



Pengaruh Strategi Pembelajaran *SEGU* Terhadap Keterampilan Grafik dan Kolaborasi Siswa SMA pada Materi Sistem Reproduksi

The Effect of SEGU Towards Graphics and Collaborating Skills of High School Students on Reproductive System Material

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Penelitian ini dilatarbelakangi oleh perkembangan abad 21 yang membawa perubahan besar dan mencakup semua aspek. Oleh karena itu, penting untuk menguasai keterampilan abad ke-21 untuk dapat menghadapi perubahan tersebut. Selain itu, keterampilan grafik yang rendah di tingkat Sekolah Menengah Atas (SMA) harus diperhatikan agar mereka dapat memahami informasi visual yang tersedia saat ini. Stream Ecology Graphing Unit (SEGU) merupakan salah satu strategi pembelajaran yang memfasilitasi siswa untuk “mind-on” dalam memahami konsep graf. Tujuan penelitian ini adalah untuk menganalisis pengaruh penerapan SEGU terhadap keterampilan grafis dan kolaborasi SHS pada materi reproduksi. Penelitian ini menggunakan kuasi eksperimen dengan desain kelompok kontrol Non-Equivalent. Sampel penelitian adalah dua kelas XI MIPA di sebuah SHS di Bandung yang diambil secara Purposive sampling. Instrumen yang digunakan adalah pre-test, post-test, rubrik pengukuran keterampilan berkolaborasi, dan angket respon siswa terhadap SEGU. Hasil penelitian menunjukkan perbedaan yang signifikan antara kelompok eksperimen dan kontrol dalam grafik dan kolaborasi dan menunjukkan makna yang dimaksudkan terhadap implementasi SEGU. Sebagian besar siswa memberikan respon positif terhadap SEGU.

Kata kunci: *Stream Ecology Graphing Unit*; Keterampilan Grafis; Keterampilan Berkomunikasi

The research was motivated by 21st-century developments which made major changes and covered all aspects. Thereby, it was important to master 21st-century skills to be able to deal with these changes. Furthermore, low graphic skills at Senior High School (SHS) level must be considered so they could understand the visual information currently available. Stream Ecology Graphing Unit (SEGU) was a learning strategy to facilitate students to “mind-on” in understanding graph concept. The purpose of the research was to analyze the effect of applying SEGU towards the graphic and collaborating skills of SHS on reproductive material. This research used a Quasi-experimental with Non-Equivalent control group design. The samples were two classes of XI MIPA in an SHS in Bandung which was taken using Purposive sampling. The instruments used were pre-test, post-test, rubrics of measuring collaborating skill, and questionnaires for students’ response towards SEGU. The result showed significant differences between the experimental and control groups in graphic and collaborating and showed intended meaning towards the implementation of SEGU. Most of the students gave a positive response towards SEGU.

Keywords: *Stream Ecology Graphing Unit; Graphic Skill; Communicating Skill*

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INTRODUCTION

The world in the 21st-century is changing rapidly regarding various aspects of life, including the fields of economy, transportation, technology, communication, information, and

others. By mastering 21st-century skills, this change can be anticipated well. The 21st-century skills include critical thinking and problem-solving, creativity and innovation, communication, collaboration, information literacy, media literacy, technology literacy, flexibility, leadership attitudes, initiative, productivity, and social skills (Stauffer, 2020). By mastering these skills, someone will be able to face the challenges of life that are increasingly complex and to succeed in life and career in the world of work along with the progress in the 21st century (Redhana, 2019).

Communicating skills are skills used to present or explain information needed effectively (Stehle & Peters-Burton, 2019). Graphs are a type of data or information representation that are useful for summarizing groups of data and for obtaining and interpreting new information from complex data (Uzun et al., 2012). Therefore, skills in understanding graphics are needed by someone to communicate and obtain information well from a graphical data display. Graphing skill is someone's skill in converting and interpreting a graphic. These skills include reading graphs, analyzing data in a graph, and processing complex data into more concise data in a graph (Harsh & Schmittharsh, 2016). The necessity of this skill can be felt when technology, such as television and the internet, is currently the main source for science and technology information that generally presents data visually in informing opinions about public policy and private actions (Bruer & Camilla, 2010). Data representation competence is also an important aspect of understanding scientific writing because data representation in journals is dominated by graphical representations (Bowen & Roth, 1998). Apart from graphing skills, collaborating skills are also important as time passed. In the world of work, an organization will be faced with the need to innovate which requires a combination of all the potential and expertise of existing employees (Knoll et al., 2010). Therefore, collaboration skills become abilities that are considered important for the workforce to have in the future (Blaskovich, 2008).

