

The spiritual and social attitudes of students towards integrated problem based learning models

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This research aimed to investigate the spiritual and social attitudes of students with different academic abilities towards four educational models: problem based learning (PBL); numbered heads together (NHT); integrated PBL and NHT; and multi-strategies model. This quasi-experimental investigation employed a pretest-posttest non-equivalent control group with the design of a 4 x 2 factorial pattern. The research subjects were tenth grade students from four public senior high schools (SMAN) in Jeneponto, namely SMAN 1 Binamu; SMAN 2 Binamu; SMAN 1 Batang; and SMAN 1 Tamalatea. Data on the students' spiritual and social attitudes was taken by using observations, self-assessment and peer assessment sheets before and after the learning. The data was analysed with descriptive and inferential statistical techniques. The results of the research indicated some differences in the spiritual and social attitudes of students with different academic abilities towards different learning models. The integrated PBL and NHT learning model was considered as the best combination to improve the spiritual and social attitudes of students with upper academic ability.

Introduction

In general, learning at schools tends to focus on improving students' cognitive achievement, whilst students' attitudes tend to be ignored. Thus the spiritual and social attitudes of high school students in Jeneponto tend to be under-developed because most teachers implement learning models that do not facilitate the development of students' spiritual and social attitudes. Students' attitudes towards learning may reflect some deficiencies such as students being dishonest in doing worksheets, cheating by using observations made by other groups, being undisciplined, lacking respect for their friends' opinions, and a lack of activity in practical work.

A survey questionnaire and interviews with biology teachers teaching eleventh grade students at senior high schools in Jeneponto has provided some information on this case. The teachers admitted that they did not understand how to implement cooperative learning models such as problem based learning (PBL) and numbered heads together (NHT) in the classroom. In addition, the teachers reported their lack of knowledge of how to assess students' spiritual and social attitudes. Learning in senior high schools in Jeneponto, therefore, was dominated by teacher-centred learning which may not do enough to promote students' spiritual and social attitudes in the classroom (Bachtiar, 2015).

Learning processes in senior high schools in Jeneponto have not tapped into the potential of students as is mandated by national education goals. Different academic abilities in the

classroom have not been noticed by the teachers. The learning model that has been applied has not accommodated all characteristics of students' academic abilities so that there can be large gaps between high and low academic ability students. If the students having different levels of academic ability are given the same learning, outcomes will also differ according to ability level (Anderson, 2001).

The teaching and learning model that is used by teachers in public senior high schools classrooms in Jeneponto has not been able to overcome the existing problems. Therefore, it is necessary to develop a cooperative learning model that can promote students' spiritual and social attitudes. Several cooperative learning models offer potential to better develop students' attitudes (Bialangi, et al., 2016). Problem based learning (PBL), for example, is a cooperative learning model that uses real-world problems as a context for students to learn about critical thinking and problem solving skills, as well as to acquire knowledge and essential concepts of the subject matter, to train high-level thinking including learning how to learn (metacognitive skills), and to train students to become independent and self-regulated (Nurhadi & Senduk, 2003; Arends, 2008; Bachtiar, 2014).

Goodnough and Cashion (2003) stated that PBL can improve students' skills in organising themselves (self-regulating or metacognitive skills). Nugraheni (2007) stated that improvements in students' critical thinking skills can be attained through problem-based learning (PBL). Bachtiar (2013) stated that PBL is effective in improving students' critical thinking skills, metacognitive awareness, and cognitive achievement. PBL is an approach to curriculum development and instruction which develops students' problem solving skills and helps students to acquire knowledge (Akca, 2009). The use of PBL has revealed many advantages. However, this learning model also has weaknesses. Peterson and Treagust (1998) pointed out that it is difficult to implement PBL in all classes. PBL is less effective with students who cannot fully understand the value or the scope of the problem with social content. PBL is difficult for teachers who have to change their teaching style. PBL is not able to accommodate all topics in the curriculum, especially those related to declarative knowledge or conceptual narratives, because in PBL the material depends on problem being solved, which is related to procedural knowledge (the act of using the concepts, principles in certain situations). As a result, problems solved by students are less representative. Students with low academic ability probably will face greater difficulties during the problem solving process.

