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Group Investigation Learning in Developing 21st Century Skills of Elementary School Students

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Abstract

The 21st century is a century where all information and technology is growing rapidly as if without a barrier that requires humans to have the skills to be able to compete in this century. This skill does not just appear in humans but through a process of habituation. This process can be obtained through educational institutions. The right age to develop 21st-century skills is to start when children enter elementary school age. Educational institutions through the teaching process by teachers will help students to develop 21st-century skills such as critical thinking skills, problem-solving skills, collaboration skills, communication skills, and creativity. These skills can be developed through an innovative, creative, and involving learning process. students are actively involved in the learning process. One of the models or methods that can be used by teachers is group investigation learning. Group investigation is cooperative learning that puts forward cooperation in teams to carry out investigations in completing the assigned tasks. This study collects previous studies on the application of group investigation learning in developing 21st-century skills in elementary school students. This study uses search data from Google Scholar through an explanation of qualitative metasummary forms. After carrying out the selection, 10 journal articles were selected to be studied in this study. The results of the analysis show that group investigation learning has a significant influence in developing critical thinking skills, problem-solving skills, cooperative skills, communication skills, and students' creativity.

Keywords: *Group Investigation; 21st Century Skills; Elementary School Students*

Introduction

The 21st century is a century where technology and information are available and can be used massively. The 21st century is also referred to as the third-millennium era as a continuation of the era of globalization known as the transformation of industrial society into a knowledge society which is marked by advances in science and technology so that it requires every human being to have the ability to think at a high level (Nata, 2018; Sari & Trisnawati, 2007). 2019; Nugraha, 2019; Makhrus et al., 2019). In various aspects, countries will compete to work very quickly in giving birth to various innovations in human life which in the end these countries will dominate human civilization (Rachmadtullah et al.,

2020). Thus, countries will compete in winning the global competition which will cause a very fierce technology and information battle (Asrifah et al., 2020; Iasha et al., 2020).

This phenomenon has become a reality that we must face now which makes Indonesia must be able to produce superior human resources and have global competitiveness in facing this era. Efficiency and relevance in education are key for the state in preparing and producing citizens who have superior competitiveness (Nugraha, 2019). Education has an important role in the implementation of these demands because education is still believed to be a formal process in preparing the progress of the nation in the present and the future (Septiani et al., 2019). The learning process carried out in a classroom environment must be able to accommodate students to be able to develop the skills or abilities needed to face the 21st century, one of which is the development of 21st-century skills (Setiawan et al., 2021). In its implementation, especially in elementary school age, the development of these skills must target students' soft skills. which focuses more on the formation of attitudes, behavior, and personality than just formal or technical knowledge (Mahasneh & Thabet, 2015). Skills-based on soft skills can compete in the face of this fast-paced development era (Rachamatika et al., 2021; Sari et al., 2020).

According to BSNP (2010), some of the skills listed in the 21st Century Partnership Learning Framework that must be possessed by the community 21 are: 1) critical thinking and problem-solving skills; 2) collaboration and communication skills (collaboration and communication skills); 3) creating and updating skills (creativity and innovation skills); 4) information and media literacy skills; 5) information and communication technology literacy; and 6) learning skills based on the surrounding environment (contextual learning skills). These skills must be presented in the educational process through teaching in classes so that students can be helped in dealing with changes that occur in a global society without barriers, facing challenges and complex life full of uncertainty, and being able to become superior human resources in the world of work (Fazriyah, 2016; Redhana, 2019). These skills are not born naturally in the human body, the process is obtained from the process of learning, practice, and experience, one of which is through the teaching process informal education (Acesta et al., 2021; Sudrajat et al., 2021).