According to Redhana (2019), the preparation of human resources who master the skills of the 21st-century will be effective if it is pursued through education. The 2013 curriculum accommodates 21st-century skills, both in terms of content, process, and assessment standards. However, most learning in Indonesia is still implemented with centered on educators (teacher-centered). As a result, students cannot master 21st-century skills optimally. Efforts made to develop the 21st-century skills of students are carried out learning reforms, changing from teacher-centered learning to student-centered learning (Redhana, 2019). Therefore, strategies in learning must be considered because these skills can be achieved with learning methods that are applied following the mastery of material and skills (Trisdiono, 2013).

According to Gerlach and Ely (in Wiryawan, 2014), learning strategies are the methods chosen to deliver a subject that fits with a particular learning environment, including the nature, scope, and sequence of activities that can provide learning experiences to students. Learning strategies can be applied in several ways. One of them is the Stream Ecology Graphing Unit

learning strategy or called SEGU. This learning strategy is one of the learning strategies using an inquiry learning model with the goal of facilitating students to be "mind-on" in understanding a concept in a graph (Harsh & Schmittharsh, 2016). SEGU learning strategy is also one of active learning. According to Cunska and Savicka (2012), active learning is a term used to describe several models of student learning as responsibility for the learning they do. Active learning is intended to optimize all the potentials that students have so that they can achieve maximum learning outcomes according to each personal characteristic of students. Therefore, this learning can facilitate students to take an active role during learning activities with collaborative skills that are well-honed (Harsh & Schmittharsh, 2016).

The SEGU learning strategy has five stages that must be fulfilled when learning takes place, namely: (1) students must take an active role in authentic scientific inquiry; (2) students must be exposed to complex data exposure; (3) students should be guided in making data displays, both manually (for example using pen and paper) and representational practices using technology, (4) student ability gaps must be considered by using explicit teaching steps or modeling graphic skills; (5) students collaborate to understand and solve the problems faced, and can communicate data effectively. The five steps will involve students actively in learning, especially in the process of data collection and processing. This learning strategy will improve students' ability to draw and read graphs (Harsh & Schmittharsh, 2016). This can be seen in the first to third stages, students will be actively involved in collaborating in taking and processing data into a simple graphic. That way, students will focus on developing graphic skills. Besides, according to Morrison and McDuffie (2009), students will feel challenged when analyzing and interpreting the data they get, as well as describing and explaining the data. According to Bowen and Roth (2005), the experience of using primary data can lead to misunderstandings about the relationship between variables, which is necessary to make a scientific statement. These three stages also include training other students' 21st-century skills, namely students' collaborative and communicative skills. Communication and collaboration skills are skills when someone can communicate clearly and collaborate with other group members (Wijaya et al., 2016). Dillenbourg (1999) defines collaboration as a situation in which two or more people learn and try to learn something together. In the fourth and fifth stages, students will be emphasized more in collaborative and communicative skills by working with their group friends in processing and analyzing data to find solutions to the problems they face. Therefore, SEGU learning can also be an effort to develop collaborative skills and student graphic skills simultaneously in one learning activity.

However, with the COVID-19 pandemic in Indonesia, the implementation of SEGU learning in this research has been transferred online. In addition to preventing the spread of this pandemic disease, the advantage of SEGU learning online implementation is making it easier for

teachers to monitor student discussions during learning, so that teachers can monitor all students every time. Therefore, this study made several adjustments in its implementation, such as learning time, use of applications in its implementation, and technical implementation of learning. This study uses two classes, namely the experimental class as a class that applies the SEGU learning strategy and the control class as a class that uses online learning with the teacher method using Google Classroom.

The strategies used in learning must be considered so that they are following the side of mastery of the material and skills to be developed (Trisdiono, 2013). The reproductive system is a part of XI biology-grade material. Material on population and family planning (KB) are part of the reproductive system material for XI grade in the second semester. Reproduction material is material to support students in understanding population and family planning material. The menstrual cycle is one of the materials that support students in understanding the effect of pregnancy rates, infant birth rates, and contraceptive materials as part of family planning efforts (BKKBN, 2019).

