038)

DISCUSSION

Overall, there is no significant difference in the effect of the application of the Jigsaw learning model and the Student Team Achievement Division (STAD) learning model on student social skills. In this study, the two models both have an impact on students' social skills. However, specifically, the two models have different characteristics in emphasizing the development of students' social skills. One of the main aspects of the Jigsaw Type Cooperative Model is collaboration and social interaction between students through the formation of expert groups with students working together to learn a specific topic and then sharing their knowledge with peers in a heterogeneous group (home group) so that they rely on each other's expertise to gain a comprehensive understanding of the subject matter. They need to discuss, share information and work together in achieving a common goal. This activity helps students to develop social skills such as the ability to listen, speak politely, and respect the opinions of others (Cronin et al., 2018). In addition, the Jigsaw Model offers opportunities for individuals to develop skills such as critical thinking, communication, and collaboration, which can be applied outside the classroom. By becoming experts in different areas, students can gain a broader perspective on the subject matter (O'Leary & Griggs, 2010). Previous research conducted by (Cook & Friend, 2020) explained that the Jigsaw Cooperative Model has been proven to improve students' academic achievement, attitude, and engagement in learning. Another study by (O'Leary et al., 2018) related to students' perspectives when using the Jigsaw Cooperative learning model that they felt that home and expert groups had the potential to encourage higher-level social and cognitive learning and that individuals with limited psychomotor abilities seemed to be better served in home groups to facilitate such learning.

In contrast, the STAD model focuses on forming diverse teams, with members of different abilities and skill levels to support and assist each other in achieving learning objectives, working together to achieve a common goal. The STAD model, with its focus on heterogeneous teams, promotes diversity and inclusion of each group, preparing students to work collaboratively in real-world situations involving people with different

abilities and backgrounds (Rad et al., 2022). Both Jigsaw and STAD models are effective cooperative learning models with different structures and advantages. The Jigsaw model emphasizes expertise, knowledge sharing, and interdependence, while the STAD model emphasizes diverse team collaboration and individual accountability (Siong et al., 2020). The meaningfulness of all activities carried out by students while implementing these two models is a miniature of life when interacting and collaborating in the future world of work. All will not be separated from students' intrapersonal and interpersonal relationships that can build the quality of an individual. Social skills must be taught both in the educational environment and in the family environment. Therefore, parents and teachers need to play an important role in the development of social skills by acting as role models who must display acceptable social skills (Booyesen & Grosser, 2008)

Educators can choose the model that best suits their instructional goals, the needs of their students, and the specific learning objectives of the lesson. Previous research revealed that cooperative learning has a significant impact on the development of social skills, peer relationships, and emotional and learning motivation (Grenier & Yeaton, 2019). Salah satu dukungan yang paling penting dari sebuah pendidikan adalah pendidikan jasmani, yaitu mempengaruhi pertumbuhan dan perkembangan individu, melalui aktivitas fisik keterampilan gerak diperoleh, serta memberikan kontribusi yang besar terhadap perkembangan individu (Nisli et al., 2021). Through Taekwondo learning, students learn to foster self-confidence, synchronize and harmonize movements and art in practicing poomsae, and learn to control themselves and control emotions when sparring (kyorugi).

Although Taekwondo is a type of sport with a high risk of injury due to physical strength and full body contact when competing (Kazemi et al., 2009), it can train individual self-control, solve problems, make good decisions when under pressure, foster a sense of responsibility and sportsmanship when competing. Furthermore, educators are expected to metaphorize or provide explicit learning from what students do during the learning process. When students can transfer these abilities in real life, undoubtedly the social skills taught through Taekwondo learning by

implementing a cooperative learning model can be applied in everyday life, so that a harmonious person is formed. The learning environment and the role of educators are very important in developing individual behaviors. For this reason, teachers must have sufficient information about emotional intelligence and be able to organize an environment that is conducive to improving students' social skills (Mert, 2023).