Another relevant learning model is numbered heads together (NHT), which is a type of cooperative learning designed to improve interactions between students and make them more actively engaged. Students are gathered into small heterogeneous groups, then each member of the group is numbered. Students are given questions that are related to topics presented by the teacher. Each group discusses the best answer to a question given by the teacher. The teacher asks one specifically numbered student to answer the question. This causes their learning to become more active because it is student centred and more conducive for classroom situation to become more lively. Each student will strive to understand the material because each member of the group has a responsibility for their group in answering the question. Students who are weak will be keen to ask other students because they do not know who would be called by the teacher. In this way students'

potential can be developed optimally, having a direct impact on improving students' learning outcomes (Pradnyani & Ardana, 2013).

Envisaging a need for another learning model with potential to overcome the deficiencies of PBL and NHT, an integrated model of PBL and NHT has been developed and is investigated in this article. The application of this integrated model may assist students to be more independent in completing their learning tasks. Also, grouping students based on differing academic ability makes students work together to solve the problems assigned by the teacher, as if there were no differences among the students because they have a shared responsibility. Thus an implementation of the integrated model of PBL and NHT may enhance students' spiritual and social attitudes.

Problem based learning (PBL)

Problem based learning (PBL) is a learning model designed based on ill-structured, open-ended, and ambiguous real life problems (Fogarty, 1997). The problems are vague and undefined. PBL promotes students' interest and cognitive ability as well as providing them with an opportunity to learn in a real life context. Additionally, PBL helps stimulate students' higher order thinking when facing a problem-oriented situation in which they are required to exercise their metacognitive skills (Ibrahim & Nur, 2000). In PBL, the teacher has a role to introduce problems to the pupils, ask them questions, and facilitate their investigation as well as to give scaffolding or support so that they will be able to develop their intellectual skills.

PBL assists students to improve their ability to think various strategies in learning new topics and finding solutions to problems. PBL also provides a conducive learning environment for students to promote their critical thinking, create meaningful discussions, and support each other (Ahlam & Gaber, 2014). It also challenges students to solve authentic problems effectively. Unlike traditional teaching techniques, PBL is considered more effective (Birgili, 2015).

Numbered heads together (NHT)

NHT is an alternative learning model implemented to involve students actively in a discussion related to learning materials. All students write their individual responses to teacher's queries and share them with peers in small, heterogeneous groups. One of the members of the group will be selected randomly as the group representative to read the responses in front of all groups. The application of NHT indicates that this learning model is more effective than conventional learning models (Haydon, Maheady & Hunter, 2010) as it promotes students' active engagement and interpersonal relationships in the classroom (Kagan & Kagan, 2009).

NHT is a cooperative learning model designed specially to influence student-student interaction and improve their academic ability. This learning model involves students in analysing materials and evaluating their understanding afterwards (Ibrahim, 2000). NHT

consists of four learning stages in which students are engaged to review facts and basic information whilst interacting with one another. This learning model can also be used to help students solve problems at medium difficulty level.

The involvement of the students will certainly affect their motivation in a positive way. Students will attempt to understand concepts or provide solutions to problems offered by the teacher. Cooperative learning, as is mentioned by Ibrahim (2000), helps increase students' learning achievement as it makes the high achievers and low achievers work together and help each other in doing their tasks.

The integrated model of PBL and NHT

The integrated model of PBL and NHT combines the two learning models so that they complement each other. This learning model is expected to be able to promote individuals' responsibility in PBL groups. The integrated model of PBL and NHT can be applied in the classroom where problem solving activities exist, including biology learning.

The implementation of this learning model may build a stronger social relationship between pupils since they are given an opportunity to discuss and communicate their problems with other students in the classroom. The combination of the characteristics of each learning model eventually may bring a significant and distinctive effect on students' metacognitive ability. Students become familiarised with an essay test which requires them to express their ideas creatively and organise their thoughts in a piece of writing as a thorough evaluation of their learning. Slavin (2009) explained that students' interactions will result in their being able to discuss and communicate their learning problems with peers. It therefore implies that teacher should promote students' metacognitive skills in the classroom in order that students can achieve better in the future (Kusumaningtyas, 2013).