Basic Competencies (KD) regarding population and family planning are found in KD 3.13 and 4.13 issued by the Ministry of Education and Culture which reads, "Analyzing the application of reproductive principles in humans and exclusive breastfeeding in family planning programs as an effort to improve the quality of Human Resources (HR)" and "Presenting papers on the importance of preparing a planned generation to improve the quality of Human Resources (HR)" (Kementerian Pendidikan dan Budaya, 2019). In general, the characteristics of the material in this competency are analyzing and explaining solutions to solving population problems through exclusive breastfeeding and family planning (KB) programs. According to Sunaryanto (2012), population problems are one of the problems faced by Indonesia. This shows in this learning students will get learning with contextual (real) problems. Besides, in studying this material, complex data displays will be used to show the problem of the population that tends to be dynamic, and informing this data also requires the ability to make graphics so that graphic skills are needed by students in mastering this population material (Sunaryanto, 2012). The ability to understand and communicate dynamic complex data is needed to support solutions that will be made in solving population problems, such as through family planning programs. Also, solving the population problem requires cooperation from various parties, such as the government, health service personnel, especially in family planning services, and the community itself (Kementerian Kesehatan RI, 2014). Therefore, the implementation of the SEGU learning strategy will be suitable to be applied. As previously explained, the SEGU learning strategy is a learning strategy that has 5 stages in its implementation, especially in learning that requires students to be faced with contextual problems. The general characteristics of this learning strategy: students must collect authentic data, deal with complex data, take a

two-stage approach to analyze data, use the explicit direction to reduce each student's ability gaps, and collaborate in solving problems in graphical form (Harsh & Schmittharsh, 2016). The five characteristics of the learning strategy are like the characteristics needed for learning material for population and family planning (KB). In general, the application of this learning strategy includes student activities in collecting primary data on population problems, processing data, analyzing data, and training to strengthen learning activities regarding population and family planning in graphical form. In this learning too, students will be directed to work and think like scientists, play an active role in collecting various data (data that is not sequential or in the form of raw data), and trained to communicate and collaborate in groups in solving given problems. With learning like this, it is hoped that students will get an understanding of graphic concepts and skills simultaneously, and students will know more about the importance of collaboration in solving a problem.

Research related to graphic and collaboration skills have been conducted by several researchers. The research shows that at the high school student level, students still experience difficulties during exams regarding graphic understanding, as well as a lack of conceptualization skills which include variable identification abilities, interpretation of variable relationships, utilization of appropriate graph types, detection of data trends, and ability to change numeric data into a graphic form (Tairab & Khalaf Al-Naqbi, 2004). According to Wilson (2002), science is the object most effectively communicated as a story, because students support it to be written in a creative and informative way that can be implemented by the public. A story about a phenomenon in everyday life can be packaged in a graph. By packaging the story, students do not only learn about numerical data but the meaning or story in the graph (Bell & Janvier, 1981). Also, in the face of the 21st century, graphic skills must be combined with another ability, like collaboration, because in the 21st century to solve problems must be handled by various disciplines in solving them (Redhana, 2019).

METHOD

The research method used Quasi-Experimental. This study used a research design in the form of a Non-Equivalent Control Group Design. The samples of this study were two classes 11 MIPA which were taken using purposive sampling. The two classes were the experimental class and the control class. The number of students in the experimental class was 30 students and the control class was 34 students.

In this study, several instruments were used to conduct evaluation, includes graphical skills tests, collaboration assessment rubrics, and student response questionnaires about SEGU learning implementation. The graphic skills test consists of 12 description items following the assessment indicators developed by Harsh and Schmittharsh in the SEGU (Stream Ecology

Graphing Unit) learning strategy which refers to Harsh, Maltese, and Warner (in Harsh & Schmittharsh, 2016) and is combined with Basic Competencies regarding the Reproductive System determined by the Ministry of Education and Culture (Kementerian Pendidikan dan Budaya, 2019). Graph skills indicators are presented in (Table 1). The collaboration skills assessment rubric consists of 5 sub-skills which are assessed based on indicators developed and adapted from (Trilling & Fadel, 2009). Collaborative skills indicators are presented in Table 2. The student response questionnaire consists of 5 indicators with 7 statements developed by Harsh and Schmittharsh (2016). Indicators of student responses to the implementation of the SEGU learning strategy used in the study are presented in Table 3.

