How Sharing and Jumping Task affect to student interaction in chemistry learning

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Abstract. This research is a qualitative descriptive study which aims to see the effect of sharing learning and jumping tasks on student interactions in the chemistry learning process at high school (SMA) in Subang district. This article will explain how interactions occur between students and teacher interactions with students in group discussions during the chemistry learning process. This research method is Didactical Design Research (DDR). Data collection using observation and recording (video and voice). Learning uses sharing and jumping tasks which are divided into three learning activities, namely opening activities, core activities (sharing and jumping) and closing activities. The results of the study were then transcribed and analyzed using the Transcript Base Lesson Analysis (TBLA) technique, showing that there was student interaction in the form of conversations between students and teachers in groups during the learning process but with different amounts in each learning activity. Most interactions are found in sharing activities, then in jumping task activities, opening activities and interactions at least occur in closing activities. Interaction is in the form of a conversation containing questions and answers between students, student presentations and sharing knowledge among students in groups. This shows that learning sharing and jumping tasks is able to foster good student interaction in learning.

1. Introduction

Education is the main thing that will sustain the progress of a nation. National education has the aim of developing the potential of students to become human beings who believe and have faith in God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent and become democratic and responsible citizens. The 21st century requires many specialized skills to succeed in work and life. Based on Permendikbud No. 34 of 2018 attachment III that the learning process is held based on interactive, inspirational, fun, challenging and motivates students and provides space for the development of 21st century skills, namely creative, innovative, critical thinking, collaborative problem solving and communicative. This means that students in this century must have one or even all of the skills needed in the 21st century. One of them is communicative, namely the relationship or communication that occurs between two or more people.

These communicative skills will enable people to communicate well with others so that they need to be trained and grown from students in the learning process. Good communication can be seen from the
interactions that occur between students in the learning process. Good interaction must be grown in every student in the learning process, especially in chemistry learning, which has to be a lot of practice and discussion that must be studied, so students are required to play an active role in learning both individually and in collaboration so that there will be active interactions during learning. Reducing the level of difficulty in chemical materials by improving abstractness and complexity of chemical materials to make it easier, simpler, more concrete and simple so that it is easier for students to understand [1]-[6]. There will be development of higher order thinking skills, retention rates increase and students perform better in assessments, because they engage in deeper and more meaningful learning by interacting or communicating with oral, written, leadership skills and teamwork [7]. The thinking process of students is already owned within themselves, but there needs to be encouragement from the teacher to further develop and bring up student thinking skills with good learning methods and teacher interaction [8]-[10].

Good interaction will make the classroom atmosphere more active, especially when there is interaction between students, namely learning from each other, sharing knowledge and ideas. Good interaction must be owned by students from an early age both in the family environment and in the school environment, therefore we need to foster student interaction in the learning process. To foster good student interaction, a good learning model is needed. An effective learning model is needed by an experienced teacher in overcoming student learning difficulties by developing a learning model that attracts students' interest in improving the quality of learning [8]-[11].

Collaborative learning is learning that helps students develop collaborative skills, increased understanding, critical thinking skills, the ability to learn interpersonal relationships between students and teachers and positive attitudes in lessons [12]. Collaborative learning makes students partner in the learning process, namely the sharing and interaction that occurs between teachers and students [13]. Collaborative learning is also able to help connect socially and intellectually and improve communication, interaction and dialogue between students in groups and with other group members [14]. One of the collaborative learning models is sharing and jumping task. The learning process of sharing and jumping task is considered to have significant value, not only during discussion activities but also activities when students learn from each other, resulting in mutual learning relationships, respecting differences of opinion and helping each other in the learning process that takes place [15].

In this sharing and jumping task learning activity, the teacher designs learning using two types of material by taking into account the diverse abilities of students, namely individual assignments through small group collaboration which contain basic material at textbook level and are understood by all students who are part of the sharing task and the jumping task part, namely giving higher level problems to students to improve students' higher abilities [16]-[18]. The problem given in the jumping task section is applicable material from basic concepts taken from basic material that has been developed (beyond the textbook level) [19]-[21]. Another opinion expressed about learning sharing and jumping tasks that the sharing task stage can facilitate collaboration between students can facilitate students to learn from each other and share thoughts about the material being studied. Therefore, it is hoped that this sharing and jumping task learning can influence and foster student interaction in the chemistry learning process.