The findings of this study show that there is an interaction or intersection between learning models and learning styles. Cooperative learning is a model that encourages social interaction and collaboration in groups. Students work together to achieve a common goal and support each other in the learning process. The learning styles that students have, such as visual, aural or kinesthetic learning styles, can affect the way they participate in cooperative learning. For example, students with kinesthetic learning styles prefer to engage in physical activities that involve movement and hands-on practice. In addition, the character of kinesthetic learning style is more about demonstrating, so their ability to contribute to the group. In cooperative learning, students with kinesthetic learning styles feel more comfortable and actively involved in physical roles or tasks that involve action. On the other hand, individuals with aural learning styles prefer to participate in group discussions and share ideas verbally. In cooperative learning, individuals with aural learning styles can be effective contributors in sharing knowledge and facilitating communication within the group. In the results of this study, although there is an interaction between the model and learning style, but when viewed from the learning style, there is no significant debate in the Kinesthetic and Aural learning style groups. This is in line with the results of previous research that there is no significant difference in test performance between students who favour visual learning styles and reading/writing learning styles (Hsieh et al., 2012).

The research findings in the kinesthetic learning style group that the Jigsaw learning model has a greater impact than the Student Team Achievement Division (STAD) learning model. Hypothesis calculation shows that there is a significant difference between the application of the two models on kinesthetic learning styles. It can be seen in the field that when students have a kinesthetic learning style, they tend to want to

practice movements directly by feeling them on their own bodies and in the Jigsaw learning model itself when students interact in expert groups and origin groups. They are more likely to demonstrate basic techniques or movements in Taekwondo learning and help them understand more quickly compared to those who apply the STAD learning model. Another finding in the Aural learning styles group is that the application of the STAD model has a higher impact than the application of the Jigsaw model. In the application of the STAD model, students tend to receive motivation and constructive evaluation verbally by the teacher or peers in the learning interaction process. Giving awards in the form of words has a more meaningful impact on this study when they have an Aural learning style, because in the aural learning styles, students focus more on their hearing, and listen to the teacher or lecturer's speech well and clearly.

In this study, the researcher has limitations in terms of students who have an aural learning style so future research should be improved on a larger sample size and can distinguish from other learning styles. In this study, students were categorized into two learning styles (aural and kinesthetic) which is the result of them filling out the VARK form to analyze their learning style which may exclude other learning style preferences if any.

In relation to teaching styles (Mirza & Khawar Khurshid, 2020) revealed that learning styles are merely method preferences for internalizing information, not information processing abilities. Therefore, although many students are able to identify one most preferred learning style, they most likely use other learning styles/senses to access and process the information presented. This is in line with the results of the differences between the two models which were not significant in improving students' social skills. In addition, the models compared are still within one type of cooperative learning model so there is no significant difference between the two models.

Conclusion

In this study, researchers concluded that overall there was no significant difference in the effect of applying the Jigsaw learning model and the Student Team Achievement Division (STAD) learning model on social skills in students who have Aural and Kinesthetic learning styles in

Taekwondo learning. However, in this study there is a significant interaction between the learning model applied and the learning styles of students. Students with Kinesthetic learning styles showed significant differences in the application of the Jigsaw and STAD models with the Jigsaw model providing a higher increase in student social skills compared to the application of the STAD model, while students with Aural learning styles did not have significant differences in improving social skills in the application of the two models. This research is still limited to one characteristic of the model being compared, namely the cooperative learning model, although with different types, namely Jigsaw and STAD so that further research is expected to test other learning models with more varied learning styles in order to obtain more comprehensive information related to the development of student social skills.

Acknowledment

We would like to express our deepest gratitude to the Faculty of Sports Science, Universitas Negeri Malang for facilitating us on the 7th ICSSH until we were able to publish this manuscript.

Conflict of Interest:

There is no personal or financial conflict of interest within the scope of the study.

Ethics Committee

All procedures in this study were approved by the Head of Research Ethics Committee Universitas Negeri Malang (Approval No. 3.11.1/UN32.20/PB/2023)

Author Contributions

Study Design, FRM; Data Collection, FRM, DTJ; Statistical Analysis, FRM, AAM; Data Interpretation, FRM, DTJ, AAM, DM; Manuscript Preparation, FRM, DM, YNH; Literature Search, FRM, AAM, YNH. The published version of the manuscript has been read and approved by all authors.