Table 1. Indicator of Pre-Test and Post-Test Graphing Skills.

No.	Indicator	Question Number
1	Clarify the principles of human reproduction in the problem of implementing family planning (KB) programs through tables and graphs regarding family planning (KB) programs.	4a, 3a
2	Determine the type of graph that is appropriate for displaying data regarding the Family Planning Program (KB) and population issues.	3c, 4c
3	Determine the graphic framework in displaying data regarding the Family Planning Program (KB) and population issues.	3d, 4d
4	Analyze solving population problems based on charts and tables regarding population problems.	1a, 2a
5	Making tables from data regarding the Family Planning Program (KB) and population issues as an effort to improve the quality of Human Resources (HR).	3b, 4b
6	Displaying data improves the quality of Human Resources (HR) as an effort to improve the quality of Human Resources (HR).	1b, 2b

Table 2. Subskills and Indicator of Collaborating Skills.

No.	Subskills	Indicator	Question Number
1	Teamwork	Students can work together with diverse team members in solving existing problems.	1
2	Flexibility	Students can adapt to each group in solving existing problems.	2
3	Responsibility	Students have the initiative to organize themselves in groups in working on tasks together to solve existing problems.	3
4	Compromise	Group members hold discussions to take joint decisions in solving existing problems.	4
5	Communication	All group members are connected (communicate) well with the group in solving existing problems.	5

Table 3. Indicator of Questionnaire for Student Responses to the Implementation of The *SEGU* Learning Strategy

No.	Indicator	Statement Number
1	Students are satisfied with the <i>SEGU</i> learning strategy on reproductive system material.	1, 5
2	Students consider that the <i>SEGU</i> learning strategy helps their skills in making graphics and collaborating.	2, 6
3	Students consider that the use of the data they get (primary data) helps them in improving their graphic skills, especially in converting data.	3,7
4	Students assume that the <i>SEGU</i> learning strategy facilitates them to construct and interpret data to make graphs.	4

In the research procedure Learning in the experimental class begins with giving initial tests before the implementation of learning, then giving problems through the LKPD, followed by collecting data directly into the field, organizing primary or complex data obtained, carrying out two stages of analyzing the data obtained, carrying out redirection explicitly and modeling in making graphs, strengthening in making and understanding graphs collaboratively, and the last given the final test, collaboration assessment rubric, and questionnaire student responses. In the control class, learning begins with giving a preliminary test, then a discussion in observing the picture that is given which illustrates the material of this meeting, followed by providing material, working on student worksheets, and giving the final test at the least.

RESULT AND DISCUSSION

The implementation of the *SEGU* learning strategy could be carried out well because of the support of students during learning in following existing instructions through Student Worksheets (LKPD). In the experimental class, learning begins with an opening. Before learning is carried out, students have been put into groups on the WhatsApp application according to the group division data that has been determined by the teacher. WhatsApp is a social network commonly used by young people which has potential as a supporting technology in education (Cetinkaya, 2017). This application helps students to be more active in communicating in group discussions and increasing teacher awareness of student discussion activities.

Then the learning continued with the provision of learning materials in PowerPoints, Student Worksheets (LKPD), peer-assessment questionnaires, and student response questionnaires to the implementation of *SEGU* through Google Classroom. Students carry out learning according to the directions on the worksheet. Students conduct interviews with each member of their family. The data obtained will be raw. The data is then processed and analyzed using 2 data processing techniques, namely, the data is processed manually using paper and stationery, and using technology assistance. During the processing of the data, the teacher was not involved.

When each group has completed the data analysis independently, the teacher checks the results of the discussions that the students have conducted. If the group is not precise in carrying out student assignments, the teacher will provide input and explicitly direct how students correct the mistakes they have made. Students collaborate again in completing all tasks on the worksheet. After completing the worksheet, students fill out a peer-assessment questionnaire and a questionnaire on student responses to learning at the meeting. The lesson is then closed, and the teacher informs about the learning at the next meeting.

In the control class, students are only given a student worksheet containing directions in the workmanship and workmanship material. Learning like this is usually used by research schools so that researchers do not have the opportunity to assess students' collaboration skills at the meeting. This also causes students to have difficulty communicating before the implementation of fresh learning in the experimental class.

