JPII 13 (2) (2024) 313-324

Jurnal Pendidikan IPA Indonesia

https://journal.unnes.ac.id/journals/jpii

# THE CHANGE IN STUDENTS' COMMUNICATION AND COLLABORATION SKILLS THROUGH TIME TOKEN COOPERATIVE LEARNING MODEL

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**DOI: 10.15294/n77t7q82**

Accepted: May 16th, 2024. Approved: June 29th, 2024. Published: June 30th 2024

## ABSTRACT

The 21st century highlights the need for students to develop relevant abilities, such as collaboration and communication skills. Communication skills are critical for students to interact and express thoughts or ideas when solving problems. By communicating efficiently, students collaborate more easily, creating cooperation, responsibility, and concern within the group. This research aims to improve students' communication and collaboration skills in science learning by implementing the time-token cooperative learning model. This research is a quasi-experiment with a single-group pretest-posttest design. The following is the information obtained in this research: 1) Time-token cooperative learning has an effect in improving students' collaboration and communication skills; 2) Time-token cooperative learning has an effect in improving collaboration and communication skills for male and female students; 3) Male and female students' collaboration skills increased after implementing the time-token model. There is an increase in communication skills in female students but not in male students, even though male students' initial and final skills are higher than female students. Therefore, it is concluded that the time-token cooperative learning model increases students' communication and collaboration skills.



Keywords: collaboration skills; communication skills; science learning; time token

## INTRODUCTION

Education has a strategic role in preparing the next generation to meet the challenges of the 21st century. The 21st century is known for technological advances, so human resources are starting to be replaced with robots or technological sophistication; thus, human competence today no longer follows past standards (Chairunnisak, 2020). Partnership for the 21st century in the framework for 21st-century learning states four crucial elements to ensure students' 21st-century readiness: Learning & Innovation Skills-4Cs. Students must prepare four essential aspects: 1) Creativity and innovation, 2) Critical thinking and problem solving, 3) Communication, and 4) Collaboration (Battele for Kids, 2024). These aspects are fundamental considering the increasingly complex life and work environment. The same thing is also implied in the Minister of Education and Culture Regulation Number 81A of 2013 concerning implementing the Indonesian Curriculum, where students must have communication, collaboration, critical thinking, and creative competencies to adapt and develop in a global society. Students should be assessed on their knowledge, capacity to use 21st-century learning skills, and aptitude for answering questions (Xu & Zhou, 2022). Aspects of 21st-century skills involve communication and regulation. In facing the challenges of the 21st century, it is necessary to realize that communication and collaboration skills must be instilled early, even from primary education (elementary and junior high school) (Sumardeni et al., 2023).

Communication skills are conveying thoughts clearly and persuasively orally or in writing. This skill also includes expressing opinions in clear sentences, conveying orders clearly, and motivating others verbally (Setyawan et al., 2021). Communication is an effort by one person or more to build togetherness

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with other people by forming relationships by sharing or using information together (Nugraha & Pujiastuti, 2019). Communication is defined as providing or explaining information by presenting ideas constructed to solve problems in the learning process (Peters-Burton & Stehle, 2019). Communication skills are the ability to convey information related to learning material through oral and written conversations (Fitriah et al., 2020). It involves conveying ideas and concepts related to problem-solving. Communication allows one to express solutions through writing or discussion, which ultimately helps enrich classroom learning (Nurhayati et al., 2019). Jones and Seybold (2016), Klein and Carney (2014), Stewart et al. (2016), and Chan (2011) state that students need to have written and verbal communication skills in preparation for their careers. Communication can encourage quality improvement and influence the success of learning at all levels (Hastuti & Hidayati, 2018). In 21st-century skills, students are more likely to have difficulty implementing learning oriented toward communication skills. It shows that students need more intensive assistance and increased communication (Mutohhari et al., 2021). Students' low communication skills impact their problem-solving skills (Nurhayati et al., 2019). Observation results in high schools show that several aspects of students' skills still need to be improved, especially regarding communication skills.