REFERENCES

- Almeida, R., Behrman, J., & Robalino, D. (2012). *The Right Skills for the Job? Rethinking Training Policies for Workers*. DC: World Bank. <https://doi.org/10.1596/978-0-8213-8714-6>
- Azlina, T. E. (2014). Kemahiran Sosial Menurut Perspektif Islam: Aplikasinya Dalam Membentuk Kepribadian Pelajar. *Jurnal Pendidikan*, 1, 42-56., 1(2), 42-56.
- Booyesen, M., & Grosser, M. (2008). Enhancing social skills through cooperative learning. *The Journal for Transdisciplinary Research in Southern Africa*, 4. [CrossRef]
- Casey, A., & Rio, J. F.-. (2019). Cooperative Learning and the Affective Domain. *Journal of Physical Education, Recreation and Dance*, 90(3), 12-17. [CrossRef]
- Cheung, P. P. P., Siu, A. M. H., & Brown, T. (2017). Measuring social skills of children and adolescents in a Chinese population: Preliminary evidence on the reliability and validity of the translated Chinese version of the Social Skills Improvement System-Rating Scales (SSIS-RS-C). In *Research in Developmental Disabilities* (Vol. 60, pp. 187-197). Elsevier Inc. [PubMed]
- Cook, S., & Friend, M. (2020). Cooperative Learning: The Effects of Jigsaw on Academic Achievement, Attitudes, and Engagement in Ninth-Grade Earth Science. *Journal of Educational Research and Practice*, 10(1), 75-92. [CrossRef]
- Cronin, L. D., Allen, J., Mulvenna, C., & Russell, P. (2018). An investigation of the relationships between the teaching climate, students' perceived life skills development and well-being within physical education. *Physical Education and Sport Pedagogy*, 23(2), 181-196. [CrossRef]
- Diaz-Garolera, G., Palliser, M., & Fullana, J. (2022). Developing social skills to empower friendships: design and assessment of a social skills training programme. *International Journal of Inclusive Education*, 26(1), 1-15. [CrossRef]
- Dyson, B. (2002). The Implementation of Cooperative Learning in an Elementary Physical Education Program. In *Journal Of Teaching In Physical Educaion* (Vol. 22). [CrossRef]
- Fatmawati, E. (2021). Dukungan Perpustakaan Dalam Implementasi "Kampus Merdeka Dan Merdeka Belajar." *Jurnal Pustaka Ilmiah*, 6(2), 1076. <https://doi.org/10.20961/jpi.v6i2.46682>
- Fleming, N. D. (2001). *Teaching and learning styles : vark strategies (1st ed.)*. Neil Fleming.
- Fleming, N. D., & Mills, C. (1992). Helping Students Understand How They Learn. *The Teaching Professor. Magma Publications, Madison, Wisconsin, USA*, 7(4).
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. N. (2023). *How To Design And Evaluate Research In Education*. Published by McGraw Hill LLC.
- Grenier, M., & Yeaton, P. (2019). Social Thinking Skills and Cooperative Learning for Students with Autism. *Journal of Physical Education, Recreation & Dance*, 90, 18-21. [CrossRef]
- Gresham, F. M. (2016). Social skills assessment and intervention for children and youth. *Cambridge Journal of Education*, 46(3), 319-332. [CrossRef]
- Gresham, F. M., & Elliott, S. N. (2008). *Social skills improvement system: Intervention guide*. Minneapolis, MN: Pearson Assessments.
- Hsieh, C. T., Mache, M., & Knudson, D. (2012). Does student learning style affect performance on different