Based on the research results, the increase in graphic skills in the experimental class and control class could be seen through the acquisition of graphic skills test scores. Data of the prerequisite of graphics skill in both classes are presented in Table 4. According to the prerequisite test in Table 4, after the pre-test of graphic skills in the two classes, the normality test used the Kolmogorov-Smirnov test. The result of both classes all of the student scores the result of normality test of the two classes showed that the samples of the two classes were not normally distributed since the probability value is smaller than 0,05. If the value of $d_a(N)$ shown in Table value is exceeded or the probability is smaller than 0,05, it means that the discrepancy is significant or the distribution is not normal (Frank J. Massey, 2017). The homogeneity test showed that the two classes were homogeneous since the significant value was smaller than the significant standard value (0,05). If the significant value is smaller than the significant standard value, the variant in the class was homogeneous (Sudjana, 2009). The hypothesis test of the two classes used a non-parametric test. This test is carried out through samples that are not normally distributed (Sudjana, 2009). The test showed a significant difference. Therefore, to find out how they increase in graphic skills in the experimental and control classes was seen from the acquisition of the N-Gain value for each student. Data on the comparison of the mean value of N-Gain in the experimental class and the control class are presented in Figure 1.

Table 4. Data of The Prerequisite of Graphics Skill in Both Classes

Class	Normality test	Significant	
		Homogeneity test	Hypothesis test
Experimental	0.000	0.145	0.000
Control	0.000		

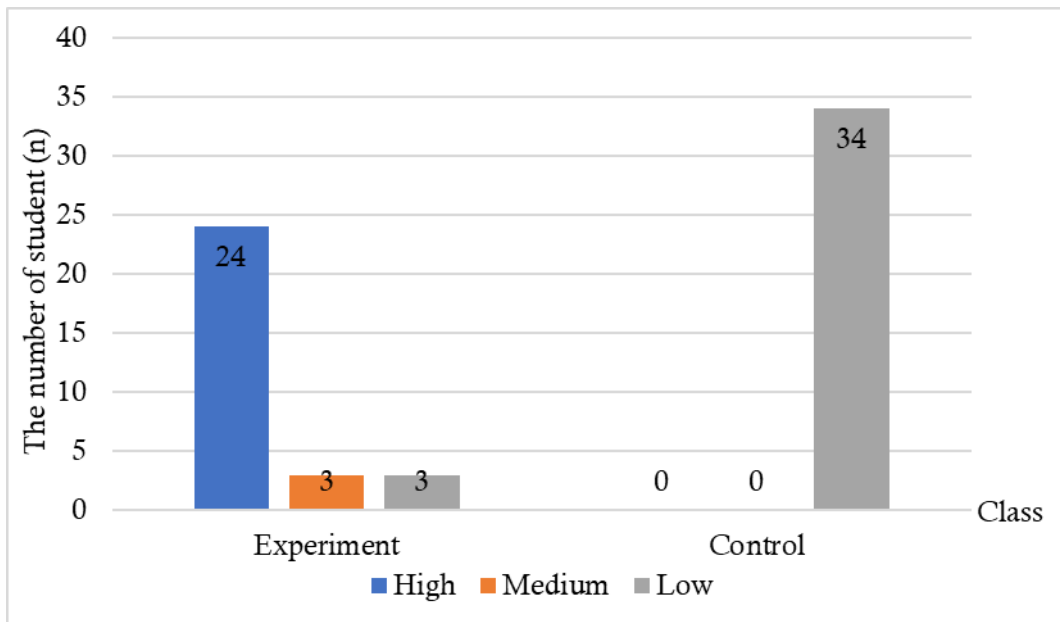


Figure 1. Comparison of Amounts of N-Gain Categories in Experiment Class and Control Class after the research.

Based on the diagram in Figure 1, the experimental class obtained an average higher N-Gain value than the control class. This showed that the increase in graphic skills in the experimental class was higher than in the control class before and after the research implementation. The N-Gain value was obtained from the scores of the students' pre-test and final test results. The higher the difference between the initial and final test scores, the higher the N-Gain category (Hake, 1998). An approach in teaching that combines discovery methods with graphic skills in teaching science allows students to find the true laws of nature rather than being given equations and just entering data. However, the control class obtained higher initial test scores than the experimental class before carrying out the learning based on the data that the researcher obtained, the graphic skills in the experimental class increased higher than the control class which can be seen by the acquisition of high N-Gain values. This is following the statement of Harsh and Schmittharsh (2016) that the SEGU learning steps can facilitate students in improving students' graphic skills during learning.