2. Methods
The research used a qualitative descriptive research method. The choice of this method is because the researcher wants to see the actual situation that occurs in the learning process. This research was conducted at Private Senior High School (SMAS) in Subang Regency, West Java Province. The data collection instruments in this study used observation sheets and audio video recorded during the learning process. The results of this recording are then transcribed and analyzed using the Transcript Base Lesson Analyst (TBLA) technique [22]. In this technique, the researcher will change the results of the audio video recording or transcribe it into words first, then the transcripts will be analyzed in the form of interactions between
students in the conversation. The results of this analysis will then be adjusted to the interaction of students who grow in the learning process. Indicator of student interaction in the form of conversations containing questions and answers between students, student presentations and sharing of knowledge between students in one group and with friends in other groups as well as between students and teachers during the learning process.

![Diagram](image)

**Figure 1.** A framework on student and teacher interactions with the TBLA technique.

### 3. Results and Discussion

The learning process is carried out in 4 learning parts, namely the beginning or opening part, the sharing task section, and the closing section. During the learning process it is assisted by using an audio and video recorder. The results of the recorded learning are then transcribed, namely changing the research data which is still a digital file into a written file using the Transcript Base Lesson Analysis (TBLA) technique. TBLA is a transcript-based learning analysis technique to investigate the characteristics of a lesson. There are three stages of TBLA, namely: (1) dividing the stages of analysis into introduction, development, direction and conclusion which aims to focus the dialogue that occurs between students and teachers; (2) determine the focal point as the basis of analysis by referring to various analytical perspectives and learning categories; (3) conduct microanalysis and meta-analysis based on the analysis focal points in each learning segment. The transcript result data is then analyzed to see the interactions that grow between students during the learning process. From the results of the transcript analysis during the learning process, it was found that the various numbers of student interactions that grew from each part of the learning were as follows:
**Opening Activities**

The results of the identification in this initial activity showed the emergence of student interactions during the learning process, namely 40 times. The interactions that occur between the teacher and students in each group are in the form of questions and answers to start learning. This question and answer process aims to provide incentives for students to be more interested in knowing the subject matter to be studied. The interaction in this section does not only occur between teachers and students but between students in groups and with other groups. This interaction process is very important for students because it is able to build communication and the process of mutual learning between students and build closeness between teachers and students in guiding learning. Guidance is assistance provided during the early stages of learning, then students can independently learn and solve a problem. The assistance provided can be in the form of guidance, encouragement, giving examples, or anything that allows students to grow independently as students [23]. Students can achieve learning goals well if given the right time and guidance at the time needed [24]. The transcript result data is then analyzed to see the activities of students' critical thinking skills which are adjusted to the indicators of critical thinking skills. From the results of the analysis, a graph shows that there is an interaction that develops by means of learning which is recorded and then transcribed, namely changing the research data which is still a digital file into a written file using the Transcript Base Lesson Analysis (TBLA) technique as follows:

![Figure 2. Student interaction in Opening activities.](image)

The graph above shows the number of interactions during the opening activities of each group. Each group has a different number of interactions. The group with the most interactions was in group 3 with the appearance of 9 interactions and the least number was in group 1 3 times.

**Sharing Task Activities**

This task sharing activity was carried out after the opening activity. Sharing task activities containing knowledge sharing activities or mutual learning between students and students and students and teachers is a sharing that occurs in learning. From the results of the analysis carried out, a graph can be made as follows:
Figure 3. Student Interaction In Sharing Activities.

The graph on the sharing task activity shows the difference, namely the increasing number of interactions for each group. This graph shows the number of interactions during the process of sharing the task with the number of different interactions. The group with the most interactions was in group 3 with the appearance of 22 interactions and the least number of which was group 2 with 9 times. The interactions that occur show that in sharing task activities there is a lot of interaction between students in groups and students with other groups.

Jumping task activity

Learning activities in the form of jumping tasks by giving assignments to students. In jumping task activities, the teacher acts as a facilitator so that students are required to be active and explore their own thoughts according to their experiences during learning. The teacher tries to guide students when working on jumping tasks to find answers on their own with the group so that they practice the thinking process and student interaction.

Figure 4. Student Interaction in Jumping Task Activities.

