



Optimization of Science Learning Outcomes of Elementary School Students through the Powtoon Audio Visual Assisted Group Investigation Learning Model (A Literature Study)

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Abstract. This study focuses on optimizing students' learning outcomes, particularly in the subject of Natural Sciences (IPA) at the Elementary School (SD) level. Quality education is considered crucial for advancing a nation. However, the integration of technology in education and the evolution of the era have also influenced the progression of education. Suboptimal student learning outcomes can be attributed to the lack of diverse teaching models and limited use of media, resulting in decreased student engagement. To address this issue, the research employs the Group Investigation learning model with the assistance of the Audio Visual Powtoon (ADIVIPO) media. Powtoon is a web-based application that enables the creation of presentations with added animations, images, music, and sound. The aim of this study is to assess the impact of employing the Group Investigation model with the assistance of the Audio Visual Powtoon (ADIVIPO) media on optimizing students' learning outcomes in IPA at the Elementary School level. The research methodology involves a literature study or literature review, analyzing various studies related to the topic of discussion, which is the Group Investigation teaching model aided by audio visual Powtoon. The findings of this research indicate that the use of the Group Investigation teaching model aided by the Audio Visual Powtoon can enhance the learning outcomes of IPA for Elementary School students. The Group Investigation (GI) teaching model offers the advantage of improving students' higher-order thinking skills and complex inquiry abilities, consequently positively influencing students' interpersonal skills.

Keywords: Group Investigation Learning Model, Optimization, Powtoon

1. INTRODUCTION

Education is one of the important factors to advance a bang-sa. Quality and quality education can prepare the younger generation to face future challenges and needs. The use of technology in learning has become inseparable. Along with the times, education must also keep up with the flow of increasingly advanced technological developments.

The success of education is a goal desired by all parties involved in the world of education. Such success can be measured by a variety of interrelated indicators, including improved student learning outcomes. This is because student learning outcomes are a benchmark for the success of the learning process carried out at school. Student learning outcomes include understanding and understanding of the knowledge, skills, and competencies learned in school. When student learning outcomes increase, it can be said that the learning process carried out has succeeded in producing intelligent and competent individuals in their fields[1]

Student learning outcomes are the abilities that children have after going through the learning process [2]. Learning itself is a process in which a person seeks to achieve relatively permanent behavioral change. Learning or instructional activities, namely the teacher sets learning goals that must be achieved by students. Students who succeed while learning are those who are able to achieve learning or instructional goals that have been set by the teacher. Student learning outcomes can be measured by the extent to which learning or instructional objectives have been achieved by students.

Regulation of the Minister of National Education of the Republic of Indonesia Number 22 of 2006 which regulates the content standards of the Basic Unit explains that the curriculum of elementary schools (SD) must cover eight subjects, local content, and development. One of the subjects given in elementary school is Natural Sciences (Science). Science is a way to find out about nature systematically to master concepts, principles, discovery processes and have a scientific nature. Science education is directed at gaining a deeper understanding of the environment. Science itself experiences various errors in its application, especially in the results and learning process.

The use of various learning models in educational contexts can provide different learning experiences for students. This is important because each student has a different learning style, and with the use of various learning models, teachers can provide a variety of ways of presenting material and learning activities that are interesting and in accordance with the needs of students. The use of different learning models can also increase students' interest in learning and make them more active in the learning process.

An alternative model that can be used in science learning is the Group Investigation model with the help of Audio Visual Powtoon (ADIVIPO) media. Pow-toon itself is a web-based application, which serves to create presentations with additional animations that can be enhanced by the use of manipulated images, coupled with music, and sound. This type of media usually attracts the attention of elementary school age students.

2. METHOD

This study uses a literature review by analyzing several studies related to the topic of discussion, namely the Powtoon Audio Visual Assisted Group Investigation learning model, and science learning outcomes. Literature studies are theoretical analyzes and related sources related to the values, culture, and rules that develop in the social context being investigated [3]. Reference sources that are the subject of discussion come from books, journals and others. This is intended to review the application of the Group Investigation learning model assisted by Audio Visual Powtoon as a means of optimizing elementary school students' science learning outcomes.