Multi-strategies

Multi-strategies refer to learning strategies, teaching techniques, and methods developed by the teacher in the classroom. All learning tools used to assist learning are also developed by the teacher based on Curriculum 2013. No intervention was given to the process. In other words, the researchers only played a role as the observer.

The characteristics of the four learning models investigated in this research are summarised in Table 1.

Table 1: The characteristics of PBL, NHT, PBL and NHT, and multi-strategies

Learning models	Learning procedures	Learning activities	
		Teacher	Students
PBL	Introduce students to problems.	Deliver learning objectives.	Pay attention to and note down the learning objectives.

	Organise students to learn.	Organise and define learning assignments related to problems introduced beforehand.	Sit in groups.
	Facilitate individual or group investigation.	Encourage students to collect relevant information as much as possible.	Collect relevant information related to the topics in order to solve the problems.
	Develop and present final projects.	Assist students to plan and prepare reports, worksheets which are going to be presented or displayed.	Plan and prepare a project to be presented and discussed.
	Analyse and evaluate the problem solving process.	Assist students to do a reflection or evaluation on strategies used to solve problems.	Do a reflection or evaluation on the problem solving process.
NHT	Numbering.	Group students into teams of 4 to 5. Every student in each team will be numbered.	Pay attention to the numbering.
	Questioning.	Ask students questions.	Interact with other members in the same group, care for each other.
	Head together.	Motivate students to discuss and discover answers to their problems. Teacher also needs to make sure that all members of the group know the answer.	Each member of the group must express their ideas to help solve the problems.
	Answering	Call a number. Students coded with the number will provide the answer.	Student whose number is called raises hand, explains the answer in front of the classroom.
PBL and NHT	Introduce students to problems, learning information, learning objectives, and motivate them to learn.	Deliver information about the integrated model of PBL and NHT.	Carefully analyse information delivered by the teacher.
	Organise, number, and divide students into groups.	Organise students into groups of 4-5.	Organise themselves in their groups and make sure each member of the group gets different number.
	Present information, queries, and organise learning.	Present information about learning materials in brief.	Carefully analyse information from the teacher.
	Facilitate individual or group investigation.	Motivate students to discuss and discover answers to their problems. Teacher also needs to make sure that all members of the group know the answer.	All the group members must contribute their ideas in solving the problems.

	Answer, develop, and present final projects.	Call a number. Students coded with the number will provide the answer.	Student whose number is called raises hand, explains the answer in front of the classroom.
	Analyse, evaluate, and summarise problem solving process.	Assist students to write a summary of the application of the concepts in life.	Write a summary of the application of the concepts in life.
Multi-strategies	Learning procedures are developed by the teacher in the classroom. In other words, every classroom will implement different ways of learning.	Depends on the situation created by the teacher in a particular classroom.	Depends on the situation created by the teacher in a particular classroom.

Method

This research is a quasi-experimental design with pretest-posttest, non-equivalent control group factorial 4 x 2 (Sugiyono, 2009; Palennari, 2012). The independent variables as factor A are PBL, NHT, the integration of PBL and NHT, and multi-strategies, while factor B is upper academic (UA) and lower academic (LA) ability. The dependent variables are students' spiritual and social attitudes.

The population was tenth grade students (15 to 16 years old) from 11 public senior high schools (SMAN) located in Jenepono regency of Indonesia. The students were registered in the school year 2014/2015. The samples were obtained by a random sampling technique from 4 schools coded as SMAN 1 Binamu (N = 36), SMAN 2 Binamu (N = 35), SMAN 1 Batang (N = 33), and SMAN 1 Tamalatea (N = 39). From each class, 24 students were selected for pretest-posttest administration, based on their academic ability, upper (KA; n = 12) and lower (KB; n = 12) as determined by tests conducted by the researchers. Then, they were engaged in a biology lesson which covered topics on Kingdom Plantae, Kingdom Animalia, ecology, ecological/weather balance, and waste recycling. Learning in the integrated PBL and NHT class used the learning design for integrated PBL and NHT that developed by researcher. The equipment consisted of a syllabus, lesson plans, and student worksheets. Learning was conducted in 12 meetings with eight basic competencies in biology lessons.

