

PRACTICING THE STUDENT'S COMMUNICATION SKILLS THROUGH THE APPLICATION OF GUIDED INQUIRY ON THE REACTION RATE MATERIAL AT XI GRADE SMAN 1 CERME-GRESIK

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Abstract

This study is a quantitative descriptive research that aims to practice communication skills include the quantity and quality of student's giving opinion and asking question. Target of this study is students in XI MIA 1 class at SMAN 1 Cerme-Gresik. This research used One Shoot Case Study research design. Collecting data methods was done by using observation and test methods. The result of research in quantity of student's giving opinion skill at 1st until 3rd meeting, are 60%, 60%, and 50%. The result of research in quantity of student's asking question skill at 1st until 3rd meeting, are 20%, 30%, and 25%. The result of research in quality of student's giving opinion skill at 1st until 3rd meeting on good category, are 35%, 45%, and 40%. The result of research in quality of student's asking question skill at 1st until 3rd meeting on good category, are 15%, 25%, and 25%.

Keywords: Communication Skills, Guided Inquiry Learning Model, Reaction Rate.

INTRODUCTION

Education is a human effort to develop its potential through the learning process in order to achieve the goals of national education. One way to achieve the goal of national education is improving the quality of education in every level of education that exists through the development of the curriculum. The 2013 curriculum is developed through four philosophies to produce qualified students. The philosophy is that education is rooted in the culture of the nation, students are the heirs of the nation's creative culture, education is aimed at developing intellectual intelligence and academic anxiety through disciplinary education, and the last education to build a present and future life better than the past with a variety of intellectual abilities, communication skills, social attitudes, care, and participation to build a better society and society (experimentalism and social reconstructivism). Thus, the 2013 curriculum uses the philosophy as above in developing the lives of individual students in communicating, the values and various dimensions of intelligence that correspond to a student's self and necessary of society, nation and humanity [1].

The learning process will be meaningful if the communication process is also good, but otherwise the learning process will not be meaningful if the communication process is not good [2]. According to Vygotsky [3], students must learn through interaction with more capable adults or peers. social interaction will spur for the

emergence of new ideas and enrich the intellectual development of students.

Verbal communication can be developed in children by providing opportunities for students to work in group, group communication and communicate the results of communication. The ability to communicate verbally in this study is to explain the results of experiments, reading graphs or tables, communicating the results of activities through group experiments. The ability to communicate through writing is the delivery of information through graphs, curves, charts, maps, diagrams or equations [4].

Indicators in the subject matter of factors affecting reaction rate mainly students can describe the understanding of reaction rates through experiments about the factors that affect reaction rate. Based on this it can be seen that the basic characteristics of reaction rate in the form of understanding the concept for understanding reaction rate, while for factors that affect reaction rate has the characteristics of application materials in everyday life.

Questioning skill is one of the teaching skills teachers must have, but to make learning active an questioning skill should also be possessed by students. Questioning skills are not only done when measuring the evaluation of student's learning outcomes, but are carried out during the learning process [1]. Questioning skills of students can be measured through the level of questions asked by students. Based on Bloom's

Taxonomy can be determined the level of questions of students.

The efforts of teachers as teachers and educators have an important role in the success of any education. So that the learning process requires a learning model that allows students in understanding the material and can practice the communication skills of students. Teachers should develop a unique teaching style as well as effective and continuously modified, so that impact on the atmosphere of learning that can improve the quality of teaching and learning outcomes [5].

Learning strategies recommended by many experts who can develop thinking skills, cultivate attitudes, and inculcate concepts are learning that gives students the opportunity to learn to "discover" rather than simply "receive". To solve the problem, it is necessary to apply learning model that aims to improve the ability of communication that is guided inquiry learning model. In the guided inquiry learning model, students are given the task by the teacher to examine a problem in the classroom. Students are divided into groups, students learn, research or discuss their work in groups, giving opinion, ask and report [4].

Students are expected to learn chemistry through direct observation of indications and chemical processes, to practice scientific thinking skills, to develop scientific attitudes, to solve problems through scientific methods, and to practice student's communication skills. Ability to communicate high school students with the application of guided inquiry learning model can be increased, because in the guided inquiry learning model students are required to communicate verbally with giving opinions and asking questions in groups and classes [4]. Based on the above description, then the goal to be achieved is to be able to describe the implementation of guided inquiry learning model, students activities, and communication skills.

METHOD

This research is a quantitative descriptive research with one shot case study research design. The target of this research is the students of class XI MIA 1 SMA Negeri 1 Cerme Gresik district with the following design:

X	O
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X : Treatment, the implementation of guided inquiry learning model.