The importance of developing 21st-century skills has been widely recognized by many parties, including educational practitioners and observers of researchers. The challenge for the world of education is how to prepare students to have 21st-century skills to go to an era without boundaries. In its journey, education began to experience a paradigm shift where learning had to be changed which was originally horizontal into a circle of knowledge that combines knowledge, application, and contributions that take place continuously (Hartini, 2017). Through the 2013 curriculum, the government seeks to develop 21st-century skills through the learning process in the classroom (Juniarso et al., 2020; Sudrajat et al., 2018). The young generation of Indonesia is expected to be able to become independent individuals and be able to compete in this global era.

21st-century skills need to be developed from an early age. The age that is quite potent in transforming 21st-century skills in formal education is elementary school-age (Nugraha, 2019). In its implementation, the process of developing 21st-century skills is taught through a variety of interesting and contextual learning activities. Elementary school students enter a period of development so that they will be interested in learning things related to everyday life (Dono et al., 2010; Meyer, 2016). The benefits of teaching 21st-century skills for students are so that students have skills in communicating, collaborate, dare to express opinions, and can solve problems they face well (Widodo & Wardani, 2020). One strategy that can be an alternative in classroom learning to improve 21st-century skills is the application of group investigation learning (HARSANTI, 2018; Pramujiono et al., 2020).

Learning group investigation is student-centered cooperative learning. Group investigation learning provides opportunities for students to carry out group investigation activities which then write

down the results of the investigation into a simple report form and communicate it to other groups (Adiansyah et al., 2017; Joyce et al., 2009; Sangadji, 2016). According to Slavin (2016), several steps for implementing group investigation learning are as follows: 1) identifying topics and organizing students into small groups; 2) make plans related to the tasks to be studied; 3) conduct of investigations; 4) final report preparation; 5) presenting reports, and 6) conduct an evaluation. Through the steps in group investigation learning, it can help students improve 21st-century skills. The successful use of group investigation learning is shown by the results of Supriyanto & Mawardi's research (2020) which states that the application of group investigation learning can improve students' critical thinking skills in cycle 1 by 12.50% and in the second cycle of 43.75% with very high criteria. Research conducted by Kisworo, Wasitohadi, & Rahayu (2019) also states that the application of group investigation learning has a higher impact on collaboration results than PBL learning with the average acquisition of group investigation learning of 100.65 while PBL learning of 93.81 (Setiawan et al., 2020).

Based on the description above, this scientific study focuses on the use of group investigation learning in developing 21st-century skills that have been mentioned in the previous presentation and aim to collect both quantitative and qualitative scientific findings related to the research problems to be discussed. The general description of this study is to answer: "How is the use of group investigation learning in developing 21st-century skills in elementary school students?"

Method

Data Sources and Search Strategy

The limitation of the term literature study in the 21st-century skill category is critical thinking, problem-solving, collaboration, communication, and creativity. From what has been mentioned, it is part of 21st-century skills which are expected to increase with the application of group investigation learning. Search data in research using Google Scholar. The study selection process in the follow-up analysis consisted of a screening process, reading, and identification of abstracts from the scientific findings sought. The keywords in the search in this research are 1) group investigation and critical thinking; 2) group investigation and problem-solving; 3) group investigation and the ability to cooperate; 4) group investigation and communication skills; and 5) group investigation and creativity. From the first search process: 1) the researcher found 75 journal articles before further selection; 2) from the second search, the researcher found 28 journal articles; 3) from the third search result, the researcher found 6 journal articles; 4) from the fourth search result, the researcher found 8 journal articles, and 5) from the fifth search result, the researcher found 11 journal articles. The search for research data uses a period range from 2017-2021.

Study Selection and Elimination Criteria

Based on the data search that has been done, the number of selected journal articles is 10 studies. The selection of journal articles was carried out based on several criteria outside the context of the search, such as research subjects not of primary school age, studies related to other unrelated variables, as well as studies published in languages other than Indonesian and English.

Study Selection

The data selection process consists of 1) identification of research title, researcher name, and abstract; 2) screening on the objectives, methods, and research results; 3) the process of assessing whether journal articles can be continued for analysis or eliminated; and 4) the process of determining which journal articles will be analyzed and eliminated. From a total of 128 journal articles collected, after going

through a process of consideration, it is determined that 10 journal articles will be used in this study. The selection phase of journal articles will be discussed in the results and discussion section of this study.