The skills that students need in 21st-century learning do not only focus on communication but also collaboration. Collaboration is an important aspect that students must master in studying and working. Many jobs in the 21st century emphasize collaboration between individuals, teams, and professions (Trilling & Fadel, 2009). Collaboration also significantly improves students' skills (Fusco et al., 2020). The essence of collaboration is working together with other people in teams and in groups to achieve mutual success (Talitha et al., 2019). Collaboration, often also called the ability to collaborate, is the ability of individuals to support each other in teamwork and between teams to create cohesiveness and unity to achieve common goals (Putri & Rahmawati, 2022). The urgency of collaboration can be categorized into long- and short-term benefits. In the short term, collaborative learning will produce team members who can complete tasks and solve problems together. Long-term collaborative learning can be utilized as a learning method that directs students to develop and collaborate effectively. Collaboration skills increase self-efficacy and opportunities to work with overseas partners for prospective teachers (Hardianti et al., 2017). The advantages of learning with the ultimate goal of collaboration are practicing effective division of labor, increasing student responsibility, combining information from various sources of knowledge, perspectives, and experiences, and increasing creativity and quality of solutions stimulated by the ideas of members in each group (Child & Shaw, 2016; Dooley & Finck, 2017). However, students have not fully realized collaboration skills (Kirschner et al., 2018).

Le et al. (2018) examined students' lack of collaboration skills and showed that many did not yet understand working in groups. Apart from that, collaborative learning also raises several problems, such as students' unrelated interaction with the learning topic and students' inadequate participation. For example, when conducting a group discussion, students chat, play around, and even sleep (Ramadini, 2020). Previous observation results show that students' communication and collaboration skills at one of the MTsN in Bengkalis are relatively low (38%), indicated by students' lack of courage to ask questions and low participation when learning in groups. Not all students are actively involved in group discussions, so only certain students answer and ask questions more often during learning. Nurwidodo et al. (2022), Sarifah and Nurita (2023), and Wela et al. (2020) stated that students' collaborative skills were still low. This previous research only used STEM models, problem-based learning, and guided inquiry. Apart from that, students' low communication skills were also revealed by other researchers who used discovery learning and generative learning (Jusniani & Nurmasidah, 2021; Kanah & Mardiani, 2022; Zaditania & Ruli, 2022).

Some efforts to develop students' communication and collaboration skills are by choosing an appropriate learning model. Teachers need to know the strategies to be implemented to develop students' skills, such as teamwork. Teamwork learning models can be considered (Xiang & Han, 2021). A learning model is a pattern or plan to design a long-term curriculum, compile learning materials, and direct the learning process in the classroom or other learning environment (Mirdad, 2020). The model that is thought to facilitate learning and develop communication and collaboration skills is called cooperative learning (Tinungki, 2015). Cooperative learning is a learning model involving collaborating or working together. Several teamwork activities will allow students to exchange ideas on several issues and form the characteristics that influence their thinking patterns, represented in communication skills (Huda, 2014). Cooperative learning has various types, one of which is time token. Time token is a type of cooperative learning used in learning contexts (Harefa, 2020). Time-token cooperative learning is a structural approach that involves students learning more about the material discussed and checking their understanding of the learning content (Son, 2019). Students are organized into study groups to teach social skills so that no student dominates the conversation too much and there is no total silence during discussions (Kanginan, 2016). Students' learning activities facilitate open interactions and encourage them to take positive actions that support their academic improvement (Sembiring et al., 2021). Time-token learning positively affects students' communication skills (Latifah, 2016; Yassin et al., 2018). Additionally, time-token learning helps students to participate actively in group settings (Indraswati et al., 2021).

Time tokens can improve students' learning outcomes (Nasir et al., 2024; Oktaviani et al., 2019). Alonemarera (2023) shows that time-token learning can improve students' communication and collaboration skills. This research is conducted at the tertiary level with a medium category for communication skills and a good category for students' collaboration skills.

