Collaborative Creativity Learning: Analyzing Scientific Creativity and Problem Solving Watershed Conservation Studies in Learning Geography

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Abstract. Scientific creativity skills (SCS) and problem-solving abilities (PSA) are benchmarks in assessing a person's quality in learning 21. SCS and PSA need to be possessed by every student. They can be developed by implementing a model of collaborative creativity learning (CCL) because it can train students in exploring ideas related to problems of geographical phenomena and encourage the active role of students in mastering concepts and analyzing a problem. CCL learning needs to be explored regarding its influence on Scientific Creativity and Problem Solving which is closely related to collaborative learning. This study aimed to determine the effect of the CCL model on the SCS and PSA of high school geography students. The research design in this study used a quasi-experimental study with a post-test only control group and Man Whitney U test, and an Independent-sample T test as data analysis. The research subjects used were class X Social Science-1 and X Social Science-2 as an experimental group using the CCL model, while class X Social Science-3 as a control group using a conventional learning model. The results showed a significant effect from applying the CCL Model on SCS and PSA with a significant score of $0.001 < 0.05$. This study proves that applying the CCL Model can develop SCS and PSA.

Keywords: Collaborative creativity learning · problem solving · learning geography

1 Introduction

21st-century learning seeks to grow students' skills to increase knowledge to the maximum. Students must have several 21st-century skills that must be mastered, such as critical thinking, creativity, and communication and collaboration skills [1]. Mastery of 21st-century skills aims to improve the quality of students to compete in the current globalization [2]. Therefore, 21st-century learning requires students to have several unique

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characteristics and complex knowledge accompanied by various higher-order thinking skills such as critical thinking, problem-solving, communication, able to think creatively, collaboratively, and innovatively [3]. Thus, the learning process in the 21st century must create innovative learning that allows students to further develop and construct their knowledge to the fullest.

Higher order thinking skills have a relationship with 21st-century learning. Therefore, higher-order thinking skills are essential in learning, especially in Geography. Geography subjects have learning characteristics that show critical knowledge and understanding of the diversity of forms that describe humans and the physical world [4]. Therefore, by developing higher-order thinking skills in learning Geography, students can identify problems and explore various methods and solutions [5]. Thus, higher-order thinking skills in learning geography will foster sensitivity and concern for students in solving actual problems and be able to solve and understand problems clearly.

SCS is one of the higher-order thinking skills that can be developed in Geography. SCS can generate ideas or ideas that are emphasized in scientific activities [6]. The characteristics possessed by SCS include product, nature, and process dimensions, allowing students to have a great curiosity to research [7]. Furthermore, SCS in geography learning can improve students' skills in identifying problems, trying to explore various methods, and exploring several solutions to solve a problem [8]. Students will be encouraged to collect data, such as making observations and measurements of geographical phenomena and solving problems well. Thus, students with SCS will not feel afraid or fail in solving geographic problems [9].

SCS has a relationship with the PSA owned by the student. Therefore, improved SCS will give students more opportunities to solve problems. Moreover, students with SCS can formulate many ideas and conduct research to solve students' problems [7]. The result is that the existence of SCS will able to improve PSA later, students will be able to seek the best solution to achieve a goal by using the knowledge that has been learned [10], and it will make it easier for students to deal with various problems that must be solved [11].

PSA is one of the criteria for assessing the quality of students in 21st-century learning [12]. This ability is essential for students to learn geography [13]. The problems contained in geography are not appropriately identified by students [14].Therefore, the indicators contained in the PSA will assist students in integrating their knowledge to identify problems and make clear problem solutions [15]. In addition, through PSA, students can use their thinking and reasoning abilities. Characteristics of geography learning which studies everyday phenomena and problems that can train students' thinking and reasoning abilities [16].

