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# The Profile of Elementary Teachers' Understanding in STEAM (Science, Technology, Engineering, Art, and Mathematics) Approach

*** Esti Dewi Riyanti[1], Fenny Roshayati[2], Veryliana Purnamasari[3]**
[13]*Program Studi Guru Sekolah Dasar, Universitas PGRI Semarang, Semarang, Indonesia*
[2]*Biologi, Fakultas Matematika, Ilmu Pengetahuan Alam dan Teknologi Informasi, Universitas PGRI Semarang, Indoensia*

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**A B S T R A K**

Diperlukannya sebuah pendekatan yang mampu menghadapi tantangan abad 21 dan revolusi industry 4.0 untuk meningkatkan mutu dan kualitas pendidikan, salah satunya dengan mengenalkan guru tentang pendekatan STEAM. Penelitian ini bertujuan untuk menganalisis profil pemahaman guru SD terhadap pendekatan STEAM (Science, Technology, Engineering, Arts, and Mathematics). Jenis penelitian ini adalah deskriptif kualitatif. Subjek penelitian ini adalah pemahaman guru. Pengumpulan data dalam penelitian ini dilakukan dengan metode observasi, wawancara, angket, dan dokumentasi. Instrumen yang digunakan pada penelitian ini yaitu instrumen non-tes berupa angket. Data yang diperoleh dianalisis dengan teknik analisis statistik deskriptif kualitatif dengan cara triangulasi data. Hasil penelitian ini memperoleh bahwa jumlah dari skor jawaban dari setiap responden didapatkan rata-ratanya yaitu 55,58. Berdasarkan hasil analisis data dan pembahasan dapat disimpulkan bahwa kepala sekolah dan guru belum mengetahui mengenai pendekatan STEAM (Science, Technology, Engineering, Arts, and, Mathematics) sebagai pendekatan baru yang dapat digunakan dalam proses pembelajaran yang melibatkan keaktifan siswa. Implikasi dari penelitian ini adalah mengembangkan soft skill peserta didik, yaitu bekerja sama, berfikir kritis, peduli lingkungan, tanggung jawab, keterampilan beradaptasi dan berfikir kreatif.

**A B S T R A C T**

*An approach is needed to face the challenges of the 21st century and the 4.0 industrial revolution to improve the quality and quality of education, one of which is by introducing teachers to the STEAM approach. This study analyses the profile of elementary school teachers' understanding of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach. This type of research is descriptive qualitative. The subject of this research is teacher understanding. Data collection in this study was carried out by observation, interview, questionnaire, and documentation methods. The instrument used in this study was a non-test instrument in the form of a questionnaire. The data obtained were analyzed using qualitative descriptive statistical analysis techniques using data triangulation. This study's results obtained that the number of answers from each respondent's score obtained an average of 55.58. Based on the results of data analysis and discussion, it can be concluded that the principal and teachers do not know about the STEAM (Science, Technology, Engineering, Arts, and, Mathematics) as a new approach that can be used in the learning process that involves student activity. This research aims to develop students' soft skills, cooperation, critical thinking, environmental care, responsibility, adaptation skills, and creative thinking.*

## 1. Introduction

Transformation era 21st-century learning is one of the most rapid technological developments, the challenges of the 21st century are marked by an era of globalization that has made the world seem borderless, triggering international comparisons between schools, curricula, assessment methods, and student achievement (Amran et al., 2019; Fitri et al., 2020; Lubis, 2018). The teacher can see the potential in students through the theory of multiple intelligence. The potential that exists in students includes



Corresponding author
E-mail addresses: : estydewir@gmail.com[1] (Riyanti), fennyroshayanti@upgris.ac,id[2] (Roshayati), Verylianapurnamasari@gmail.com[3] (Purnamasari)

linguistic intelligence, mathematical logic, physics, spatial intelligence, kinesthetic, and intra-personal (Ernawati et al., 2019; Nulhakim & Berlian, 2020; Winarti et al., 2015). This habit is made to prepare students to face the 4.0 revolution era in the future.