3. RESULTS AND DISCUSSION

A. Group Investigation Learning Model

The Group Investigation Learning Model is a fairly complex model, where students are emphasized to highlight higher-order thinking skills. This model is also a group-based learning model, where in its implementation students are given the opportunity to discuss and think critically to solve a problem. That way a sense of trust, respect, and mutual respect will grow, which will foster an impression and a harmonious atmosphere in the classroom. [4]. By implementing the group Investigation (GI) learning model, it

is hoped that it can stimulate students' critical thinking skills, especially in terms of problem solving, and can also foster good behavior in socializing.

Apart from that, the purpose of applying this learning model is also to develop students' sense of responsibility when learning is in progress. Designing learning that involves interaction between students, this model increases their awareness of responsibility for tasks and learning outcomes. Group investigation is a form of cooperative learning model that offers students the opportunity to engage in critical thinking through a variety of activities based on the outcomes of the investigation. The group investigation learning model emphasizes the importance of students to collaborate and actively contribute from each group member in achieving learning objectives. In addition, through group investigation learning, students are invited to respect each other's roles and contributions in achieving group success [5]. With collective responsibility, students become more responsible in managing time, overcoming challenges, and achieving optimal learning outcomes.

The learning contained in the group investigation model makes the material given to students more meaningful because in the process students will learn based on direct experience [6]. Through the direct experience gained, students will learn to solve problems concretely and formulate solutions to problems to be taken. Learning that is synonymous with student-centered allows students to think more to improve students' thinking skills.

The concept of Group Investigation (GI) has been adopted by various fields of knowledge both humanities and science. However, cooperative learning, the Group Investigation (GI) model emphasizes cooperation between students who have diversity [7]. The attitude of cooperation implemented in the Group Investigation (GI) learning model can improve students' social skills, foster familiarity and concern between friends and solve problems together.

The Group Investigation (GI) type cooperative learning model is one solution for choosing the right learning model for learning to have a good impact on student learning outcomes [8]. This type of learning model makes students learn to investigate a problem regarding the topic being studied. In addition, the Group Investigation (GI) learning model focuses on students to be actively involved in learning so as to improve student understanding and learning outcomes.

The three opinions above can be concluded that the Group Investigation (GI) learning model is a learning model that integrates democratic principles of social processes with the use of intellectual or scientific strategies to help students find new knowledge. The Group Investigation (GI) learning model also emphasizes cooperation in the learning process between students who have diversity. This is an effort to cultivate the social spirit of students to understand each other, especially to solve problems.

The Group Investigation (GI) model has the advantage of improving higher-order students' thinking skills as well as complex inquiry skills. The group investigation (GI) learning model focuses on students in learning activities so that students can absorb their knowledge well. Then, this model can improve students' social skills to work together with other students, so as to improve the development of soft skills (critical, communicative, creative) and group process skills or group management. These advantages are needed for students in the success of learning activities so that the group investigation learning model can be used as a choice of model used by teachers during teaching and learning activities.

The group investigation learning model also has the advantage of increasing student interest in learning through active participation in learning and improved learning outcomes [9]. It can be understood that students are required to be active when learning

accompanied by the teacher as a facilitator in the process. Then, the activity of these students has a good impact on the pattern of student interest in learning.

The learning process in the Group Investigation model involves students almost entirely in the learning process, starting from planning to learning practice [10]. Based on this description, we can know that in the group investigation learning model, students are actively involved when the teacher plans learning so that the benefits or uses of learning are directly felt by students. The practice of the group investigation learning model can be implemented by students both learning and outside learning activities, especially learning to solve problems.

The group investigation model emphasizes students to think positively about collaborative project activities [11]. Activities that involve cooperation between students will foster students' social attitudes, especially at school and outside school. So that students' ability to understand learning can increase.

Group Investigation learning model steps. In the first stage, the teacher will divide students into heterogeneous groups consisting of 2-6 students per each group, then the teacher asks each group representative to come forward and take the topic of the material to be discussed. Each group will get a different topic from each other [12]. In this stage, students learn to take responsibility and work together in groups through discussion tasks given by the teacher.

In the second stage, students discuss what they will learn together and how to learn it and also understand the topic with their group mates. Students and teachers devise various specific learning procedures for tasks and general objectives that align with the selected topics and subtopics [13]. Students at this stage will learn how to learn and understand learning by discussing with groups.

The third stage, students will collect information from books and the internet then analyze the data that has been obtained and make temporary conclusions. At this stage all group members are expected to play a role with each other and discuss with each other. The learners exchange, discuss, clarify, and synthesize all ideas [14]. It is hoped that at this stage students can improve their social skills with their friends regarding the analysis of the collection of information sought.