Based on this explanation, it is necessary to research to test the effectiveness of time-token learning in improving students' collaboration and communication skills at junior high school. The following problem formulation will be answered in this research: 1) Does time-token cooperative learning affect students' collaboration and communication skills? 2) Does time-token cooperative learning affect male and female students' collaboration and communication skills? 3) Is there an interaction effect between gender and treatment on students' collaboration and communication skills? This study aims to determine the effect of time-token cooperative learning on students' collaboration and communication skills, to find out how time-token cooperative learning influences male and female students' collaboration and communication skills, and to see whether there is an interaction between gender and treatment on students' collaboration and communication skills. This research is urgent because time-token learning improves 21st-century skills, including students' communication and collaboration skills. These skills are key to students' academic success, personal development, and preparation to become productive and contributing members of society.

## METHODS

This research is a quasi-experiment with a single-group pretest-posttest design. Measurements in the single-group pretest-posttest design were carried out before and after treatment (Jackson, 2012). This research only used one group without a comparison group. The quasi-experiment design was used to examine the improvement of students' collaboration and communication skills.

The population of this study was all 8th-grade students at MTsN 4 Bengkalis. The research subjects were 25 class 8-D students consisting of 11 male students and 14 female students. The dependent variable of this research was communication and collaboration skills, and the independent variable was the time token cooperative learning model. Using time tokens effectively encourages students to increase initiative and participation to play an active role in learning and be more courageous in expressing their opinions well (Wahyuni et al., 2018). Data on students' collaboration and communication skills was collected through observation sheets. Collaboration and communication skills data were analyzed using descriptive analysis and MANOVA tests. Before starting the assessment, the validity index of the observation sheet was first tested through expert analysis. Three expert lecturers from the Postgraduate Program at the Faculty of Teacher Training and Education, Universitas Riau, were selected to analyze whether the observation sheet was suitable for measuring indicators of collaborative and communication skills. Learning using the tome token model was supervised by two observers and recorded using CCTV. Communication and collaboration skills were observed during eight meetings using observation sheets. A score of 1 is given if the observed criterion is visible, but if the observed criterion is invisible, a score of 0 is given. The results of communication and collaboration skills observations at the first four meetings were designated as pretest, and those at the last four meetings were designated as posttest.

The time token cooperative learning model was applied because of the grouping method criteria. The group was divided into five, each consisting of five people. The following are the stages in the time token cooperative learning model: (1) Conveying the learning objectives and preparing students; (2) Providing some information to students via PowerPoint slides, student modules, YouTube videos, and the like; (3) Organizing students in groups; (4) Providing time vouchers; (5) Presenting several awards.

Communication skills were monitored in each meeting with several indicators: 1) Students express their opinions in front of the class, 2) Students listen when others express opinions, 3) Students dare to come to the front of the class to make a presentation, 4) Students explain the presentation material flexibly, and 5) Students are not distracted or misfocused (Amelia & Trismawati, 2015; Dewi et al., 2019; Vanalita et al., 2014). Students' communication skills were observed at each meeting. Researchers provided different learning materials and media in each meeting according to the required topics.

The researchers also studied students' collaboration skills in each meeting besides verbal communication skills. The following are indicators of collaboration: 1) Students contribute actively in groups, 2) Students respect others' opinions, 3) Students respond or provide feedback, 4) Students take joint responsibility in working, 5) Students help others, and 6) Students Students ask for other help (Indrawan et al., 2021).

## RESULTS AND DISCUSSION

After implementing the time token cooperative learning model, descriptive analysis was carried out for total scores, averages, and percentages, and inferential analysis was carried out using the MANOVA test.

Based on statistical analysis, the results of communication and collaboration skills before and after implementing the time-token cooperative learning model are obtained, and how it impacts male and female students is also obtained.