The development of the 4.0 industrial revolution has now penetrated the global market. In Indonesia, readiness to face the challenges of education in the era of the industrial revolution 4.0 to improve the capabilities and skills of Indonesian human resources through education by producing reliable operators and analysis in the field of educational management as a driver for the advancement of information technology-based education in Indonesia to answer the challenges of industry 4.0 which continue to advance rapidly. Facing the challenges of industry 4.0 in education cannot be separated from the 2013 curriculum, the problems faced by teachers in implementing the curriculum are the selection of learning approaches that are suitable for students, learning methods that are less effective or not following the material to be delivered, learning media, assessment of learning outcomes complicated and different teaching methods from the previous curriculum (Aldianto et al., 2018; Setiawan et al., 2019; Warjiyono & Hellyana, 2018). Implementing the 2013 curriculum is about determining the appropriate approach to the learning material and student characteristics and the extent to which teachers are prepared to apply the 2013 curriculum.

The curriculum that is applied to face the challenges of the 21st century and the 4.0 industrial revolution is as follows: (a) independent learning; (b) seeking information; (c) use real-world challenges; (d) using unstructured problems; (e) contextualization of knowledge; (f) use higher-order thinking skills; (g) students determine the scope and issues of learning; (h) peer learning; (i) peer evaluations; (j) group work; (k) multidisciplinary learning; (l) process skills assessment (Husain & Kaharu, 2020; Jayadi et al., 2020; Komalasari, 2019). Indonesia faces the biggest challenge facing the industrial revolution 4.0 in creating new technologies and approaches that combine the physical and digital worlds. The industrial revolution is balanced with an education system and increasing self-potential through training to respond to the era of globalization characterized by the 4.0 industrial revolution. New literacy is needed related to collaboration skills, critical, creative, and innovative thinking. It can be done by applying the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach.

The three elementary schools' interviews show that the curriculum used is the 2013 curriculum, that the implementation of the 2013 curriculum has not been fully implemented. They also revealed that they did not know about the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach. The lack of understanding of the STEAM approach is not due to a lack of knowledge. However, there has been no socialization from the education office. This delay in socialization can also hinder education development in Indonesia because it can reduce teachers' knowledge about new education.

(Apriliana et al., 2018; Bahrum et al., 2017; Yakman & Lee, 2012) Stated that STEAM is a development of the STEM approach by adding Art elements in it. STEAM is a learning approach that integrates four fields (Science, Technology, Engineering, and mathematics) which can improve students' higher-order thinking skills to face the development of the 21st century. The STEAM learning movement's growth in basic and tertiary education is an attraction for more educational reasons. The STEAM approach can develop students' soft skills, working together, thinking critically, caring for the environment, responsibility, adapting skills, and creative thinking to face the challenges of the 21st century. (Amran et al., 2019; Jayadi et al., 2020; Ningsih et al., 2019).

STEAM aims to inform an example of a STEAM education framework in the US for Korea and provide descriptive, and analysis of STEAM teaching and learning as an innovative integrated converged education. The integration of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach will generate and develop student soft-skills and train students' ability to think critically by providing solutions to problems that arise (Marudut et al., 2020; Putri et al., 2020; Suriasa, 2018).

STEAM (Science, Technology, Engineering, Arts, and Mathematics) has several benefits. Students can use knowledge and skills from all subjects to support project work. Students are encouraged to recognize and respect their own and others' skills and interests. Students are taught to adapt themselves to the people around them as a team form according to their respective roles (Apriliana et al., 2018; Bahrum et al., 2017; Yakman & Lee, 2012). STEAM (Science, Technology, Engineering, Arts, and Mathematics) also has several advantages and disadvantages. The advantages are that the STEAM approach shows positive results in scientific knowledge, the STEAM approach teaches students to think actively, creatively, and innovatively solve problems, through technology students can create their ideas into the latest technology, the STEAM approach can bridge abstract concepts mathematically into science, technology, inquiry, and Art (Arisantiani et al., 2017; Huppert et al., 2002; Listyono, 2012).