Watershed Conservation Material is one of the sub-materials contained in the hydrosphere dynamics material, and its impact on life watershed is an area that is the main focus of environmental management. This management cannot be separated from various problems such as the problem of resource decline, pollution from various sources, and land use conflicts around the watershed [17]. The complexity of environmental problems in watersheds requires several solutions to solving multidimensional and comprehensive problems, such as carrying out conservation activities appropriately Therefore, SCS and PSA are needed to solve problems and generate new ideas for solving problems in the watershed [18]. Thus, it is necessary to improve the quality of learning by using innovative learning models to support the formation of these skills and abilities.

Scientific Creativity and Problem-Solving are primarily associated with collaborative learning. Students' collaborative activities by doing scientific tasks can generate ideas in small groups through applying relevant thinking strategies and engaging in communication between students [19]. The existence of collaboration between students can affect cognitive styles that can develop students' creative performance [20]. Collaborative learning through meaningful group interactions is a challenge; to make it happen, students must struggle to solve problems [21]. Thus collaborative learning can develop students' problem-solving abilities [22].

The learning model enables the effective development of SCS and PSA is the CCL model. The CCL model is a model that directs students to learn collaboratively, think creatively, and train students to work together in groups. Through the CCL model, students will be able to emphasize teamwork and scientific creativity [18], explore ideas from various points of view in groups and consider ideas to find new ways to solve problems. Through five steps in its application in the form of (1) problem identification, (2) exploration of ideas and creativity, (3) collaborative creativity, (4) elaboration of creative ideas, and (5) evaluation of the creativity process [5] students will have many opportunities to explore ideas related to geographical phenomena problems and encourage the active role of students in mastering concepts and analyzing a problem contextually. Thus, the CCL model is suitable if integrated into geography learning.

Research on CCL was conducted by Vladoiu (2018) who examined how the construction of student creativity. Another research related to CCL was conducted by Rojas (2022) which explained that collaborative and creative learning is able to foster problem-solving skills in students. However, there has been no research related to CCL in SCS and PSA. The purpose of this study is to determine whether the use of the CCL model has a significant effect on the SCS and PSA of high school students, and this research is expected to contribute to improving better learning.

2 Literature Review

2.1 Collaborative Creativity Learning (CCL)

The face of competition in the 21st century requires improving the quality of learning. 21st-century education requires many students to have several skills, such as learning and innovation, such as communication, collaboration, critical thinking, and creativity [24]. The learning process must design student activities interactively, motivate students to participate actively, and allow students to develop and be independent according to students' interests to realize these skills in each student.

The CCL model is one of the learning models that can be applied to achieve student competence. The CCL model is a model that can develop students' skills in finding various ideas through collaborative learning [25]. Learning that is carried out collaboratively can involve student interaction in increasing the courage of members to give each other opinions and create active learning [26]. In addition, the CCL model can develop students' skills in developing their learning outcomes and develop skills in creative skills

Table 1. Indicator Scientific Creativity Skills (SCS)

Indicator	Description
Unusual uses	Measure fluency, flexibility, and originality in using objects for scientific purposes
Technical Production	Measure fluency, flexibility, and originality in generating new ideas or products based on scientific discoveries or research results
Hypothesizing	Measure fluency, flexibility, and originality in students' scientific evaluation abilities
Science Problem Solving	Measure flexibility and originality in solving a student's problem
Creative Experimental	Measure flexibility and originality in creative experimentation
Science Product	Measure flexibility and originality in designing a product or activity to solve a problem creatively

through five steps consisting: (1) problems, exploration of ideas, (3) collaborative creativity, (4) elaboration of creative ideas, and (5) process and outcome evaluation. Thus the CCL model must be applied in learning to improve 21st-century skills.

2.2 Scientific Creativity Skills (SCS)

SCS is a skill in the learning process that students must possess. SCS is a skill that combines aspects of creativity and science that can produce original products with personal or social value and can design and use the information to achieve goals [7]. These skills are part of higher order thinking skills (HOTS) which are following the demands of skills in the 21st century [25].