**Table 1.** The Effect of Time-Token Learning on Male and Female Students' Collaboration and Communication Skills

| Variable | Gender | Time | Mean | Std. Deviation | Sample |
|---|---|---|---|---|---|
| Collaboration | Male | pretest | 11.91 | 7.134 | 11 |
| | | posttest | 15.82 | 5.582 | 11 |
| | | Total | 13.86 | 6.563 | 22 |
| | Female | pretest | 16.14 | 5.231 | 14 |
| | | posttest | 19.86 | 4.055 | 14 |
| | | Total | 18.00 | 4.967 | 28 |
| | Total | pretest | 14.28 | 6.374 | 25 |
| | | posttest | 18.08 | 5.107 | 25 |
| | | Total | 16.18 | 6.029 | 50 |
| Communication | Male | pretest | 9.36 | 4.567 | 11 |
| | | posttest | 9.09 | 6.204 | 11 |
| | | Total | 9.23 | 5.318 | 22 |
| | Female | pretest | 6.07 | 2.235 | 14 |
| | | posttest | 8.86 | 3.394 | 14 |
| | | Total | 7.46 | 3.156 | 28 |
| | Total | pretest | 7.52 | 3.765 | 25 |
| | | posttest | 8.96 | 4.721 | 25 |
| | | Total | 8.24 | 4.288 | 50 |

In Table 1, collaboration skills increased after using the time token cooperative model for male and female students. Meanwhile, communication skills increased in female students and did not increase in male students.

Students' communication and collaboration skills were observed in eight meetings. The following section is the result of all the skills observed. Profiles of students' communication skills in eight meetings are illustrated in Figure 1.

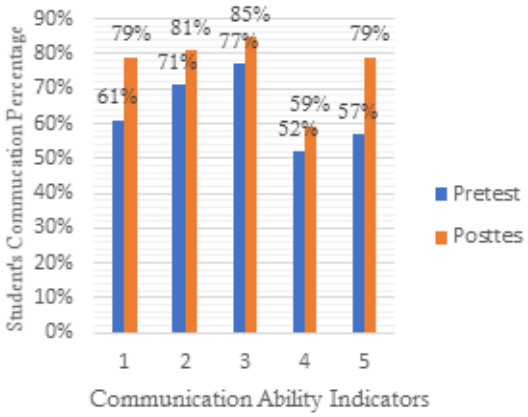



**Figure 1.** Comparison of Students' Communication Skills

Information:
1. Students express their opinions in front of the class
2. Students respect when others express opinions
3. Students dare to come to the front of the class to make a presentation
4. Students explain the presentation material flexibly
5. Students are not distracted or misfocused

Students' verbal communication skills are crucial in learning (Sulistiadewi, 2017). Communication skills are needed when students convey scientific results directly, indirectly, individually, or in groups. Student communication is observed when they ask, answer, present in front of the class, and do several other activities. The following explains the indicators of communication skills.

The ability to express opinions includes expressing ideas or thoughts verbally logically, without imposing one's own will, and with good language. This ability is vital for students because it can help them achieve optimal learning outcomes. If students do not have this ability, they may face various obstacles and difficulties in achieving academic success. Therefore, a lack of ability to express opinions can hinder learning because this ability reflects students' thinking skills (Ginanjar et al.., 2019). This indicator obtained 61% on the pretest and 79% on the posttest. These results prove students' ability to express opinions was higher after the treatment. Students' courage in expressing opinions is because they dare to ask the teacher, understand the material, have self-confidence, and interact in class (Dahlan & Murad, 2023).

Respecting other people's opinions is an attitude that shows respect and the ability to accept differences, regardless of who the person is or what they have (Susanti, 2021). This indicator obtained 71% on the pretest and 81% on the posttest. These results prove that students' ability to respect others' opinions was higher after the treatment.

