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THE INFLUENCE OF THE SOCIAL COMPLEXITY INQUIRY MODEL ON STUDENTS' CRITICAL AND CREATIVE THINKING SKILLS IN SALT HYDROLYSIS MATERIAL

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ABSTRACT

Critical and creative thinking skills are 21st century skills developed in the current education curriculum. Critical and creative thinking skills can be developed through the use of learning models with a scientific approach, namely inquiry social complexity. This study aims to determine the effect of applying the inquiry social complexity model on students' critical and creative thinking skills on salt hydrolysis material. The research method used is a quantitative method and a quasi-experimental research type with a posttest-only design with nonequivalent control groups. The test results using the independent sample t-test obtained a Sig. (2-tailed) < 0.05. The results of the study indicate that there is an effect of using the inquiry social complexity model on students' critical and creative thinking skills on salt hydrolysis material.

Keywords: *critical and creative thinking skills, inquiry social complexity, salt hydrolysis*

INTRODUCTION

Education in the 21st century requires students to have 4 skills, namely critical thinking, creative thinking, collaboration, and communication (Aufa et al., 2021). Critical thinking and creative thinking are not only used to meet the needs of students in the 21st century, but according to Irawati et al. (2023) the existence of critical and creative thinking is to train students in finding, modifying, and expressing innovation.

Chemistry learning is learning that develops students' competencies so that they can explore and understand chemical concepts systematically through meaningful experiences (Isdayanti et al., 2022). Chemistry subjects contain materials that require a fairly high level of understanding and according to Suryaningsih et al., (2023) the material on salt hydrolysis is one of the materials that has a fairly high level of complexity so that it is difficult to solve problems from questions on determining pH and types of hydrolysis which makes students tend to memorize formulas rather than understand the concept in depth. This is also in accordance with research by Junarti et al., (2018) who said that students had difficulties in understanding the material on salt hydrolysis from the understanding of 49%, showing the properties of the solution resulting from salt hydrolysis 52.3%, showing the salt that was hydrolyzed 23.4%, and difficulty in applying the pH formula in showing the value of [H +] the solution resulting from salt hydrolysis 46.8%.

Therefore, the use of appropriate learning models can play a role in making students active in the learning process. Various learning models have been created to support learning activities in the classroom, so that educators are free to use learning models according to the goals they want to achieve. Of the various learning models available, the inquiry social complexity learning model was chosen. The inquiry social complexity model is a learning model that involves or encourages students to be active so that their cognitive skills develop along with the exchange of new information and experiences (Rachmadani, 2023). This learning model emphasizes discovery, investigation, constructivism, thinking skills, and knowledge integrity (Perdana et al., 2020).

As described above, this study aims to determine the effect of using the inquiry social complexity model on students' critical and creative thinking skills in the salt hydrolysis material.

METHODS

The type and approach used are quasi-experimental with posttest-only design with nonequivalent control groups and quantitative approach. In this study, experimental and control groups were used which were implemented at SMAN 4 Banjarbaru in classes XI IA 1 and XI IA 2 selected by purposive sampling. Class XI IA 1 as the experimental class with 36 students and class

XI IA 2 as the control class with 34 students. As for the experimental class using the inquiry social complexity model and the control class using the guided inquiry model.

According to the research design, the data collection process can be categorized into two stages, namely the treatment stage and the final test (post-test). In this study, students received treatment through the inquiry social complexity learning model for two sessions. Then, the post-test was conducted after the treatment was completed to evaluate the results of the learning process carried out using the inquiry social complexity learning model.

Data collection was conducted using a test instrument consisting of 10 questions composed of several indicators of critical thinking and creative thinking. Critical thinking indicators are, expressing opinions, forming basic skills, concluding, forming further explanations, and arranging tactics and strategies. While creative thinking indicators are, fluency, flexibility, originality, and elaboration.

RESULTS AND DISCUSSION

This study explains the data related to the use of the inquiry social complexity learning model on students' critical and creative thinking skills in the salt hydrolysis material. The data obtained, namely initial ability data obtained from students' scores on the final assignment and post-test obtained from the evaluation results after using the inquiry social complexity model.

The influence of the inquiry social complexity learning model on students' critical and creative thinking skills can be seen from the results of the independent sample t-test on the post-test scores of the experimental and control classes. The test results, if they show a value of Sig. (2-tailed) <0.05, can be concluded that there is an influence of the use of the inquiry social complexity model on students' critical and creative thinking skills.

The results of the initial ability data of students obtained in the experimental class were 52.22 and in the control class were 50.29. As for the prerequisite test regarding the initial ability data of students, a value of > 0.05 was obtained so that the data was homogeneous and normally distributed. As for the hypothesis test of the initial ability of students, it showed a Sig. (2-tailed) value < 0.05, meaning that there was no difference in the average initial ability of students.