Data Synthesis

The systematic review stage in this research is guided by the form of a qualitative metasummary that brings together the results of an in-depth analysis of both quantitative and qualitative journal articles (Sandelowski in Utami & Kurniawati, 2019). The stages of analysis in this study refer to the stages proposed by Tromp, Zwaan, & Vathorst (2016), as follows: 1) the extraction stage of journal articles related to the problems to be studied, namely group investigation learning; 2) the stage of making a list of selected journal articles under the established criteria; and 3) the stage of grouping by category and its presentation is integrated.

Result and Discussion

Result

Based on the research data search that has been carried out, the use of group investigation learning affects improving the 21st-century skills of elementary school students. The following is an explanation of the data search process in this study.

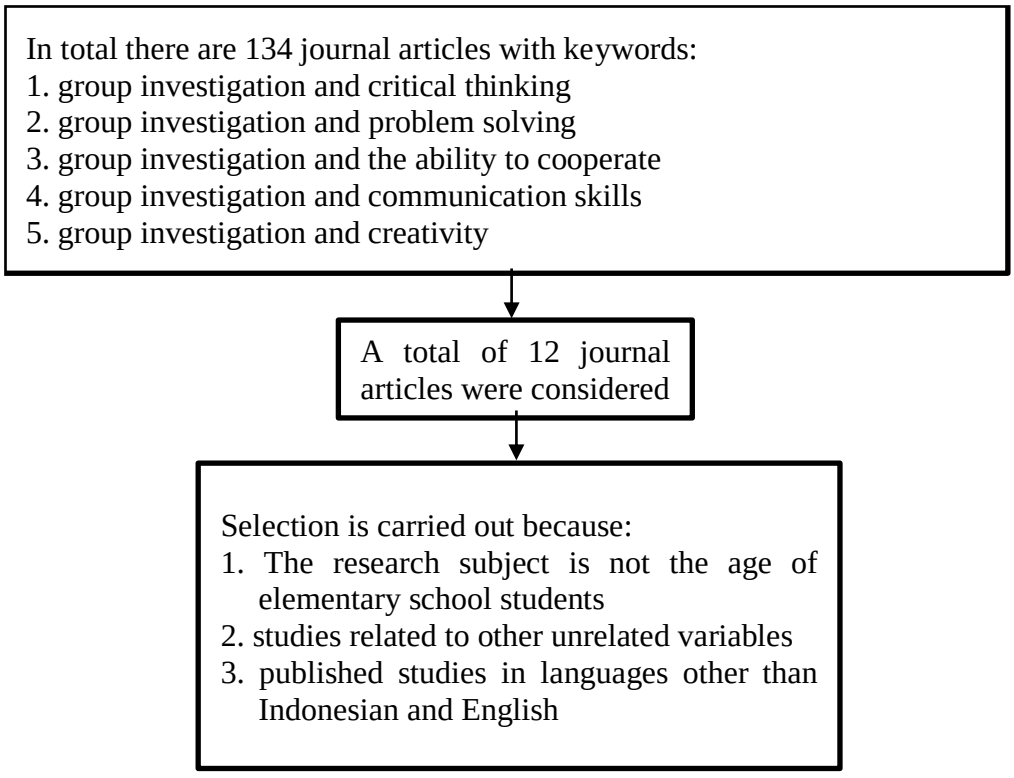

Fig. 1 Flowchart of Identification, Screening, and Elimination of Journal Articles

Study Selection. The data from the selected journal articles amounted to 10 with various types of research. Support from several other literacies has changed the criteria for selecting journal articles, such as the use of other terms other than group investigation, such as group investigation and group

investigation. Through the process of identification, screening, and elimination, the data from the journal articles collected are summarized in the Table 1.