Students often face various problems in studying geography lessons, so they need various solutions to overcome them. SCS in learning activities is essential for students to master. The existence of SCS in learning activities can grow students' skills in identifying problems, exploring different methods, and exploring alternative solutions to problems [25]. In addition, SCS will cultivate students' skills in creating new ideas based on students' experiences and knowledge during the study [27]. Thus SCS can help the learning process of students in high school through six indicators consisting: (1) unusual uses (UU), (2) technical production (TP), (3) hypothesizing (H), (4) science problem solving (SPS), (5) creative experimental (CE), and (6) science product (SP) to deal with complex and dynamic geography learning tasks and train students to be responsive to the environment and life on earth through a spatial perspective [28] (Table 1).

2.3 Problem Solving Abilities (PSA)

21st-century education requires students to have the ability to solve problems and apply them in everyday life. In dealing with problems, especially in learning Geography, students need abilities that can support them, such as PSA [29]. PSA is a high-level ability to seek students to find solutions to every problem using analytical thinking skills, critical thinking, creativity, reasoning, and experience following the information obtained [30].

Table 2. Indicator Problem Solving Abilities (PSA)

Indicator	Description
Problem Identification	Identify related phenomena that exist in the problems
Formulate the problem	Formulate in the form of questions to solve problems
Analyze the problem	Analyze any data obtained by adjusting to the facts of the problem studied
Looking for solutions	Making problem-solving and planning various problem-solving solutions
Solve the problem	Choose from a variety of solutions that are most appropriate for solving problems that occur

Students must apply high-level cognitive abilities such as convergent thinking, which only focuses on the problems at hand, and divergent thinking, namely creative thinking of the information obtained to generate as many ideas as possible in solving problems [31]. Nevertheless, in reality, students still cannot choose and organize the information obtained to find the right solution [31]. Therefore, students need an ability such as PSA, which can bring students to the development of learning activities to expand cognitive capacity and learning ability in solving problems through PSA indicators which consist of: (1) identifying problems, (2) formulating problems, (3) analyzing problems, (4) find solutions, and (5) solve problems (Table 2).

3 Methods

This research uses a quasi-experimental design with a post-test-only control group design that uses two subjects (control group and experimental group) based on the results of the final semester assessment. The control group received conventional learning treatment. In comparison, the experimental group received treatment with the CCL model. The material used is in the form of material in KD 3.7. It analyzes the dynamics of the hydrosphere and its impact on life by focusing on watershed conservation.

The research subjects used were class X Social Science in High School Plemahan 1 Kediri for the academic year 2021/2022, consisting of four classes, and three classes were selected as research samples, namely X Social Science-1 and X Social Science-2 as the experimental class totaling 33 students and X Social Science-3 as control amounted to 33 students. The technique in determining the sample uses purposive sampling. The consideration in taking the sample is based on the average score of the temporary final exam (PAS), which has a difference in average values that are not much different, namely, class X Social Science-1 (PAS score of 68), X Social Science-2 (PAS score of 70), and X Social Science-3 (PAS score of 74).

This study uses a CCL learning activity design. The CCL learning syntax is explained as Table 3.

The data collection technique used the test once after giving the treatment. The assessment instrument used is an essay test based on the SCS and PSA indicators with

Table 3. Collaborative Creativity Learning (CCL) Syntaxs

CCL Syntaxs	Learning Activity
Problem Identification	The teacher gives an introduction with the learning objectives and activities to be carried out Class is divided into 2 groups consisting of small groups (2 students) and large groups (4 students) Students get worksheet to identify and discuss the problems of the Brantas Kediri watershed by formulating problems together with small groups
Idea Exploration	Small groups conduct discussions to find ideas, then formulate hypotheses discussed with large groups
Collaborative Creativity	With the guidance of the teacher, students prove the problem formulations and hypotheses that have been formulated previously by observing and conducting experiments by taking water samples in the Brantas Kediri Watershed to measure water indicators based on physical parameters and students taking data and discussing the results of observations and experiments that have been carried out conducted
Idea Elaboration	Students process the data obtained from observations and experiments that have been carried out with groups, first, then proceed with large groups Students choose the best ideas and the best results that have been obtained
Evaluation of process and result	Students communicate the results that have been compiled to other groups by making presentations and the teacher providing feedback

eight questions. The SCS test was given to X Social Science-1, the PSA test was given to X Social Science-2, and X Social Science-3 was given the SCS and PSA tests. Test the instrument (correlation validity) product moment from Pearson (SCS 0.567) (PSA 0.506) and Cronbach Alpha test (SCS 0.824) and (PSA 0.867).