Based on the research results, Data on the prerequisite of collaborating skill in both classes are presented in Table 5. According to the prerequisite test in Table 5, after the pre-test of collaborating skills in the two classes, the normality test used the Kolmogorov-Smirnov test. The result of both classes all the student scores the result of normality test of the two classes showed that the samples of the two classes were not normally distributed since the probability value is smaller than 0,05. If the value of $d_a(N)$ shown in Table value is exceeded or the probability is smaller than 0,05, it means that the discrepancy is significant or the distribution is not normal (Frank J. Massey, 2017). The homogeneity test showed that the two classes were homogeneous since the significant value was smaller than the significant standard value (0,05). If the significant

value is smaller than the significant standard value, the variant in the class was homogeneous (Sudjana, 2009). The hypothesis test of the two classes used a non-parametric test. This test is carried out through samples that are normally distributed (Sudjana, 2009). The test showed a not significant difference. Therefore, to find out how they increase in collaborating skills in the experimental and control classes was seen from using comparison of amounts of categories which each class got. Data on the comparison of amounts of categories which each class got are presented in Table 6.

Table 5. Data of The Prerequisite of Collaborating Skill in Both Classes

Class	Normality test	Significant Homogeneity test	Hypothesis test
Experimental	0.000	0.016	0.068
Control	0.000		

Table 6 Categories Data of Communicating Skills in Experimental and Control Class

Implementation of Learning	Class	Category				
		Very Good	Good	Good Enough	Not Good	Very Not Good
Before	Experimental	0	0	7	23	0
	Control	0	12	2	23	0
After	Experimental	25	1	4	0	0

On improving collaboration skills, it focused on increasing the experimental class because the control class could not be a comparison class due to learning that did not facilitate students in carrying out collaborative activities. According to the state of Rahmawati (2017), passive learning activities only tend to be carried out by hearing explanations from the teacher, looking at the material on the blackboard or PowerPoint slides, and writing notes from the material presented. In the prerequisite test, the results of the experimental class, hypothesis test showed that there were differences before and after learning. According to (Child & Shaw, 2016), Collaboration affects student learning and student knowledge. Therefore, this data analysis was continued with the categorization of collaboration skills based on (Widoyoko, 2012). The comparison data of amounts of categories of collaborating skills which student got before and after the implementation of learning using the SEGU learning strategy obtained by the researcher are presented in Table 6.

Based on Table 6, the average student obtained a high score of collaboration skills which could be seen from the categories which student got before and after implementing learning using the SEGU learning strategy. Before carrying out learning using the SEGU learning strategy, researchers found students in the experimental class were still having an orderly discussion, there were group members who did not participate in the discussion, and there were members who did not carry out the responsibilities that had been given by the group leader. These things then cause

students to be unable to complete the assigned task appropriately and not finish the worksheet at the specified time given. However, after carrying out learning using the SEGU learning strategy, the experimental class showed a high increase in collaboration skills. This could be seen from the increased score of collaborating skills in Figure 2. This increase was supported by learning stages that made students play an active role when completing Student Worksheets (LKPD) that are given in groups (Harsh & Schmittharsh, 2016). This shows that students have increased in collaboration after implementing learning using the SEGU learning strategy. Moreover, Apriono (2011) stated that collaborative learning is presented as a learning model in which students must achieve a common goal in small groups. Collaborative learning activities considered is students must enter the same problem and not individually solve separate parts of the problem. Collaboration plays a role in improving students' social competence (for example, collective conflict resolution skills and helpful attitudes) (Ginsburg-Block et al., 2006). Therefore, when students collaborate, they will build the same concept and understanding in solving any given problem. The results of research by Clark and Baker (2011) also show that the application of collaborative learning in groups with diverse members gives positive results for students.