Table 1 Journal article data from identification, screening, and elimination results

No.	Researcher	Types of research	Characteristics of Participants	
			Research subject	Subject matter
1.	Susanti, Sutisnawati, & Nurasiah (2019)	PTK	Grade 5	Natural Sciences
2.	Putri, Murda, & Sudana (2018)	Quasi Experiment	Grade 5	Natural Sciences
3.	Zuhaida (2018)	Deskriptif	Grade 5	Natural Sciences A
4.	Ayu & Hamdani (2020)	Quasi Experiment	Grade 4	Mathematics
5.	Kisworo, Wasitohadi, & Rahayu (2019)	Quasi Experiment	Grade 5	Natural Sciences
6.	Ningrum, Slameto, & Widyanti (2018)	PTK	Grade 5	Natural Sciences
7.	Rahmawati (2018)	Quasi Experiment	Grade 5	Mathematics
8.	Setyowati (2018)	PTK	Grade 5	Social Sciences
9.	Kaffah, Panjaitan, & Julia (2017)	Quasi Experiment	Grade 5	Natural Sciences
10.	Yuniharto & Susanti (2019)	PTK	Grade 5	Natural Sciences

Qualitative Meta summary of the Use of Group Investigation Learning. Of the 10 journal articles that have been collected, there are various types of research methods used, such as CAR, descriptive, and quasi-experimental. The journal articles collected conducted the most research on 5th-grade elementary school students and learning mathematics, science, and social studies. From the results of the articles that have been analyzed, the use of group investigation learning can improve 21st-century skills in students such as critical thinking skills (Susanti et al., 2019; Putri et al., 2018), problem-solving skills (Zuhaida, 2018; Ayu & Hamdani, 2020), collaboration skills (Kisworo et al., 2019; Ningrum et al., 2018), communication skills (Rahmawati, 2018; Setyowati, 2018), and creativity (Kaffah et al., 2017; Yuniharto & Susanti, 2019). A more complete explanation will be discussed in the discussion section below.

Discussion

Critical thinking skills. Based on the results of the journal articles that have been collected, group investigation learning can improve 21st-century skills, namely critical thinking skills. According to Susanti, Sutisnawati, & Nurasiah (2019) group, investigation learning can improve critical thinking skills because, in its implementation, group investigation learning requires students to look for problems in learning material, manage, find their concepts in solving problems, and practice in communicating with style. his language. Group investigation learning makes the material presented meaningful because students will learn based on direct experience. In this learning, students' communication with friends and teachers, cooperation that occurs within the scope of groups, and tolerance will be trained so that students are accustomed to doing this in their daily lives so that it will make it easier for students to solve the problems they receive. Group investigation learning also upholds democratic values that give students the freedom to be active during the learning process.

Putri, Murda, & Sudana's research (2018) also states that group investigation learning is one of the cooperative learning methods capable of involving students to be directly active in the learning process. In this study, heterogeneity is used in groups so that students in groups can share and exchange information with group members to increase students' motivation to learn and be able to work together in groups.

Problem-solving skills. Based on the results of the journal articles that have been collected, the application of group investigation learning can improve 21st-century skills, namely problem-solving

skills. In Zuhaida's research (2018), it is stated that group investigation learning is one part of cooperative learning which has complexity in its application. Group investigation involves students actively planning the learning topics to be studied and how to process the investigation. In addition, this learning also respects the heterogeneity of each group to complete the assigned tasks that are under the topics they choose and are interested in, conduct investigations on subtopics, and prepare reports to be presented to other groups.

The same thing was also stated by Ayu & Hamdani (2020) who stated that in group investigation learning, students are required to try to solve the problems given to stimulate students to be active during the learning process. This learning also emphasizes the attitude of being able to work together in teams to solve problems and create fun learning and provide opportunities for students to participate in their groups to solve problems and be studied together with their groups.