The data analysis technique is in the form of quantitative analysis. Data analysis was based on the SCS and PSA post-test results with prerequisite tests and hypothesis testing. Kolmogorov-Smirnov normality test performed a prerequisite test (0.101 and 0.200 for SCS) (0.098 and 0.173 for PSA). The homogeneity test used Levene's test for the equation of variance (SCS 0.018) and (PSA 0.304). Hypothesis testing to determine the effect of CCL on SCS and PSA. Hypothesis testing from SCS uses the non-parametric Mann-Whitney U Test, while PSA uses the independent-Sample t-test.

Table 4. Distribution of Score and Frequency of SCS and PSA

Category	Score	SCS				PSA			
		Experiment		Control		Experiment		Control	
		F	%	f	%	F	%	f	%
Very Low	0–47	0	0	3	9	0	0	2	6
Low	48–60	0	0	4	12	2	6	5	15
Moderate	61–73	3	9	9	27	5	15	8	24
High	74–86	11	33	7	21	8	24	10	30
Very High	87–100	19	58	10	30	18	55	8	24
Total		33	100	33	100	33	100	33	100

Table 5. The score of SCS is Based on Indicators

Indicator SCS	Experiment		Control	
	Mean	Category	Mean	Category
Unusual use	86.87	High	78.79	High
Technical Production	91.92	Very High	78.79	High
Hypothesizing	88.89	Very High	68.69	Moderate
Science Problem Solving	83.33	Very High	71.21	Moderate
Creative Experimental	80.81	High	66.67	Moderate
Science Product	92.93	Very High	76.77	High
Mean	86.97	High	73.97	Moderate

4 Finding

4.1 Distribution of Score and Frequency of SCS and PSA Experimental and Control Class

Table 4 shows the frequency and percentage of differences in the SCS and PSA post-test results between the experimental and control groups. Again, the experimental group had a very high dominance with a percentage of 58%, while the control group was 30% in SCS. Meanwhile, the experimental group's frequency distribution and PSA percentage were dominated by the very high category with a percentage of 55%, while the control group was 30%.

4.2 Average Score and Catagory of SCS and PSA Based on Indicators

Table 5 shows the SCS score based on indicators; the experimental group has an average score (86.97) and the control group (73.97). Table 6 shows the PSA score based on

Table 6. The score of PSA is Based on Indicators

Indicator PSA	Experiment		Control	
	Mean	Category	Mean	Category
Problem Identification	87.37	Very High	77.27	High
Formulate the problem	74.75	High	58.59	Low
Analyze the problem	86.36	High	81.31	High
Looking for solutions	93.94	Very High	80.81	High
Solve the problem	88.89	Very High	72.73	Moderate
Mean	85.06	High	73.55	Moderate

Table 7. Mann-Whitney U Test SCS

	SCS
Mann-Whitney U	285.000
Asymp. Sig. (2-tailed)	0.001

indicators, the average score of the experimental group (85.06) and the control group (73.55). Thus, the experimental group obtained higher scores with better categories than the control group.

4.3 Mann-Whitney U Test Results of SCS

Based on Table 7, the results of the Mann-Whitney test are $0.001 < 0.05$, so the results obtained show a significant difference. Furthermore, the results that have been obtained illustrate the differences in SCS between the two groups. Therefore, learning using CCL can positively influence the SCS of high school students. Thus, the hypothesis for H0 is rejected, and H1 is accepted, which means that the CCL model influences SCS.

Table 8 shows the analysis test results using the Mann-Whitney U test based on the SCS indicator. Again, hypothesizing indicator was the most significant, with a $0.000 < 0.05$.