Presentation is an activity of speaking in front of a large audience or a form of communication. This indicator obtained 77% on the pretest and 85% on the posttest. There was a significant increase in the presentation aspect. This increase is due to automatic compulsion because students feel embarrassed by other students if they cannot present the material. Students will be forced to increase their knowledge and ability to answer questions given by other students so that they become more active in learning (Noor, 2021).

Explanation skills in learning are the presentation of information orally, which is organized systematically to show the existence of a relationship with one another (Wulandari et al., 2019). This indicator obtained 52% on the pretest and 59% on the posttest. Compared to the three previous indicators, this indicator has a less satisfactory result. Factors that cause a lack of explanation skills include motives/motivations, study habits, attitudes or mentality, interactions between teachers and students, learning methods, learning media, and student-student interactions (Selawati, 2017).

Learning concentration focuses on behavior change manifested in mastery, use, and assessment of attitudes and values, knowledge, and basic skills in various fields of study. Learning is successful if the objectives are achieved (Aviana & Hidayah, 2015). This indicator obtained 57% on the pretest and 79% on the posttest. These results prove that students' focus on learning has increased significantly. According to Mustofa et al. (2023), optimal physical condition, teacher motivation, environment and facilities, learning methods, and peers impact students' level of focus.

Students' verbal communication skills are crucial in learning (Sulistiadewi, 2017). Communication skills are needed when students convey scientific results directly, indirectly, individually, or in groups. Student communication is observed when they ask, answer, present in front of the class, and do several other activities. The average of students' verbal communication skills was 64% on the pretest and increased to 77% on the posttest. This results from the time-token learning requirement that all students speak. Only intelligent students spoke before this model was implemented; now, all students are used to speaking; if not, it will impact their group grades.

Based on the increase in all indicators, students become confident in speaking and expressing their ideas in front of the class using the time-token learning model with several strategies. Students also learn how to respect their friends and present the results of their discussions well. Sulistiadewi (2017) supported this because students' communication skills improved significantly after implementing time token learning. According to Asnita and Khair (2020), by implementing the time token learning model, students can express their opinions confidently and accept other people who propose different ideas.

Profiles of students' collaboration skills in eight meetings are illustrated in Figure 2.

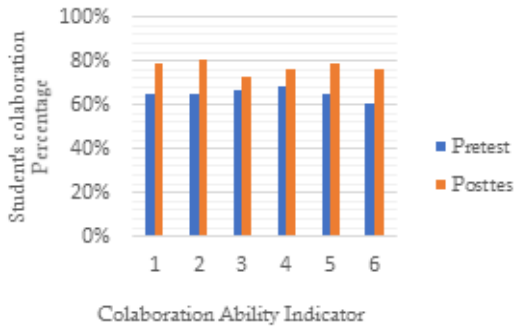



**Figure 2.** Comparison of Students' Collaboration Skills
Information:
Students contribute actively in groups
Students respect others' opinions
Students respond or provide feedback
Students take joint responsibility in working
Students help others
Students ask for others' help

Collaborative skills are important for students because they are useful in managing learning activities (Dewi et al., 2020). Collaboration skills can be useful in working together to solve problems and achieve common goals (Yunus, 2023). The following explains the indicators of collaboration skills.

This indicator of contributing actively obtained 65% on the pretest and 79% on the posttest, which is higher. Piaget's theory states that individuals who are actively involved in the learning process, such as participating in discussions, asking questions, and interacting with course material, will have more excellent opportunities to deepen their understanding through critical thinking, reflection, and collaboration (Mulya & Fauziah, 2023).

Respecting other people's opinions is an attitude that shows respect and the ability to accept differences, regardless of who the person is or what they have (Susilawati et al., 2020). This indicator obtained 65% on the pretest and 81% on the posttest, which is higher. These results show an increase in collaboration skills. This is because time token learning encourages students to increase initiative and participation to play an active role in learning and express their opinions well (Wahyuni et al., 2018).