The fourth stage, preparing the report of each group determines the answers and messages to be conveyed during the presentation process. Each student coordinates with each other in technical matters of submission of the results of the investigation obtained [15]. Students and their group mates will work together on the results of the investigations that have been carried out.

In the fifth stage, each group took turns displaying the results of the investigations they obtained. Each group must be active and interactive because each group has different topics and topics [12]. This stage of presentation is that each group presents what has been done and found about the problem being investigated.

The last stage, evaluation is the final stage in the Group Investigation learning model, meaning that there is a final conclusion obtained. This stage is the role of teachers and students collaborating with each other to evaluate the results of each group [16]. In this last stage, students give each other feedback to the group that is presenting. In order for the application of the Group Investigation model to have a maximum influence on improving learning outcomes, all steps of the Group Investigation model must be carried out systematically and maximally.

B. Media Audio Visual Powtoon

Learning media is a tool as an assistant to convey messages in the learning process. The use of media should be an interesting part of students' learning and everything that can be used to stimulate their thoughts, emotions, attention, and skills or abilities that enable them to carry out learning. This boundary is quite broad and includes a depth of understanding of the sources, environments, people and methods used for learning purposes [17]. Learning media is one of the learning components that plays an important role in teaching and learning activities so it needs to be used.

Media that can be used to improve students' skills are audio-visual learning media. Audio visual is a medium that has elements of sound and elements of images that have better expertise because they include types of auditory and visual media [18]. Audio visual media is suitable for use in students, especially in elementary schools to develop vision and hearing by utilizing the learning process. So that audio-visual media can be said to be quite important given to students.

Learning media has several objectives, including: a) facilitating teaching and learning b) increasing the effectiveness of teaching and learning c) maintaining conformity with learning objectives d) helping students to concentrate e) According to Gagne: elements of learning resources can stimulate student learning f) According to Briggs: Physical vehicles containing instructional material g) According to Schramm: Information carrier technology or instructional messages h) According to Y. Miarso: Anything that can stimulate student learning [17]. Some of these goals can be interpreted that learning media have urgency that affects teaching and learning activities. Teachers can use learning media according to the needs of the material to be given to students to increase student understanding while learning.

As the name suggests, audio-visual media is a combination or combination of audio and visual content [19]. Audio-visual learning media can be used as a student facility when learning when presenting material. However, this cannot invalidate the teacher's duty as a student facilitator, only enough as a supporting medium so that learning activities are more effective and can achieve real learning objectives.

Powtoon is a web-based application, which serves to create presentations with additional animations that can be enhanced by the use of manipulated images, coupled with music, and also sound [20]. Powtoon is an application that utilizes technology in the form of video, audio, images, writing in the form of presentations. The display presented in this powtoon web-shaped application presents interesting features so that teachers can use it as a learning medium.

The animation of the powtoon app consists of a series of images put together to create the illusion of movement. The animation features offered by Powtoon are very interesting [21]. The Powtoon application allows the characters provided to interest students understand the material. Students can receive interesting information through a combination of audio and visual in animated video format.

Powtoon Audio Visual is a combination of the name of the audio visual learning media and the Powtoon web application. Both names will be easier and not too long if mentioned so we provide abbreviations with the name ADIVIPO or Audio Visual Powtoon. ADIVIPO is a combination of two types of digital-based learning media by utilizing technology in the form of images, writing, audio, video, so that it becomes a unified learning video presentation.

ADIVIPO is a media that will be combined in the application of the group investigation learning model for students in an effort to optimize student science learning outcomes through steps in the learning process carried out, especially student-centered learning in increasing understanding and fostering social attitudes between students.

Then, the combination of the group investigation model with ADIVIPO media gives a different learning impression through an animated presentation in the form of interesting learning videos for students.

C. Science Learning Outcomes

Learning success is a very significant factor in student learning activities. The learning process can directly impact children's academic and non-academic achievements in the future. The implementation of learning, in several aspects, can affect the achievement of learning outcomes[21]

Learning outcomes are abilities acquired by individuals after the learning process, which have an impact on behavior changes in terms of knowledge, understanding, attitudes, and skills that make individuals better than before [22]. The abilities acquired by the individual are part of the process he has acquired such as learning, guidance and direction. Learning outcomes are not only in the form of values, but can be in the form of character, skills, changes in attitudes and increased interest and motivation to learn.