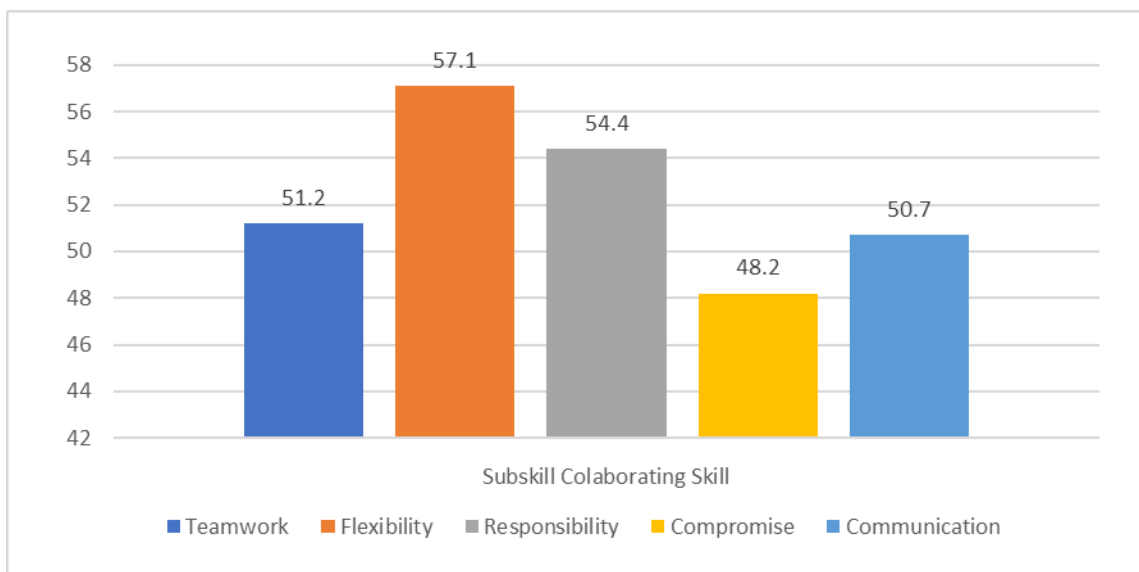


Figure 2. The Increased Score in Each Subskill Collaborating Skill in Experimental Class

The data from the questionnaire results of students' responses to the implementation of the SEGU learning strategy that has been implemented on reproduction material are presented in Table 7. Based on the tables, most students agreed or gave positive responses to the responses, attitudes, and benefits of the SEGU learning strategy that had been applied to the reproductive system material. This could be seen from almost every given category which fell into the category of mostly agree which was following the statement of Sudijono (in Zannah, 2020). Of the 7 categories given, 1 category was included in the category almost entirely agreed and the rest was categorized as mostly agree. However, it was still seen that there were students who were

not satisfied with the *SEGU* learning strategy, such as some students preferred to use the data that had been provided by the teacher compared to the data which they had obtained themselves and students still felt that this learning did not train their collaboration skills. This could be caused by the difficulty of communicating between fellow group members online so which was hindering work in the group. However, in general, students agreed and gave a positive response to the *SEGU* learning strategy as a learning strategy that has been able to facilitate students in improving graphic skills and collaborating skills of high school students on reproductive system material well.

Table 7. Questionnaire Data for Student Responses to the Implementation of the *SEGU* Learning Strategy

No.	Indicator	Statement Number	Grade	Category
1	Students are satisfied with the <i>SEGU</i> learning strategy on reproductive system material.	1	75	Most of all
		5	78.33	Most of all
2	Students consider that the <i>SEGU</i> learning strategy helps their skills in making graphics and collaborating.	2	80.83	Almost entirely
		6	76.67	Most of all
3	Students consider that the use of the data they get (primary data) helps them in improving their graphic skills, especially in converting data.	3	79.17	Most of all
		7	63.33	Most of all
4	Students assume that the <i>SEGU</i> learning strategy facilitates them to construct and interpret data to make graphs.	4	79.17	Most of all

CONCLUSION

The *SEGU* learning strategy can be the solution to improve graphic skills and collaboration of high school students on Reproductive Systems material. The results of this study indicated that there was a difference in the improvement of graphic skills in the experimental class and the control class which could be seen from the comparison of the average N-Gain value of the two classes. In the experimental class, collaboration skills showed an increase that was shown by the difference collaboration percentage value before and after implementation of *SEGU*. In student responses to the application of the *SEGU* learning strategy, most students agreed and gave a positive response to the application of this learning. Almost all students thought that the *SEGU* learning strategy helped their skills in making graphics and collaborating.

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