Responding or providing feedback is necessary for a discussion so that learning occurs actively. This indicator obtained 67% on the pretest and 73% on the posttest, which is higher. Students become active, listen to each other, and share their knowledge in time token learning (Son, 2019).

Joint responsibility is a collective commitment from all team members to carry out their respective duties and roles to achieve the desired results effectively and efficiently. This indicator obtained 65% on the pretest and 76% on the posttest, which is higher. This increase occurred because each team member was committed to carrying out their respective duties and roles, contributing effectively, and working together to achieve common goals.

The indicator of helping others was obtained at 65% on the pretest and 79% on the posttest, which is higher. By implementing time token learning, students can help each other through intellectual guidance that allows them to complete more complex tasks. This approach is effective in helping students build their knowledge. Therefore, collaborative learning is one way to apply the principles of constructivism (Mahmudi, 2006).

Asking for help is requesting another person for support, guidance, or assistance in completing a task or facing a problem. This indicator of helping others obtained 61% on the pretest and 76% on the posttest, which is higher. The increase in all indicators of students' collaboration abilities cannot be separated from the good cooperation of each group member to achieve common goals, caring for each other, and having responsibility.

Based on the inferential statistical test (Box M Test), the observed covariance matrix of the dependent variable is the same across groups, F=2.263 and sig kk0.160. These results indicate that the posttest data for both variables met the

requirements for the MANOVA test, which used Pillai's Trace and Wilks' Lambda techniques in this case.

**Table 2.** Multivariate Tests Results

| | Effect | F | Sig. |
|---|---|---|---|
| Gender | Pillai's Trace | 12.984 | .000 |
| | Wilks' Lambda | 12.984 | .000 |

The MANOVA test found F=12.984 and p<.05 for the gender variable. These results state that gender has a significant effect on improving collaboration and communication skills.

To identify the interaction effect of gender and treatment (pretest and posttest) on collaboration and communication skills separately, a between-subjects effect test was used (Table 3).

**Table 3.** Results of Between-Subjects Effect Test (Pre-Post)

| Source | Dependent Variable | F | Sig. |
|---|---|---|---|
| Time Token-Gender | Communication | 2.180 | .147 |
| | Collaboration | 6.976 | .011 |

a. R Squared = .103 (Adjusted R Squared = .045)

b. R Squared = .220 (Adjusted R Squared = .169)

The following explains the content of Table 3: a. Communication Skills. F=2.180 and p>.05 were obtained for the gender effect. This result means that gender has no significant effect on communication skills. The interaction effect of gender and treatment on communication skills is illustrated in Figure 3.

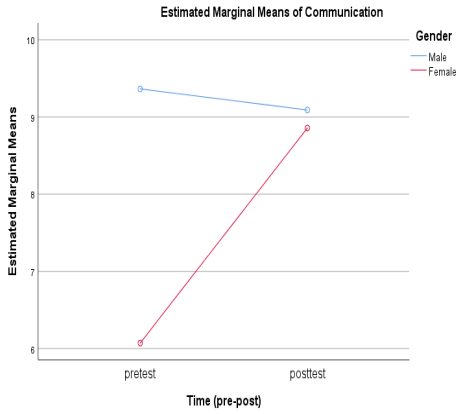



**Figure 3.** Effect of Time Token Cooperative Model on Students' Communication Based on Gender

Figure 3 shows that male students have better communication skills than female students before and after treatment. However, the treatment only significantly affects female students' communication skills. Before the implementation of the cooperative time token, the communication skills of male students were higher than those of female students; male students dominated the conversation, but after the implementation of the cooperative time token, the communication skills of female students increased well, but there was a slight decrease in male students. This is because male students tend to give female students more opportunities to speak and give in if female students want to take over the conversation.

b. Collaboration Skills. F=6.976 and p<.05 were obtained for the gender effect. This result means that gender has a significant effect on collaboration skills. The interaction effect of gender and treatment on collaboration skills is illustrated in Figure 4.