O : The final ability of students is communication skills.

Data collection method in this research was through observation. Observation on the implementation of guided inquiry learning model was done by 2 observers. Students activity was also observed where one observer will observe the activities of the students in one group. The communication skills of students will be observed by one observer in each group. Observations were also aided by the visual recorder that records from the beginning to the end of the learning process.

Learning implementation data was obtained from the observer's observation of the teacher during the learning process. To know the percentage of learning implementation used the formula as follows:

$$\% \text{ implementation} = \frac{\text{Total score of implementation}}{\text{maximum score}} \times 100\%$$

This research is said to succeed if each syntax is executed with percentage $\geq 61\%$ with good or very good criterion. The learning implementation criteria follow Table 1.

Table 1 Criteria for the Implementation of Guided Inquiry Learning Model Syntax

Score (%)	Criteria
0 - 20	Very bad
21 - 40	Bad
41 - 60	Enough
61 - 80	Good
81 - 100	Very good

[6]

Analysis of observational data on group activities of students can be known through the percentage of each activity data group activity students obtained from the observation of students during the learning process takes place. Percentage of activity time can be calculated in the following calculation:

$$\% \text{ Time of a certain activity} = \frac{\text{Frequency} \times 3 \text{ minute}}{90 \text{ minute} \times \text{The number of group members}} \times 100 \%$$

Communication skills data of students obtained from the observations of students during the learning process takes place. The quantity of student's communication is analyzed by counting the number of students who communicate during the lesson, not from the number of questions or opinions expressed by each students. The analysis is done with the following calculations:

$$\% \text{ The communication quantity of student} = \frac{\text{The number of students who communicate}}{\text{The total number of student}} \times 100 \%$$

The communication quality which analyzed is the quality of asking students using the level of questioning Bloom's Taxonomy and the quality of student's opinion is analyzed using logically opinion and analytical opinion indicator. The percentage of communication quality performed by the students is calculated by the following calculation:

$$\% \text{ The communication quality of student} = \frac{\text{Number of scores obtained}}{\text{Total score}} \times 100 \%$$

The observed data were then analyzed in accordance with the criteria in Table 2:

Table 2 Skills Assessment Criteria Communication

Scores of students	Criteria
0% - 33,3%	Not good
33,4% - 66,6%	Pretty good
66,7% - 100%	Good

[7]

RESULTS AND DISCUSSIONS

The Implementation of Guided Inquiry Learning Model

The implementation of guided inquiry learning model is observed by observation sheet of learning syntax by two observers. The syntax of inquiry learning model used is 6 phases [8]. The average of observational data is presented in Table 3.

Table 3 The Implementation of Each Phase of Guided Inquiry Learning Model

No	Aspects Observed	Meeting 1	Meeting 2	Meeting 3
1.	Phase 1	100%	96.7%	93.4%
2.	Phase 2	100%	93.4%	90%
3.	Phase 3	99%	98%	97%
4.	Phase 4	98.6%	97.2%	100%
5.	Phase 5	100%	100%	100%
6.	Phase 6	100%	100%	100%
7.	Closure	95%	92.5%	95%

Based on Table 3, the implementation of the guided inquiry learning guided syntax for three learning processes in all phases showed very good category.

Phase 1 focusing the students and explains the inquiry process. Phase 1 percentage results decreased. Meeting 1 earned 100%, at meeting 2 earned 96.7%, and at meeting 3 gained 93.4%. Despite the decline, the results obtained from

apperception and phase 1 activities get very good categories at each meeting.

Further assessment is on the main activities consisting of 5 guided inquiry phases [8]. The core activity consists of phase 2 which presents inquiry problems or phenomena; phase 3 helps students to formulate hypotheses to explain the problem or phenomenon; phase 4 encourages students to collect data to test hypotheses, and phase 5 formulate explanations or conclusions. The result of phase 2 percentage has decreased. Meeting 1 got 100%, at meeting 2 got 93.4% and at meeting 3 got 90%. Despite the decline, the results obtained in phase 2 got very good category at each meeting.

Phase 3 percentage results decreased. Meeting 1 got 99%, meeting 2 earned 98%, and meeting 3 earned 97%. Despite the decline, the results obtained in phase 3 got very good category at each meeting.

The result of phase 4 percentage decreased at meeting 2. Meeting 1 got 98.6%, meeting 2 earned 97.2, and meeting 3 earned 100%. Despite the decrease in meeting 2, however, the results obtained in phase 4 got very good category at each meeting.