The instrument that was used comprised the observation, self-assessment (Appendix) and peer assessment sheets for assessing the spiritual and social attitudes of students. The guidelines for observations were in a rating scale by rubric, and a check list was used to observe whether there an attitude or behaviour change had occurred. The assessment scale determined the position of the attitude or behaviour of students for a range of items.

Data collection was done by using descriptive statistics to show profiles of spiritual and social attitude scores of students. The descriptive statistics included the average, standard deviation, the highest average, the lowest average, and the percentage change between pretest and posttest. Inferential statistics ANCOVA two paths with a significant level of

5% was used to test the hypothesis of a difference. Data were analysed using *SPSS 18.0 for Windows*. If the result of ANCOVA showed significance, it was followed by a least significance difference (LSD) test which was used to measure students' average scores on spiritual and social attitudes test. Before the data were analysed by ANCOVA, first it was tested for the prerequisite, i.e. normality of the test and homogeneity of the test. A test for normality was done using one-sample Kolmogorov-Smirnov test, and a homogeneity test was conducted using Levene's test of equality of error variances.

Results

Data describing spiritual attitudes

Based on the combination of learning model and academic ability, the highest average pretest value of spiritual attitudes was obtained on the combination of PBL learning model and upper academic ability (2.51), while the lowest was on the combination of PBL and NHT learning model and lower academic ability (2.28). The highest of posttest average spiritual attitudes value was obtained from the combination of PBL and NHT learning model and upper academic ability (3.56), while the lowest was from the combination of multi-strategies learning model with lower academic ability (2.85) (Table 2).

Table 2: Average of pretest, posttest, and difference value: Spiritual attitudes
UA = upper academic ability; LA = lower academic ability

Learning model	Academic ability	n	Average		Difference (%)
			Pretest	Posttest	
PBL	UA	12	2.51	3.44	37.1
	LA	12	2.41	3.23	34.0
	Total	24	2.46	3.33	35.5
NHT	UA	12	2.41	3.50	45.2
	LA	12	2.29	3.10	35.4
	Total	24	2.35	3.30	40.3
PBL and NHT	UA	12	2.34	3.56	52.1
	LA	12	2.28	3.33	46.1
	Total	24	2.31	3.44	49.1
Multi-strategies	UA	12	2.46	3.21	30.5
	LA	12	2.33	2.85	22.3
	Total	24	2.39	3.03	26.4
Total average	UA	12	2.43	3.43	41.1
	LA	12	2.33	3.13	34.3
	Total	24	2.38	3.28	37.8

Table 2 shows that spiritual attitudes scores increased for all four learning models. The largest average pretest-posttest difference was found for PBL and NHT learning (52.1%), while the lowest average difference was found for multi-strategies (34.9%). Specifically related to academic ability, the average upgrading percentage on spiritual attitudes scores for the lower academic ability students (34.3%) was smaller than the average upgrading percentage for higher academic ability students (41.1%). Concerning the combination of

learning model and academic ability, the largest increase in spiritual attitudes scores was shown by PBL and NHT with higher academic ability students (52.1%), while the lowest was shown by multi-strategies with lower academic ability students (22.3%).

Table 3 shows that based on the ANCOVA test results on learning model, the significance value obtained was $p = 0.000$ ($p < 0.01$), indicating that the learning model is significantly influential upon spiritual attitude scores. The hypothesis "there is a difference between spiritual attitudes of students who were given the integration of PBL and NHT and students who were given PBL, NHT and multi-strategies", therefore, is accepted.