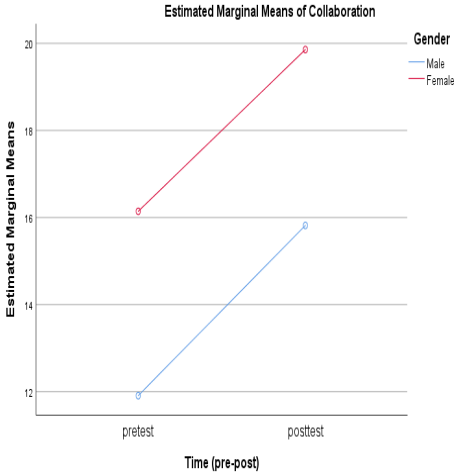



**Figure 4.** Effect of Time Token Cooperative Model on Students' Collaboration Based on Gender

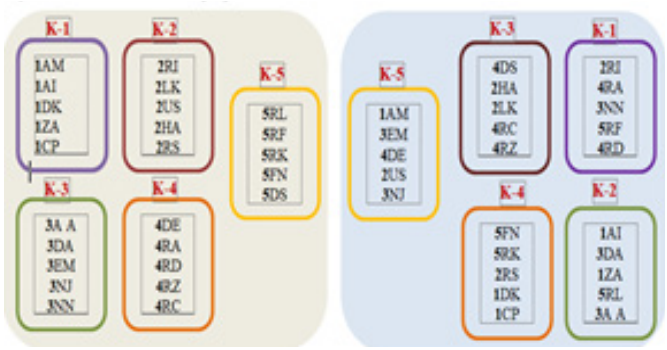
Figure 4 shows that the treatment significantly affects the collaboration skills of both male and female students. Besides that, female students are always better than male students regarding collaboration skills.

In the learning process, researchers utilize the stages of the time token learning model. The first activity before starting learning is called orientation. Orientation activities allow researchers and students to prepare themselves before starting learning. These activities include greeting, asking about their well-being, asking students to prepare for class, and taking attendance. Next, the researcher gave apperception to recall the material that had been studied previously. Af-

ter that, the researcher motivated to attract students to be curious about the lesson material that would be provided. The motivation follows the environment or events students often experience, such as "Have you ever played the guitar?" and "How often do you take selfies in a day." This is intended to make students feel that learning is more meaningful and can answer their daily needs. As stated by Zulirfan et al. (2023), science teaching that does not connect the science learned at school with the context of students' lives makes science meaningless for students.

After the orientation activities, the time token learning process begins. The first stage in this model is to convey the learning objectives and prepare students. After the students were given apperception, motivation, and ready to participate in the lesson, the researcher and the students read the learning objectives together. Next, the teacher provides information through PowerPoint slides, modules, YouTube videos, and the like. Learning delivery varies depending on the situation and conditions of the class at that time. At this stage, the researcher also explains the material and activities that will be carried out (either conducting experiments or making products), gives points to each student who completes the activity, and many other activities.

In the third stage, researchers require organizing students to sit in groups. Next, students are directed to sit in a predetermined order using slides. They are then assigned to work together to conduct experiments or make a product, fill in student worksheets, and the like. The next stage is to guide the group in learning and working. Students ask researchers about commands on students' worksheets or those they do not understand. While this stage is taking place, the researcher supervises each group so that the groups continue to work together. Figure 5 shows the division of groups in time token learning.




Group Division in BC 3.11 Group Division in BC 3.12

Information:

K-1 = Group 1
K-2 = Group 2
K-3 = Group 3
K-4 = Group 4
K-5 = Group 5

**Figure 5.** Group Division

Based on Figure 5, there are differences in what researchers do in forming groups. Students looked bored and wanted to study with a new group. In addition, some students suggested changing study group members. The researcher considered and finally agreed to their suggestion because students were also part of the research. People who know and feel how the learning process takes place or who feel and how the new method touches their hearts are students. Therefore, students can also reflect on the actions taken by the teacher (Arikunto, 2019).