The results of phase 5 percentages get very good category, with 100% percentage at each meeting. Phase 6 percentage results earn 100% percentage at each meeting. The percentage results on closing activities get very good category with percentage 95%, 92.5%, and 95% at three meetings.

The results of the assessment of the implementation of learning inquiry model guided by practiced students communicate skills as a whole is categorized very well for each meeting. Meeting 1 earned an average percentage of 98.94%. Meeting 2 earned an average percentage of 96.83%. Meeting 3 earned an average persense of 96.49%.

Students Activities

The average percentage of time the students' activity during the learning process took place at three meetings is presented in Table 4.

Table 4 Percentage of Students Activity

No	Aspects Observed	Meeting		
		1	2	3
1	Listen to or pay attention to teacher explanations	18.33%	17.67%	17.83%
2	Working on LKS			
2a	Focus on group tasks	16.33%	16.67%	15.50%
2b	Working cooperatively	16.33%	15.83%	15.67%

No	Aspects Observed	Meeting		
		1	2	3
2c	Reached group decisions	8.33%	9.00%	8.67%
2d	Make sure that everyone in the group understands the solution	6.67%	6.50%	6.83%
2e	Listen to others well	5.00%	5.17%	5.17%
2f	Make sure everyone participates	6.83%	6.00%	6.17%
3	Present the group's learning outcomes	7.17%	7.33%	7.50%
4	Refute or give opinion to the group being present	4.67%	5.17%	5.17%
5	Ask the teacher and the group who are presentations	5.67%	5.67%	5.83%
6	Students conclude the material being studied	4.67%	5.17%	5.50%

Student's activity that reflects the communication skills of students that are activities 3, 4, 5, and 6. Communication is one of the most fundamental activities in human life. The success and failure of a person in achieving his goals is determined by his or her ability to communicate. Therefore communication skills should be applied to all activities formally and non-formal [9]. In Activity 3, observations are made when students communicate their learning outcomes, including when students present opinions on the formulation of the problem. Percentage of activity time 3 on three meetings increased ie at first meeting 7.17%, at second meeting 7.33%, and at third meeting 7.50%.

In Activity 4, students refuted and gave opinion to other groups who were presentations got the percentage of time for the first meeting 4.67%, the second 5.17%, and the third meeting 5.17%. In the activities of students 5, students ask questions to teachers and groups who are presenting, get the percentage of time 5.67% at the first and second meeting, and 5.83% at the last meeting. In the activity of 6 students concluded the material got the percentage of time 4.67%, 5.17%, and 5.50% at three meetings.

In activities 3, 4, 5, and 6 that reflect communication skills, the average percentage of time increases from the first meeting to the third meeting. This indicates that students have been practiced to communicate, so that students already have enough courage to communicate opinions and questions to teachers and other students.

Communication Skills Students Involve Giving Opinion and Asking

The results of the communication skills of students observed in this study are verbal

communication skills including opinion skills, and ask questions. Communication skills in this study were observed by 4 observers, each observer observing a group of five students.

Students were observed a total of 20 whole students in one class. Observation of student's communication skills is assisted by video recording which records all activities and communication skills of students from the beginning to the end of the learning process for 2 times 45 minutes for 3 meetings. The process of video recording is done in each group, so it is very helpful in observing the communication skills of students verbally.

The video recording produces pretty good pictures with the activity of all the group members clearly visible. The sound produced from the video recording sounds very clear when heard through earphone tools, thus supporting the observation of the verbal communication skills of students.

Quantity of Giving Opinion and Asking

Quantity of students giving opinion and asking question to be observed from the number of students who giving opinion and asking questions, not from the number of opinions and questions raised by each students. The quantity of student's opinions in three meetings is given in Table 5 below.

Table 5 Quantity Data of Student's Opinion

Group	Students	Frequency of opinion		
		Meeting		
		1	2	3
Group 1	Pd1A	1	1	1
	Pd1B	1	1	1
	Pd1C	0	0	1
	Pd1D	2	1	0
	Pd1E	1	1	0
Group 2	Pd2A	1	0	0
	Pd2B	3	1	1
	Pd2C	0	1	2
	Pd2D	0	0	0
	Pd2E	1	1	1
Group 3	Pd3A	1	0	1
	Pd3B	0	1	0
	Pd3C	1	3	0
	Pd3D	1	2	2
	Pd3E	0	0	0
Group 4	Pd4A	0	0	1
	Pd4B	1	2	0
	Pd4C	2	1	0
	Pd4D	0	0	0
	Pd4E	0	0	1
The number of students who giving opinion		12	12	10
% The giving opinion quantity of students		60	60	50

Communication skills can explain behavior and feelings, so communication skills are important and should be taught to students to facilitate communication within the group. Groups formed in guided inquiry learning models will not work and function effectively if there are misconceptions in the group's work [8].