Cooperation ability. From the results of the journal articles that have been collected, the application of group investigation learning can improve 21st-century skills, namely the ability to cooperate. In the research of Kisworo, Wasitohadi, & Rahayu (2019), it is stated that group investigation learning is better in improving students' cooperative abilities compared to problem-based learning. Group investigation learning provides the widest opportunity for students to be actively involved directly during the learning process from planning to how to learn topics through investigations. This learning emphasizes group cooperation in solving problems and finding solutions to produce a conclusion which will be presented by each group in front of the other groups.

Research conducted by Ningrum, Slameto, & Widyanti (2018) also mentions that the application of group investigation learning can improve students' cooperative abilities. In group investigation learning, students are required to work together in groups and help each other in solving problems to reach an agreement, respecting differences of opinion, and learning to solve everything on time.

Communication skills. From the journal articles that have been collected, the application of group investigation learning influences 21st-century skills, namely the ability to communicate. Rahmawati's research (2018) states that the application of group investigation learning is better in improving students' mathematical communication skills compared to conventional learning. In group investigation learning, students are required to study with heterogeneous groups so that students can work together and exchange ideas. Learning begins with identifying topics, conducting investigations, preparing simple reports, and presenting reports that have been made to make students enthusiastic in participating in the learning process. In addition, students will also learn how to think logically and develop better mathematical communication, as well as train students in constructing their mathematical knowledge.

Research also conducted by Setyowati (2018) states that group investigation learning is a complex and oriented cooperative learning approach to personal development to relate to others, play an active role, and work productively in groups. In this learning, the teacher acts as a facilitator in guiding and providing suggestions or constructive criticism. This learning can be used in developing students' creativity because this learning makes students learn more through the process of formation and creation, cooperation, and responsibility.

Creativity. From the results of the journal articles that have been collected, the application of group investigation learning can improve 21st-century skills, namely creativity. Research conducted by Kaffah, Panjaitan, & Julia (2017) states that group investigation learning is learning that prioritizes investigation by recording, taking notes, conducting experiments to obtain answers to the problems to be solved. Group investigation learning accustoms students to practice listening and accepting different opinions from other students, communicating, working together, and improving thinking skills in solving

a problem. Students are required to be more active during the learning process and be directly involved in the learning process, while the teacher acts as a facilitator for students in obtaining material.

Research conducted by Yuniharto & Susanti (2019) also states that the application of group investigation learning can increase students' creativity because group investigation learning is student-centered learning that makes students dominate during the learning process so that students will feel challenged in undergoing all processes in learning. This will have an impact on increasing student interest in learning. Increased student interest in learning will also increase student creativity in the process and create products to be achieved. Creativity in this learning also arises because of the uniqueness of all individuals in the process of interaction that occurs within the group. In addition, in group investigation learning also frees students to be able to work with their groups, encouraging students to take the initiative, be creative, and be active.

From the explanation above, qualitative metasummary studies provide an overview of the application of group investigation learning in improving 21st century skills based on the results of previous studies. Research shows that group investigation learning has a significant effect on improving 21st century skills. However, in practice, the teacher's role as a facilitator who always guides and directs must remain so that the applied learning can run smoothly.

Conclusion

This study explains the application of group investigation learning in improving 21st-century skills, such as critical thinking skills, problem-solving skills, collaboration skills, communication skills, and creativity. Of all the research collected, all of them have a positive influence on improving 21st-century skills. This research is useful for teachers in choosing appropriate learning models or methods to be applied to elementary school-aged children in developing 21st-century skills. references in the selection of innovative, creative, and student-centered learning. This study aims to provide an overview of how the application of group investigation learning in improving students' 21st-century skills. This research is certainly not far from a weakness, namely that the journal articles collected are only limited to elementary school-age students and are still within the scope of research in Indonesia, not including research abroad so that journal articles are collected less. Future research may include studies conducted at all ages as well as some topics related to 21st-century skills that have not been discussed in this study. This can add to literature studies that are beneficial to society, especially for the world of education with all its problems.

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