The next stage is a special characteristic of the time token learning model, giving time vouchers. Time vouchers are given to students before presenting with their team. Similar to group distribution, voucher distribution varies at each meeting, as presented in Table 5.

**Table 5.** Time Voucher Distribution

| BC.11 Learning | | | | | |
|---|---|---|---|---|---|
| **Meeting** | **GROUP 1** | **GROUP 2** | **GROUP 3** | **GROUP 4** | **GROUP 5** |
| 1 | 5 minutes | 5 minutes | 5 minutes | 5 minutes | 5 minutes |
| 2 | 5 minutes | 5 minutes | 5 minutes | 5 minutes | 5 minutes |
| 3 | 5 minutes | 5 minutes | 5 minutes | 5 minutes | 5 minutes |
| 4 | 5 minutes | 5 minutes | 5 minutes | 5 minutes | 5 minutes |
| **BC.12 Learning** | | | | | |
| **Meeting** | **GROUP 1** | **GROUP 2** | **GROUP 3** | **GROUP 4** | **GROUP 5** |
| 1 | 6 minutes | 4 minutes | 5 minutes | 7 minutes | 5 minutes |
| 2 | 5 minutes | 6 minutes | 7 minutes | 4 minutes | 5 minutes |
| 3 | 3 minutes | 4 minutes | 5 minutes | 4 minutes | 2 minutes |
| 4 | 5 minutes | 3 minutes | 4 minutes | 2 minutes | 3 minutes |

Based on Table 5, there is a difference between BC 11 and BC 12 learning. In BC 11 learning, each group is given the same time to present in front of the class. Following four meetings, the researcher observed that students were less eager to use time vouchers because each group was given the same amount of time to speak. Accordingly, the researcher varied the times to ensure that every group was eager to use time vouchers. They felt more motivated and challenged to approach the class when they had different time vouchers. After each group's presentation is made, the next stage is evaluation. At this stage, researchers provide opportunities for students to ask questions and provide reinforcement regarding the results of their experiments. At this stage, both researchers and students draw several conclusions and provide answers to the motivations they discussed at the beginning of the lesson. After concluding, the researcher gave a quiz, which students were asked to answer on paper.

The final stage in the time token learning model is presenting several awards. Awards are given to students by giving stars to the best group. The group with the most stars will receive an award. In this study, awards were given in the form of internet vouchers. The same stages are also applied at each subsequent meeting.

This research implements time tokens in education to improve students' communication and collaboration skills. In line with this, Saputro and Ariyanto (2014) stated that implementing the time token learning strategy can improve students' communication skills in learning mathematics. Apart from that, Rambe (2021) stated that applying the time token learning method increases students' self-confidence and mathematical communication skills. Alonemarera (2023) stated that integrating the time token learning model and interactive games based on the Wordwall application effectively improves students' communication and collaboration skills. Furthermore, according to Rahmawati (2020), Every child needs to have their opinions heard and their communication skills trained, according to the research's conclusions, which have implications for the future. All students, even the quiet ones, can benefit from time spent talking to improve their communication skills. Students' collaboration skills can be enhanced by working in teams, supporting one another, and standing up for one another to accomplish shared objectives.

## CONCLUSION

Students' communication and collaboration skills improve by applying the time token learning model. Some of the actions taken by researchers were to provide opportunities for students to express their ideas by giving them time to talk so that they communicate in class and get used to answering questions from the teacher. The following is the information obtained in this research: 1) Time token cooperative learning has an effect in improving students' collaboration and communication skills; 2) time token cooperative learning has an effect in improving collaboration and communication skills for male and female students; 3) Male and female students' collaboration skills increased after implementing the time token model. There is an increase in communication skills in female students but not in male students, even though male students' initial and final skills are higher than female students. Therefore, it is concluded that training communication skills requires a relatively long time.

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