4.4 Independent-Sample T-Test of PSA

Table 9 shows the results of hypothesis testing $0.001 < 0.05$, showing a significant difference. The results that have been obtained illustrate the differences in PSA of the two groups. Learning using the CCL model can positively influence the PSA of high school students. Thus, the hypothesis for H0 is rejected, and H1 is accepted, which means that the CCL model influences PSA. Table 10 shows the results of the independent-sample T test based on the PSA indicator. The analysis showed that the solve the problem indicator was the most significant indicator, with a score of $0.001 < 0.005$.

Table 8. Mann-Whitney U test Based on Indicators of SCS

Indicator	Mean		Sig.2 tailed
	Experiment	Control	
Unusual Use	86.87	78.79	0.223
Technical Production	91.92	78.79	0.007
Hypothesizing	88.89	68.69	0.000
Science Problem Solving	83.33	71.21	0.780
Creative Experimental	80.81	66.67	0.180
Science Product	92.93	76.77	0.003

Table 9. Independent-Sample T Test PSA

	T-test for Equality of Means
	Sig. (2-tailed)
Equal variances assumed	0.001
Equal variances not assumed	0.001

Table 10. Independent-sample T Test Based on Indicators of PSA

Indicator	Mean		Sig. 2 tailed
	Experiment	Control	
Problem Identification	87.37	77.27	0.022
Formulate the problem	74.75	58.59	0.006
Analyze the problem	86.36	81.31	0.216
Looking for solutions	93.94	80.81	0.003
Solve the problem	88.89	72.73	0.001

5 Discussions

5.1 The Effect of Collaborative Creativity Learning on Science Creativity Skills

The use of the CCL model has a significant effect on students' SCS. The CCL model trains students' SCS through research and experimentation [32]. This learning experience encourages students to participate in improving their SCS, namely unusual use, technical production, hypothesizing, science problem solving, creative experimental, product science, and social interaction with group members. Study results in Table 7 show the significant score of the Mann Whitney U test results of $0.001 < 0.05$, which means that the CCL model significantly affects SCS. In addition, the use of the CCL

Model also provides an average difference between the experimental and control classes. Table 5 shows the average score of the experimental class of 86.97 in the high category, while the control class is 73.97 in the moderate category. The experimental group using the CCL model has a higher average score than the conventional learning model control group. Thus, SCS can be grown through the CCL models.

The geography learning process using the CCL model positively affects students' SCS compared to conventional learning applied to the control group. Students' learning experiences using the CCL Model are efficient when applied to learning [32]. Problem identification activities, idea exploration, collaborative creativity, idea elaboration, and evaluation of results and processes in the CCL model have an essential role in helping students to develop SCS [33]. Table 4 shows the data distribution results based on the frequency and percentage of the SCS post-test scores of the experimental group and the control group, which are dominated by very high scores. The percentage of SCS in the experimental group was 58%, with a frequency of 19 students, while the control group was 30% with ten students. The results that have been obtained indicate that differences in the treatment given by the model can affect the results obtained. This is based on the fact that the activities in the CCL model will involve various cognitive processes in stimulating the intellectual development of students compared to using conventional models ([33] Thus, the CCL model can develop various student competencies, especially SCS.

The CCL model can grow SCS indicators in problem identification and exploring ideas in the Brantas watershed. The process of problem identification and exploring ideas is related to understanding and solving problems in the Brantas watershed. Sensitivity to problems in the Brantas watershed allows students to discover and explore the problems observed so that students will try to find new answers and provide creative solutions to solving problems in the Brantas watershed [34]. Therefore, problem identification and exploration of ideas are essential in the process of improving SCS.