Quantity of students giving opinion reach 50%, even at meetings 1 and 2 get a percentage of 60%. This suggests that with the application of guided inquiry learning models can improve student's speaking skills even though they are less significant. Quantity asks students during the three meetings is presented in Table 6.

Table 6 Quantity Data of Student's Asking

Group	Students	Frequency of asking		
		Meeting 1	Meeting 2	Meeting 3
Group 1	Pd1A	0	0	0
	Pd1B	1	0	0
	Pd1C	0	0	0
	Pd1D	0	0	0
	Pd1E	1	0	0
Group 2	Pd2A	1	1	0
	Pd2B	0	0	0
	Pd2C	1	0	0
	Pd2D	0	1	0
	Pd2E	0	0	1
Group 3	Pd3A	0	0	0
	Pd3B	0	0	1
	Pd3C	0	0	0
	Pd3D	0	0	0
	Pd3E	0	1	1
Group 4	Pd4A	0	1	1
	Pd4B	0	1	0
	Pd4C	0	0	0
	Pd4D	0	1	1
	Pd4E	0	0	0
Number of students asked		4	6	5
% The asking quantity the students		20	30	25

Quantity asks students at meeting 1 reaches 20%, meeting 2 reaches 30%, and meeting 3 reaches 25%. Viewed from the percentage, still in the low category. But the quantity asks students to increase when compared to meeting 1 where students are still not practiced in communicating. The observational data of communication skills was obtained from direct observation when the learning process was conducted and by observing the video recording to avoid errors in observation.

Quality of Giving Opinion and Asking Question

The quality of communication skills students observed during the learning process takes place with the help of video recording that records the communication skills of students. The quality of communication skills of the students is observed by 1 observer in each group. Students

are said to communicate well if have the quality of opinion and asked with good category.

Communication skills of students in expressing opinions can be measured by the effectiveness of the contents of the message delivered. Communication will be effective when components that become the requirements of mutual communication include. Components in communicating communicators, messages, communicants, media, and the effects or impact of messages. The message conveyed becomes effective if the communicator as the person who conveys the message attention to the logic and the analogy of the message delivered. The language used in conveying the message must be the same between the communicator and the communicant [10].

Research conducted to obtain quality data of students that giving opinion are observed based on the analytical and logical of the opinion. Opinion is said to be analytical if the opinions are conveyed in a systematic and regular, and delivered directly and not convoluted. Student's opinion can be said to be logical if the opinion is based on the facts and opinions that can support the material presented [9].

Examples of student's opinions are viewed in terms of ananitism as proposed by Pd1B (group 1 students with code B) "I think the concentration of a substance can affect reaction rate, because the higher the concentration, the time required is relatively short, the lower ones take longer "and the examples of juvenile-based students opinions as presented by Pd2B (group 2 students with code B) are" I think, the concentration of HCL 0.1 M of time required for the out-of-band tape reacts for 250 seconds, at a concentration of 0.5 M the required time of 180 seconds, and at a concentration of 1 M the required time of 140 seconds ". Quality of students giving opinion by applying the guided inquiry learning model from the beginning to the end of the learning process during the three meetings are presented in Table 7.

Table 7 Recapitulation of Quality Assessment Data on Student's Opinion

Meeting	Category of Giving Opinion Skills (%)		
	Less good	Good enough	Good
Meeting 1	40	25	35
Meeting 2	40	20	40
Meeting 3	50	5	45

According to Table 7 it is known that the quality of the student's opinion increases every meeting. Quality believes students with a good category increase from the first, second, and third

meetings. Percentage of quality students giving opinion at the first meeting with a good category of 35%, at the second meeting by 40%, and at the third meeting by 45%. These results indicate that there is an increase in the quality of student's opinions with a good category.

Percentage of quality students giving opinion who got the category well enough at the first meeting by 25%, the second meeting by 20%, and the last meeting of 5%. This indicates that the decrease in the percentage of students who giving opinion with a good enough category, can be interpreted that the quality of students giving opinion improved to be better at each meeting. Increased percentage of students with good category and decreased percentage of students with good category indicates that by applying the guided inquiry model can practiced student's thinking skills.

Quality asks students based on a bloom taxonomy that consists of 6 levels of questions. Bloom taxonomy has 6 levels of questions: C1 through C6, C1 is a category of knowledge that includes remembering, identifying, and registering. C2 is a category of understanding that includes interpreting, comparing, and registering. The C3 level is the category of application that includes implementing, pairing, and sorting. Depth C4 category of analysis, including differentiate, characterize, and organize. The C5 level of the category of evaluation includes critiquing, assessing and classifying, while the C6 level is a category of creations that includes planning, designing and creating [8].