Another opinion says that learning outcomes are achievements achieved by students both academic and non-academic and obtained through assignments, exams or even activeness, the ability to answer and all the achievements that have been achieved during learning [23]. The achievements obtained by students are from the learning process given by the teacher. Student abilities as a result of learning in the academic field can be shown in the form of values and learning understanding, while student abilities in non-academic fields can be in the form of attitudes, expertise and achievements from the field of interest or occupation.

Moore in [24] said that there are three domains of learning outcomes, namely the cognitive domain, including knowledge, understanding, application, study, creation, and evaluation. Then the realm is effective, including accepting, answering, and determining value. Psychomotor domain, including fundamental movement, generic movement, ordinative movement, creative movement. These three domains are used as a reference for learning outcomes in students as evidenced by the achievements of each indicator contained in each domain.

The three opinions above can be concluded that learning outcomes are abilities obtained by individuals after following the learning process both academically and non-academically which have an impact on students' values, character, attitudes, and talents. The acquired ability will have an impact on behavior change which includes three domains, namely the cognitive, affective, and psychomotor domains.

D. Optimization of science learning outcomes using the Group Investigation learning model assisted by Audio Visual Powtoon (ADIVIPO) media

The primary objective of implementing the Group Investigation learning model is to enhance students' active engagement in learning and their thinking skills, particularly in problem-solving, while also enabling them to socialize effectively with their discussion peers within the group. This is evidenced in research conducted by [25] in his research it was stated that the application of the group investigation learning model produced an important impact on student achievement. At the end of the assessment, there was an improvement compared to the previous assessment, with 62.5% of students achieving grades A and A-. In addition, there is not a single student who did not successfully complete this course.

In addition to optimizing student learning outcomes, other studies have also proven that the application of group investigation models contributes to improving students' interpersonal skills. The approach used to address social problems in this group

investigation model aims to create a level of complexity in the learning process, with the aim of increasing group participation as well as stimulating deep understanding in learning. One of the highly effective factors in stimulating dynamic social interaction and improving students' interpersonal skills is the application of learning principles that combine inquiry and cooperation methods in the context of the group's investigative model.[26]

From the two opinions above, it can be concluded that the implementation of the group investigation learning model can enhance student engagement in the learning process and enable students to socialize more through discussions with their group peers. Moreover, the application of this model has been proven to enhance students' interpersonal skills by integrating principles of learning that combine inquiry methods and cooperation within the context of the group investigation model.

In addition to the selection of learning models, the learning process will be more optimal if it is supported by learning media that are in accordance with student characteristics. One of the learning media that suits the characteristics of elementary school students is audio-visual media. Coupled with utilizing powtoon software, there are many interesting features that teachers can use to give a more attractive impression on the learning media to be used. As research conducted by [27] it is stated that the use of audiovisual media in the learning process proves that the learning outcomes achieved are better when compared to conventional learning methods.

Based on the description above, it can be concluded that the application of the group investigation learning model assisted by audio visual media powtoon (ADIVIPO) will further optimize student learning outcomes. This can be seen from several previous studies where when this group investigation model is applied in the learning process, students are more actively involved in learning, besides that students' interpersonal skills are also more trained, so that it will affect the meaningfulness of learning which will later optimize the learning outcomes of the students themselves. In addition, with the help of powtoon audio-visual media that is in accordance with the characteristics of elementary school-age children, in the process of application this will allow students to feel more interested in participating in learning and will certainly affect the optimization of learning outcomes.

4. CONCLUSION

Learning success is the main goal in student learning activities. The learning process can directly impact children's academic and non-academic achievements in the future. In the process of optimizing science learning outcomes, the right learning model and media are needed. Learning models and media are one of the determining factors in student learning success. With the Group Investigation learning model assisted by Powtoon Audio Visual media, it is expected to be able to maximize student learning outcomes. This is because the Group Investigation (GI) learning model has the advantage that it can improve the thinking skills of high-level students and complex inquiry skills and will have a good effect on their interpersonal abilities. Students are required to think critically in solving problems found. In addition, with the help of audio-visual media, powtoons are expected to increase learning appeal and help students understand abstract concepts through clear visual images. Effective repetition of material and increased retention of information occur thanks to diverse visual displays. In addition, Powtoon encourages collaboration, discussion, and self-paced learning with flexible accessibility. Thus, the use of the Group Investigation learning model assisted by Powtoon Audio Visual Media can improve science learning outcomes of elementary school students.

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