Based on the results of the post-test critical thinking skills, the average obtained in the experimental class was 60.83 and in the control class was 50.29. Based on the prerequisite test, it shows that the post-test scores of the experimental and control classes show > 0.05, so it can be said that the data is homogeneous and normally distributed. As for the hypothesis test, it shows the Sig. (2-tailed) < 0.05, meaning that it can be said that there is an

influence of the use of the inquiry social complexity model on students' critical thinking skills.

Furthermore, in the results of the creative thinking skills post-test, the average obtained in the experimental class was 66.39 and in the control class was 53.24. Based on the prerequisite test, it shows that the post-test scores of the experimental and control classes show > 0.05, so it can be said that the data is homogeneous and normally distributed. As for the hypothesis test, it shows a Sig. (2-tailed) value < 0.05, meaning that it can be said that there is an influence of the use of the inquiry social complexity model on students' creative thinking skills.

Salt hydrolysis learning activities are carried out according to the learning stages with the inquiry social complexity model as follows.

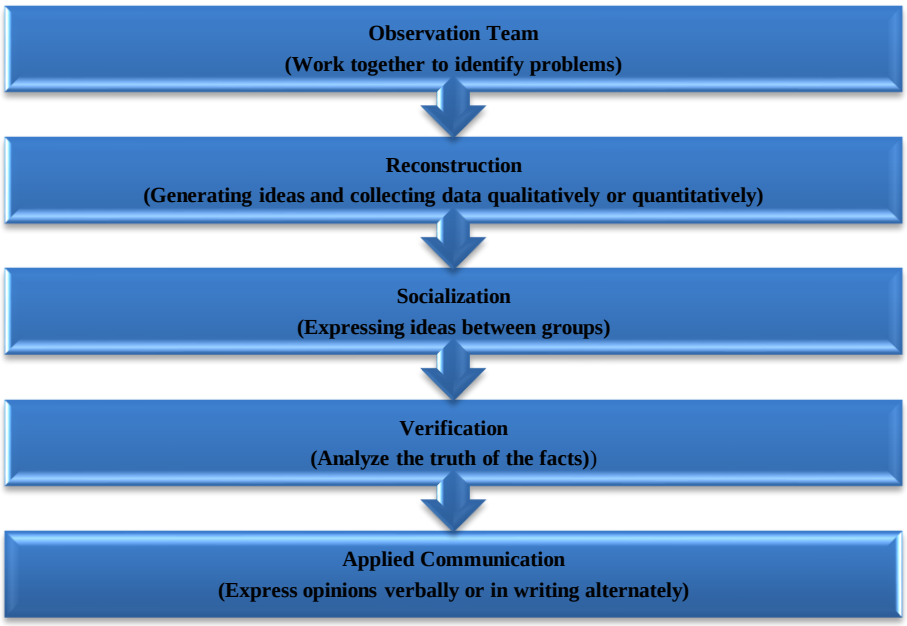

Figure 1. Stages of the Social Complexity Inquiry Model

Based on the picture, it can be seen that the stages of learning the inquiry social complexity model consist of five stages. The first stage is the observation team, where students work together to identify a problem. At this stage, students can develop various ideas from what is found or provided so that they are sensitive to a problem that causes them to think critically and creatively.

The second stage is reconstruction, where students create ideas and collect data either qualitatively or quantitatively. At this stage, students are also expected to think deeply. The third stage is socialization, where students are able to express ideas between groups. At this stage, students get additional ideas from their group members based on their respective experiences that

they have experienced so that they get information and digest and re-analyze it.

The fourth stage is verification, where students analyze the truth of the facts from what they find so that they can re-evaluate the data collected and relate it to what they are talking about. The fifth stage is applied communication, where students are able to express their opinions either verbally or in writing in turns to be agreed upon by the teacher. This stage can express ideas or opinions so that innovation is formed (Alfiantho & Sinaga, 2023).

The use of the inquiry social complexity learning model can encourage students to exchange opinions with other students (Sajidan et al., 2020). This study is also in line with research according to Perdana et al., (2020) that the use of the inquiry social complexity learning model can improve students' critical and creative thinking skills in chemistry learning materials, especially salt hydrolysis materials.

CONCLUSION

The conclusion of this study is that the use of the inquiry social complexity model has an effect on students' critical and creative thinking skills in the salt hydrolysis material in class XI IA at SMAN 4 Banjarbaru. This is based on the results of the analysis with a Sig. value (2-tailed) which shows a value of < 0.05. The suggestion from this research is that the use of the inquiry social complexity model can increase insight and be used as reference material to improve students' thinking skills in learning activities.

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