Table 3: ANCOVA test results: Spiritual attitudes

Source	Type III sum of squares	df	Mean square	F	Sig.
Model	4.587	8	0.573	12.147	0.000
Intercept	6.200	1	6.200	131.343	0.000
Pretest	0.012	1	0.012	0.246	0.621
Learning model	2.270	3	0.757	16.032	0.000
Academic ability	1.977	1	1.977	41.889	0.000
Learning model x Academic ability	0.149	3	0.050	1.054	0.373
Error	4.107	87	0.047		
Total	1043.600	96			
Total average score	8.693	95			

The ANCOVA for academic ability and interaction of learning model and academic ability found $p = 0.000$ ($p < 0.01$) and $p = 0.373$ ($p > 0.05$) respectively. This indicates that academic ability is significantly influential, whilst the interaction between the learning model and academic ability is not significant. Thus, the hypothesis "there is no difference in spiritual attitudes between the higher academic ability students on lower academic ability" is rejected, and "there is no difference in spiritual attitudes as a result of the interaction between the learning model and academic ability" is accepted. There are differences in spiritual attitudes scores between the higher academic ability and lower academic ability students, but there is no interaction between learning model and academic ability with respect to spiritual attitude scores.

Data describing social attitudes

Based on the combination of learning model and academic ability, the highest average value of social attitudes pretest scores was obtained from the combination of higher academic ability and multi-strategies learning model (2.53), whilst the lowest (2.35) was obtained from the combination of lower academic ability and PBL, the integrated PBL and NHT, and multi-strategies. The highest average social attitudes posttest score was obtained from the combination of upper academic ability and integrated PBL and NHT (3.77), whilst the lowest was from the combination of lower academic ability and multi-strategies (3.03).

Table 4: Average of pretest, posttest, and difference value: Social attitudes
 UA = upper academic ability; LA= lower academic ability

Learning model	Academic ability	n	Average		Difference (%)
			Pretest	Posttest	
PBL	UA	12	2.42	3.69	52.5
	LA	12	2.35	3.31	40.9
	Total	24	2.39	3.50	46.4
NHT	UA	12	2.51	3.46	37.8
	LA	12	2.36	3.31	40.3
	Total	24	2.44	3.38	38.5
PBL and NHT	UA	12	2.46	3.77	53.3
	LA	12	2.35	3.60	53.2
	Total	24	2.40	3.68	53.3
Multi-strategies	UA	12	2.53	3.43	35.6
	LA	12	2.35	3.03	29.0
	Total	24	2.44	3.23	32.4
Total	UA	12	2.48	3.59	44.8
	LA	12	2.35	3.13	33.2
	Total	24	2.42	3.45	42.6

Table 4 shows that social attitude scores increased for all four learning models. The largest average pretest-posttest difference (53.3%) was obtained for the integrated model of PBL and NHT, whilst the lowest average increase (32.4%) was obtained from multi-strategies. Specifically related to academic ability, the average increase in social attitudes scores for lower academic ability students (33.2%) was smaller than the average increase for upper academic ability students (44.8%).

Concerning the combination of learning model and academic ability, the highest percentage increase in social attitude scores was obtained from the combination of upper academic ability students with integrated PBL and NHT (53.3%); whilst the lowest increase was obtained from academic ability students and multi-strategies learning model (29.0%).

Table 5 shows that ANCOVA test results on learning model obtained the significance value $p = 0.000$ ($p < 0.01$). This result indicates that the learning model is significantly influential upon social attitude scores. The hypothesis that "there is a difference between social attitude scores of students who were given the integration of PBL and NHT compared with students given PBL, NHT and multi-strategies", is therefore accepted.

The result of the ANCOVA tests on academic ability and interaction of learning model is significant at $p = 0.000$ ($p < 0.01$) and $p = 0.093$ ($p > 0.05$) respectively. This indicates that academic ability is significantly influential, whilst the interaction between the learning and academic ability is not significant. Thus, the hypothesis "there is no difference in social attitude scores between the lower academic ability students and the upper academic ability" is rejected, and "there is no difference in social attitude scores due to interaction of learning model with academic ability" is accepted.