Students will get a bad category if the question posed is in category C1-C2, get category well enough if it is in category C3-C4, and will get good category if in category C5-C6. Examples of questions posed by students during the learning process that is:

1. What powder is used in surface area experiments that affect the reaction rate? (C1)
2. Does the volume of the solution also affect reaction rate? (C2)
3. Why are magnesium tapes to be sanded before being used for concentration experiments affecting reaction rates? (C3)
4. When the experiment is done with the same tools and materials and with the same procedure, why are the results obtained differently in each experimenting group? (C4)

5. What is the relationship between reaction rate that is affected by the concentration with the collision theory? (C5)

Quality ask students during the learning process by applying the guided inquiry learning model to practiced the communication skills of students can be seen in Table 8.

Table 8 Recapitulation of Quality Assessment Data Asking Students

Meeting	Category of Questioning Skill (%)		
	Less good	Good enough	Good
Meeting 1	85	0	15
Meeting 2	75	0	25
Meeting 3	75	0	25

The skills of asking students improved on a good category, at the first meeting getting a 15% percentage, and at the second and third meetings increased to 25%. The increase in the category of good quality asks students that students have been practiced to communicate, judging by the increased percentage of quality asked at meetings 2 and 3 as compared to meeting 1. The bad category decreased the percentage from 85% to 75% at the second meeting and third. A decrease in the percentage of quality of skills to ask students on the less good category shows that students have been practiced in communicating in particular ask.

Learning Results As Supporting Data

Individual student's learning outcomes were obtained from posttest results conducted during three meetings. This posttest aims to determine the degree of mastery of the student's materials in the matter of factors that influence reaction rate. Posttest given amounted to 10 items about multiple choice.

Students are said to achieve the completeness of the individual if the value of ≥ 2.66 and classical completeness is achieved if the results on posttest 75% of students in class XI MIA 1 achieve complete individual.

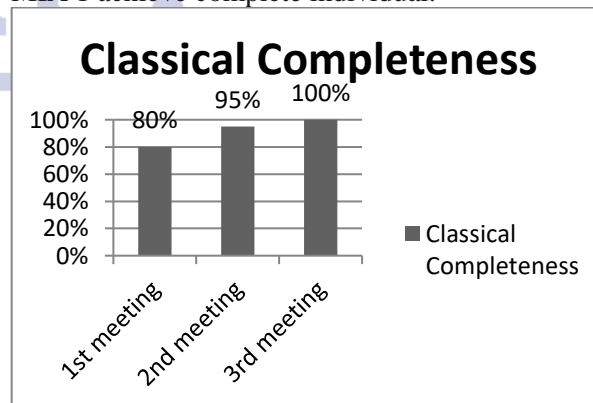


Figure 1 Classical Completeness of Students

Based on Figure 1, the classical completeness of students at meeting 1 gained 80%, meeting 2 earned 95%, and meeting 3 earned 100%. Although classical completeness at the first meeting is low, but at the next meeting the results of the clarity of classical completion have increased at each meeting.

CLOSURE

Conclusion

1. The implementation of the guided inquiry learning model at each meeting is included in the excellent category. 1st meeting obtained an average percentage of implementation of 98.94%, at 2nd meeting earned an average percentage of 96.83% implementation, and at 3rd meeting obtained an average persense of 96.49%.
2. Activities that reflect the communication skills of students exist when presenting learning outcomes, refuting, asking questions, and summarizing the material. The average percentage of activity time increased from 1st to 3rd meetings.
3. The communication skills of students that include both quantity and quality of opinion and inquires have increased although less significant. Quantity of students giving opinion at 3 meetings that is 60%, 60%, and 50%. Quantity asks students at 3 meetings ie 20%, 30%, and 25%. Quality of students giving opinion who are in good category increase in 3 meetings, earn percentage of 35%, 40%, and 45%. Quality asks students who are on a good category increase in 3 meetings, the percentage gain of 15%, 25%, and 25%.

Recomendation

Based on the results of research conducted, which can be advised researchers as input for researchers who will conduct further research are:

1. Implementation of guided inquiry learning model to practice student's communication skill on class XI reaction rate material has yielded positive result.
2. Viewed from the percentage is still in the low category, therefore still needed further treatments in other studies.
3. For researchers who will conduct further research in practice communication skills can use other learning models, so that can practice and improve student's communication skills better.

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