- formats of biomechanics examinations? *Sports Biomechanics*, 11(1), 108–119. [CrossRef]
- Jumahat, T., Mohd Noor, F., & Burhan Ibrahim, M. (2013). *Faktor-faktor Penentu Stres dalam Kalangan Guru: Sekolah Rendah Mubaligh di Kuala Lumpur*.
- Kazemi, M., Chudolinski, A., Turgeon, M., Simon, A., Ho, E., & Coombe, L. (2009). Nine year longitudinal retrospective study of Taekwondo injuries. In *J Can Chiropr Assoc* (Vol. 53, Issue 4). [PubMed]
- Kepmendikbudristek. (2022). *Pedoman Penerapan Kurikulum dalam Rangka Pemulihan Pembelajaran* (No.56). Jakarta: Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Ketabi, S., & Ketabi, S. (2014). Classroom and formative assessment in second/foreign language teaching and learning. *Theory and Practice in Language Studies*, 4(2), 435–440. [CrossRef]
- Langeveld, J. H., Gundersen, K. K., & Svartdal, F. (2012). Social Competence as a Mediating Factor in Reduction of Behavioral Problems. *Scandinavian Journal of Educational Research*, 56(4), 381–399. [CrossRef]
- Lavasani, M. G., Afzali, L., Borhanzadeh, S., Afzali, F., & Davoodi, M. (2011). The effect of cooperative learning on the social skills of first grade elementary school girls. *Procedia - Social and Behavioral Sciences*, 15, 1802–1805. [CrossRef]
- Lane, K. L., Pierson, M. R., & Givner, C. C. (2003). Teacher Expectations of Student Behavior: Which Skills Do Elementary and Secondary Teachers Deem Necessary for Success in the Classroom?. *Education and Treatment of Children*, 26(4), 413–430.
- Li, L. (2022). Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond. *Information Systems Frontiers*. <https://doi.org/10.1007/s10796-022-10308-y>
- Lubis, J., Haqiyah, A., Kusumawati, M., Irawan, A. A., Hanief, Y. N., & Riyadi, D. N. (2022). Do problem-based learning and flipped classroom models integrated with Android applications based on biomechanical analysis enhance the learning outcomes of Pencak Silat? *Journal of Physical Education and Sport*, 22(12), 3016–3022. [CrossRef]
- Maag, J. W. (2005). Social skills training for youth with emotional and behavioral disorders and learning disabilities: Problems, conclusions, and suggestions. *Exceptionality*, 13(3), 155–172. [CrossRef]
- Malecki, C. K., & Elliot, S. N. (2002). Children's social behaviors as predictors of academic achievement: A longitudinal analysis. *School Psychology Quarterly*, 17(1), 1–23. [CrossRef]
- Mert, A. (2023). The Effects of Emotional Intelligence-Oriented Psycho-Education Programme on Problem Solving and Decision-Making Skills. *International Journal of Disabilities Sports and Health Sciences*, 6(2), 193–203. [CrossRef]
- Mirza, M. A., & Khawar Khurshid. (2020). impact-of-var-k-learning-model-at-tertiary-level-education. *International Journal of Educational and Pedagogical Sciences*, 14(5), 354–361.
- Nisli, M. Y., Sirinkan, A., Acar, Z. A., Öz Nisli, E., & Toy, H. (2021). The Investigation of Acquisition Sufficiency of Physical Education Lesson Aims in A Special Education School in Turkey: A Pilot Study. *International Journal of Disabilities Sports and Health Sciences*, 4(1), 24–37. [CrossRef]
- O'Leary, N., Barber, A., & Keane, H. (2018). Physical education undergraduate students' perceptions of their learning using the jigsaw learning method. *European Physical Education Review*, 25. [CrossRef]
- O'Leary, N., & Griggs, G. (2010). Researching the pieces of a puzzle: The use of a jigsaw learning approach in the delivery of undergraduate gymnastics. *Journal of Further and Higher Education*, 34, 73–81. [CrossRef]
- Rad, H., Namaziandost, E., & Razmi, M. H. (2022). Integrating STAD and flipped learning in expository writing skills: Impacts on students' achievement and perceptions. *Journal of Research on Technology in Education*. [CrossRef]
- Riney, S. S., & Bullock, L. M. (2012). Teachers' perspectives on student problematic behavior and social skills. *Emotional and Behavioural Difficulties*, 17(2), 195–211. [CrossRef]
- Rivera, A. Samalot. (2014). Role Playing in Physical Education to Teach in the Affective Domain. *Journal of Physical Education, Recreation & Dance*, 85(2), 41–43. [CrossRef]
- Sharma, R., Goswami, V., & Gupta, P. (2016). Social skills: Their impact on academic achievement and other aspects of life. *International journal for innovative research in multidisciplinary field*, 2(7), 219–224.
- Siong, N. U., Ali, S. K. S., & Zulnaidi, H. (2020). Effects of STAD and jigsaw cooperative learning methods on badminton backhand low service skill. *International Journal of Innovation, Creativity and Change*; (10):10.<http://eprints.um.edu.my/id/eprint/24937>
- Sopiansyah, D., Masruroh, S., Zaqiah, Q. Y., Erihadiana, M., Sunan, U., & Djati Bandung, G. (2022). Konsep dan Implementasi Kurikulum MBKM (Merdeka Belajar Kampus Merdeka). *Reslaj: Religion Education Social Laa Roiba Journal*, 4(1), 34–41. <https://doi.org/https://doi.org/10.47467/reslaj.v4i1.458>
- UNESCO. (2017). *E2030: Education And Skills For The 21 St. Century*.<http://www.unesco.org/open-access/terms-use-ccbysa-en>
- Wentzel, K. R. (2009). *Peers and academic functioning at school. Handbook of peer interactions, relationships, and groups*. Guilford Press.



This work is distributed under <https://creativecommons.org/licenses/by-sa/4.0/>