Table 5: ANCOVA test results: Social attitude

Source	Type III sum of squares	df	Mean square	F	Sig.
Model	4.819	8	0.602	11.908	0.000
Intercept	8.656	1	8.656	171.126	0.000
Pretest	0.014	1	0,014	0.276	0.600
Learning model	2.551	3	0.850	16.812	0.000
Academic ability	1.730	1	1.730	34.202	0.000
Learning model x Academic ability	0.334	3	0.111	2.203	0.093
Error	4.401	87	0.051		
Total	1153.240	96			
Total average score	9.220	95			

Discussion

Learning model and spiritual attitudes of students with different academic abilities

The four learning models (PBL, NHT, integrated PBL and NHT, and multi-strategies) have been proven effective in improving the spiritual attitude of the high school students with upper and lower academic ability. Each learning model provides students with a personal experience as the social stimulus which will result in the establishment of attitude. Those learning models help promote student interactions, which also contributes to the development of the students' attitudes, especially spiritual attitude.

The results of data analysis indicate that the four learning models have a significant effect on the students' spiritual attitudes. Students with high spiritual attitude were found to be happier than those with lower spiritual attitude (Abdel-Khalek, 2006). Research conducted by Davis, Kerr & Robinson (2003) showed that there was a consistent positive correlation between spiritual attitudes and happiness. They found a consistent inverse relationship between spiritual attitudes, well-being and the nature of anxiety, regardless of gender, age, and marital status. Harris, Schoneman and Carrera (2002) found that the commitment of approach associated with spiritual attitudes may be related to lower levels of general anxiety. A principal component analysis showed that the constellation of variables which involved religious aspects of an individual and his/her relationship with other people in a religious group had a significant negative correlation with anxiety traits. Aghili and Kumar (2008) concluded that someone with a lower level spiritual attitude had more tension and anxiety, and a lower level of happiness.

Students' academic ability may influence their academic achievement, as indicated by the research conducted by Corebima (2007), who found that slow learners who used cooperative strategies can achieve at least the same or better than fast learners. Based on the results of this research, it may be concluded that implementation of the integrated model of PBL and NHT has some potential for developing students' spiritual attitudes.

This may occur because the integration of the two learning models encourages students to interact or collaborate in a smaller group to solve learning problems. Interaction promotes tolerance, cooperation, responsibility, democracy, and plurality among the students. According to Gerungan (2010), social interaction that occurs in a group can change or form a new attitude.

Each learning model, however, has a different effect on students' spiritual attitudes. The results of covariance analysis showed that the average score of students learning with PBL is higher than for students learning with NHT. Nevertheless, the average score of students learning with the integrated model of PBL and NHT is higher than for students learning with PBL.

The NHT learning model provides students with an opportunity to work independently and in collaboration with others (Lie, 2002). This model helps students gain self-confidence and thereby become more active in discussing the topics being studied. Thus, based on the highest percentage of the students' average score, the integrated model of PBL and NHT is considered the most effective learning model for improving the spiritual attitude of students with upper academic ability.

Learning model and social attitudes of students with different academic abilities

The results of the present study show that PBL, NHT, the integrated model of PBL and NHT, and multi-strategies can improve students' social attitudes. Loudon and Bitta (1993) stated that attitude is formed by three factors including (1) personal experience, (2) group associations, and (3) influential others. The results of data analysis have showed that each learning model has a significant distinctive effect on the students' social attitude. The results of this research are consistent with the results of previous research conducted by Maasawet (2009).

The integrated model of PBL and NHT better improves students' social attitude compared to PBL, NHT, and multi-strategies learning models. This may be due to the integrated model of PBL and NHT being better at enabling to interact and collaborate in a smaller group to solve their learning problems. Joyce and Emily (2009) stated that cooperation within a group increases responsibility, self-esteem (feeling respected and valued), reduces competition and establishes a positive outlook towards others. Slavin (2010) stated that cooperative learning can enhance students' social relationships and cultivate tolerance and respect for other people. Jordan and Metais (2000) stated that that cooperative learning has the potential to foster interpersonal relationships and the creation of mutually beneficial relationships, as well as providing a variety of interesting experiences that can be drawn together. Haydon et al (2010) also concluded that cooperative learning model can be effectively and efficiently used to improve learning outcomes, including for students with certain disorders of emotional intelligence, and Akbar (2003) stated that cooperative learning model can be applied to develop students' emotional quotient. Through cooperative students learn to better understand their own emotions and others' feelings.