There are several findings in research related to indicators. The first finding relates to indicators of product science and technical production. Table 5 shows that the experimental group scores were very high on the science product, while the control class scores were high on the technical production indicator. The difference in these results shows that the experimental group can create appropriate programs and activities to overcome problems in the Brantas watershed, while the experimental group can provide new ideas. Experimental group's ability to create programs or activities that make sense and take account of the conditions of the Brantas watershed. These skills are encouraged in the CCL process, which provides actual problems that occur in the Brantas watershed, thus encouraging students to combine their knowledge with the actual conditions in the Brantas watershed [35], while the control group with learning activities carried out in the classroom can create new ideas. In activities carried out, students not only transfer the knowledge given by the teacher but students search for problems that occur and compare them with other students. Interaction between students, teachers, and group mates encourages students' skills in creating new ideas [36].

The second finding relates to creative, experimental indicators. Table 8 shows that the experimental and control groups have the lowest scores on the creative, experimental indicators. Experimental indicators are indicators for conducting creative experiments.

The low score on the experimental indicator is based on students' lack of generating innovation, exploring, and creating new knowledge during learning [37]. The CCL model is equipped with an experimental process applied to the experimental group but has not produced maximum score. Students in the experimental group still have difficulty solving problems through creative, experimental activities [38]. Thus, the experimental group was not used to it and experienced difficulties during the implementation of the experiment, so students were not accustomed to taking new ideas. On the other hand, the control group had the lowest score in the creative, experimental indicator due to the lack of student interest in proving ideas and concepts by conducting experiments [39]. The lack of student interest is due to the learning that is applied only in the classroom, so the activities carried out by students are not actively involved.

The collaborative creative process can influence students' SCS. The process of collaborative creativity is conducting observations and experiments in the Brantas watershed, which students carry out in small and large groups to obtain data. The process of observation and experimentation at Brantas watershed helps students predict a phenomenon, observe through experiments and explain the suitability of the answer predictions outlined in the hypothesis in the previous process with the results of experiments that have been carried out [40]. Furthermore, through observation and experiment, activities in the Brantas watershed can create a learning climate that allows students to feel free and safe to explore their SCS potential [41]. Thus, the collaborative creative process will require students to build their knowledge by connecting the information obtained to increase the indicator components in SCS [42].

SCS can be developed through the collaborative learning process in the CCL Model. The collaboration process can encourage students to express various ideas and perspectives in solving problems at the Brantas watershed. This statement is supported by the opinion of Sri Astutik & Prahani (2018b), who states that the collaboration process will require each group member to be able to make a unique contribution and try to provide views on solving problems in the Brantas watershed. Furthermore, the process stimulates students to absorb and get new ideas from other students, thus helping in completing the required knowledge [43]. Thus, the collaboration process in the CCL model contributes to fostering active learning that encourages creativity in creating new ideas according to the science product indicators in SCS [44].

5.2 The Effect of Collaborative Creativity Learning Models on Problem Solving Abilities

The Geography learning process using the CCL Model positively affects PSA. Table 4 shows the data distribution results based on the frequency and percentage of the PSA post-test scores in the experimental group, which are dominated by scores in the very high category and sufficient for the control group. The percentage of PSA in the experimental group was 55% with a frequency of 19 students, while the control group was 30% with ten students. The results that have been obtained indicate that differences in the treatment given by the model can affect the results obtained. The results showed that the CCL model affected PSA. Table 9 shows the significant score of the Independent-sample T-test results of $0.001 < 0.05$, which means that the CCL model significantly affects PSA. Statistical data in Table 6 shows the average score between the experimental group, 85.06 in the high category, and the control group, 73.55 in the moderate category. The results obtained indicate that there is a difference in the average score of the two groups, both the experimental class and the control class.

The application of the CCL Model affects each PSA indicator. Table 6 shows two new findings in the experimental and control groups. The first finding relates to indicators of looking for solutions and analyzing the problems. The experimental group has a very high score on the indicator of finding a solution with a score of 93.94. Solve the problem indicators are abilities with a high difficulty level compared to other indicators [45]. The results indicate that students in the experimental group can determine the right solution to solving problems in the Brantas watershed. This ability is supported in the CCL learning process, which applies active learning through collaboration and experimentation. This learning process will influence students' ability to combine information obtained from problems in the Brantas watershed [46], so that students can plan various solutions to problems in the Brantas watershed. The control group has a high score on the indicator of analyzing the problem. This ability is supported by class control group activities, which encourage students to be active in asking questions, seeking data, and communicating their findings with other students and teachers. With this interaction, it can encourage students' ability to process the information and data that has been obtained [47].