The graph on the jumping task activity also shows the difference, namely the number of interactions for each group that is different from the previous learning activities. This graph shows the number of interactions during the process of jumping task activities with a different number of interactions. The group with the most interactions was in group 7 with the appearance of 16 times the interaction and the smallest was group 1 with the interactions that grew 4 times. The following is one of the students’ interactions in learning which includes interaction indicators:
Table 1. Examples of student-student interactions with interaction indicators.

| Student | Conversation | Indicator |
|---------|--------------|-----------|
| S1      | Jadi atom itu masih bisa dibagi lagi. jadi atom kecil lagi?* | 1. Focus the question |
| S2      | Unsur kali yang bisa dibagi lagi | 3. Ask and answer an explanation or challenge |
| S2      | Atom bisa dibagi lagi jadi lebih kecil, emang bisa? unsur mungkin maksudnya,* | |
| S3      | Eeh lain unsur mah | |
| S1      | Laah iya atuh, atom teh bisa dibagi lagi katanya, tapi jadi apa ya?*1 | |
| S3      | Emang teh bener atom itu ada? | |
| S2      | Iya ada, | |
| S1      | Tapi bisa diperkecil jadi kecil lagi, jadinya apa?*3 | |
| S3      | Jadi atomnya atom kali haha | |

**Closing Activities**

The last part in the learning process is the closing. In this activity, there is no interaction that grows because the learning process is only one way, namely only from teachers to students. The teacher tries to reinforce the material that has been studied by drawing conclusions from the results that have been obtained by students. The teacher repeats and confirms the materials that have been discussed by all students both in groups and with their group mates in the class. The teacher also wants to reiterate the definition and results of the learning that has been carried out from the beginning to the end so that students are expected to be able to remember and recount the lessons that have been learned.

The interaction process that occurs from each learning activity is the result of an analysis of the ongoing learning transcripts. Every interaction in learning is in the form of conversations and presentations by students to their group members and to other groups. The interactions that occur during the learning process include indicators of student interaction is (1) questions and answers between students, (2) student presentations, (3) sharing of knowledge between students in one group and with friends in other groups and also (4) discussion between students and teachers during the learning process. Students discuss and interact in solving problems or assignments given by sharing the views and understandings they have with their group friends. This process builds knowledge sharing among students to develop students' knowledge and cognitive by learning together and interacting with each other. Children can improve their cognitive with the interaction or help of others through mutual learning and communication [25]. Improvement and cognitive development of children can be done through adult guidance or peer collaboration [26].

Student interactions that grow during the learning process are expected to be able to make students' understanding of the material better. Activities in the learning process show that there is a growing interaction among students in groups. From each of the interaction learning activities that have grown a lot, there are activities sharing tasks and jumping. This is because in this process students are given problems and asked to discuss with each other in groups so that they are able to solve their problems. All students are asked to contribute in solving the problems given, so that in this activity all students, both high and low ability, work together or collaborate in solving the problems given. Task sharing-based learning provides greater benefits to students who do not understand, students' low academic abilities are better through their participation in small group collaborative learning [27].

At the sharing tasks stage, all students must really understand the content of the material. In sharing tasks, students who are academically low can ask students who are academically high, so students who are academically high can increase their level of understanding and they are more confident. Sharing tasks
facilitate jumping in students who are academically low. In learning activities, sharing activities and jumping tasks are related to one another and are not separate activities. The sharing stage is considered the initial stage that is useful for improving students' academic abilities while the jumping stage is considered the final stage in the form of activities that are useful for solving problems at a higher level so that the learning process is more developed and not boring for high-ability students [13]. Changes in the attitude of students who were previously passive in learning to be more active and have the courage to express their understanding in front of the class. It indicates that students have confidence in their ability about the material and also the ability to interact by expressing and presenting their answers to others. This change in student attitudes can be used as motivation for him to be ready and confident in learning the next material. The high intrinsic motivation of students can be a supporting factor for developing students' cognitive levels. The higher the level of the problem given in the jumping task, the better the level of achievement of students' understanding in this activity is that half or one third of the students in the class are a normal situation. In basic material, only students with high academic abilities can follow the process. Jumping learning is not only beneficial for students with high academic abilities, but actually also provides great benefits for students with low academic abilities [16].

4. Conclusion
From the explanation above, it can be concluded that sharing learning and jumping tasks can affect the student learning process by being able to foster student interaction in chemistry learning. The learning interactions that occur during the learning of student interaction is (1) questions and answers between students, (2) student presentations, (3) sharing of knowledge between students in one group and with friends in other groups and also (4) discussion between students and teachers during the learning process.

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