Although all the four learning models are able to improve students' social attitudes, the results of covariance analysis show that PBL has more potential to help students improve their knowledge and become reflective and flexible thinkers who are able to solve real-life problems. PBL remains one learning design that students preferred (Mansori, et al., 2015). Thus, based on students' average scores, the best learning design to improve students' social attitude is the integrated model of PBL and NHT.

Conclusion

From this research we conclude that (1) the learning model affects the spiritual and social attitude scores of students in biology; (2) academic ability affects the spiritual and social attitudes of students; and (3) the interaction of learning model with academic ability does affect the spiritual and social attitude scores of students in biology. However, the best learning model for improving the spiritual and social attitudes of students is an integrated combination of PBL and NHT models, in the cases of students who have upper academic ability.

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Appendix: Assessment sheets

(translated from Indonesian)

1. Assessment sheet: Spiritual attitudes

No.	Statement	Never	Some- times	Frequ- ently	Always
1	I pray before starting the study and after the study is completed				
2	I express gratitude for the gift of God				
3	I greet before and after the expression / presentation				
4	I express admiration orally and in writing to the Lord when he saw the greatness of God				
5	I feel the greatness of God's existence and is currently studying science				
Total score					

2. Assessment sheet: Social attitude

No.	Statement	Never	Some- times	Frequ- ently	Always
1	I am actively involved in practical activities / discussion				
2	I am willing to do tasks as agreed				
3	I'm looking for a way to resolve differences of opinion / thoughts between myself and others				
4	I'm not putting personal interests first				
5	I encourage others to work together to achieve a common goal				
Total score					

3. Assessment sheet: Social attitudes - discipline

No.	Statement	Never	Some- times	Frequ- ently	Always
1	I did observations in accordance with established procedures				
2	I am disciplined in doing observations in accordance with the time allotted				
3	I did part of the job that has been set in advance with the focus regardless of what does not work				
4	I put together a temporary observation sheet in accordance with the specified time				
5	I returned the equipment and materials in place after observation activities				
Total score					

4. Assessment sheet: Social attitudes - honesty

No.	Statement	Never	Some- times	Frequ- ently	Always
1	I'm honest in doing LKS				
2	I work according to his ability, cheating observations, analysis of the problems of other groups				
3	I express opinions in accordance with the feelings that are owned and not-fetched				
4	I reported observational data or information as it is				
5	I am honest in making the link between the analysis of observational data with the problems presented				
Total score					

5. Assessment sheet: Social attitudes - confidence

No.	Statement	Never	Some- times	Frequ- ently	Always
1	I dare to make a presentation in front of the class				
2	I dare argue, question, or answer questions				
3	I believe or do activities without hesitation				
4	I was able to make quick decisions				
5	I do not easily surrender				
Total score					

6. Assessment sheet: Social attitudes - responsibility

No.	Statement	Never	Some- times	Frequ- ently	Always
1	I did the division of tasks to each member of the group				
2	I carry out individual tasks well in accordance with the division of tasks well				
3	I made the observation reports while in table form				
4	I made the observation data obtained with the results of the analysis				
5	I am honest in making the analysis of observational data and analysis presented in accordance with the division of tasks set				
Total score					

7. Assessment sheet: Social attitudes - tolerance

No.	Statement	Never	Some- times	Frequ- ently	Always
1	I respect the opinion of friends				
2	I do not impose opinions or beliefs on others				
3	I received a deal although they differ with his opinion				
4	I am willing to learn from (open to) beliefs and ideas of others and understand others better				
5	I forgive mistakes by my friends groups and other groups				
Total score					

8. Assessment sheet: Social attitudes - good manners

No.	Statement	Strongly disagree	Dis-agree	Agree	Strongly agree
1	I do not say dirty, rude, and arrogant words at the time of learning activities in the classroom				
2	I thank you after receiving help from others				
3	I use polite language when expressing				
4	I use polite language when criticising the opinion of friends				
5	I'm not interrupting the discussion time				
Total score					

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