The second finding relates to indicators for formulating problems. Indicators of formulating problems in the experimental group have lower scores than other indicators. Table 6 shows the indicators for formulating problems in the experimental group, 74.75 in the high category. The inability to formulate problems is due to the lack of students' understanding of the problems in the Brantas watershed. This statement is supported by Kasdriyanto, (2014), who states that the lack of ability to formulate problems is caused by the lack of students' initial knowledge in understanding the problem, so this ability is less explored. The learning process in the experimental group is taught not only theory but also reaches the stage of carrying out observations and experiments in groups. The learning process in groups can provide sufficient opportunities to share and discuss problems in the Brantas watershed so that an intense communication process in learning makes it easier for students to identify and get meaningful learning experiences [48] The not maximal score in the experimental class is caused by the ability of students to understand problems that can trigger differences in students' abilities in formulating problems so that the ability to formulate problems has not appeared optimally [49].

The control group has the lowest score in the indicator of formulating the problem. Table 6 shows that the indicators for formulating problems in the control group are 58.59 with good categories. The low score on the indicator of formulating problems is due to the absence of students' initial ability to formulate and limit problems as a basis for overcoming the problems in the Brantas watershed. This low ability is based on learning that does not provide opportunities for students to think for themselves in understanding problems [50].

Students can achieve PSA through the stages of collaborative creativity in the CCL model. The collaborative creativity stage is the stage for students to conduct direct observations and experiments in the Brantas watershed. This learning process will provide students with a learning experience in memorizing what they observe and do [51]. This process will facilitate students in making connections between the concept of Watershed

Conservation material and the real world. This experience will be a source of student knowledge to analyze and solve problems in the Brantas watershed through theory and practice [52]. In addition, observation and experiment activities will provide a deep understanding and allow students to prove the answers that have been formulated previously, both with small groups and large groups [53]. Such conditions appear in the process indicators of analyzing the problem.

The stage of elaboration of ideas can significantly affect PSA. The idea elaboration stage is the stage in combining creative ideas from the results that have been obtained to produce the best idea collaboratively. This stage will be able to help students to be able to exchange and compare ideas with other students before deciding on the best solution to solve the problems that exist in the Brantas watershed [54]. This process will involve students actively interacting with each other in understanding and finding answers to solving problems in the Brantas watershed [55]. In addition, elaborating creative ideas helps students discuss and develop cognitive skills that can be used to determine the most effective problem solving [56]. The incorporation of each student's knowledge can perfect the idea as an idea improvement in the problem-solving process [57]). Therefore, the creative idea elaboration stage can train to develop interactions and discussions that can develop the best ideas for solving problems in the Brantas watershed.

6 Conclusion

The study aims to determine the effect of CCL on the SCS and PSA of high school Geography students. The results show that CCL has a significant effect on SCS and PSA. The advantages of CCL in the learning process are that it facilitates students' SCS through independent exploration activities and presents new learning experiences for students through direct experiments and observation. Students can actively and independently improve their cognitive skills in solving complex Geography problems. In addition, CCL can help improve student's PSA by helping students determine the right attitude in dealing with or solving problem in the learning process. Emphasis on the process of experimentation and observation allows students to build their knowledge by connecting the information obtained with the right answers.

The researcher recommends the Collaborative Creativity Learning (CCL) model in Geography learning to scientific creativity skills (SCS) and problem-solving abilities (PSA). Suggestions in implementing the CCL model must be carried out over a long period of time and require careful training and preparation for the application of the CCL model so that the implementation of learning activities becomes more effective. In addition, further researchers are advised to apply the CCL model by combining various learning media such as the use of Virtual Reality (VR) Geography as an alternative to inadequate laboratory support.

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