The weakness of STEAM is that education has constraints in terms of sufficient knowledge of each subject, such as the conceptual relationship between the domains of knowledge that has been given, understanding of the scientific process, and difficulties regarding how to integrate effective STEM-based

learning (Apriliana et al., 2018; Bahrum et al., 2017; Yakman & Lee, 2012). On the other hand, many researchers have previously examined the weaknesses of STEM. Education must encourage students not only to learn about skills but also to learn problem-solving.

Some previous studies support STEAM (Science, Technology, Engineering, Arts, and Mathematics, first research by (Bahrum et al., 2017) shows that the STEM approach by adding artistic elements can improve students' thinking skills. Both studies were conducted by (Apriliana et al., 2018) with the findings. Students consider learning using the STEAM approach to be interesting learning. The third is research conducted by (Siswanto, 2018). With the research results, physics learning with the STEAM approach effectively increases student creativity.

The purpose of this study is to analyze the profile of elementary school teachers' understanding of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach in Kecamatan Karangrayung Grobogan, where research will be carried out at SDN 1Ketro, SDN 2 Ketro, and SDN 3 Ketro.

## 2. Method

This research is a qualitative descriptive study. Qualitative research aims to understand human and social problems, not describe the surface part of reality as quantitative research does with its positivists. (Aliyanti et al., 2019; Ardina & Sa'dijah, 2016; Wirawan, 2016).

This research subject is the elementary teacher's understanding of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach. This research was conducted in Kecamatan Karangrayung Grobogan, SDN 1 Ketro, SDN 2 Ketro, and SDN 3 Ketro.

The research data collection technique was taken using observation, interviews, questionnaires, and documentation. Respondents in this study were school principals and teachers in grades 4, 5, 6 in SD with 12 students from elementary schools in Kecamatan Karangrayung Grobogan, SDN 1 Ketro, SDN 2 Ketro, and SDN 3 Ketro.

The instrument used in this study was a non-test instrument in the form of a questionnaire. A questionnaire is a data collection technique using questions in written form for respondents to get answers.

The data obtained were analyzed for the validity of the data using observation and triangulation acumen. This research data analysis technique uses descriptive statistical analysis by collecting data, reducing, presenting, and drawing conclusions.

## 3. Result and Discussion

This research was conducted using descriptive research. The findings from the questionnaire analysis of the profile of elementary school teachers' understanding of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach in Kecamatan Karangrayung Grobogan. The analysis results can be obtained using the method of observation, interviews, questionnaires, and documentation. Interview activities with school principals and teachers as resource persons to obtain the required data, the profile of elementary school teachers' understanding of the STEAM approach (Science, Technology, Engineering, Arts, and Mathematics) in Kecamatan Karangrayung Grobogan.

Based on the results of the first interview conducted at SD N 1 Ketro, it was found that the school had implemented thematic learning in all classes. Thematic learning is learning that is carried out in the 2013 curriculum. The 2013 curriculum is an integration of one lesson content with another. It is in line with the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach, which integrates several aspects.

After conducting interviews with SDN 1 Ketro, it was shown that the principal and teachers were not aware of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach that could be applied in learning. Teachers in the teaching and learning process often provide project assignments to students. The assignment is one of the STEAM approach applications (Science, Technology, Engineering, Arts, and Mathematics). However, in giving this assignment, the teacher does not know that it is included in the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach. The teacher's project assignments to students must also pay attention to the aspects that are in the STEAM approach (Science, Technology, Engineering, Arts, and Mathematics).

Second, the results of interviews conducted with school principals and teachers of SDN 2 Ketro show that the school has implemented peer-to-peer learning following the 2013 curriculum. However, thematic learning has not been implemented in all classes. Thematic learning is only applied to grades 3, 5, and 6. It has not been applied to all sailors because there has not been any local education office

socialization. The teacher's learning has also not kept up with the times. Teachers need an approach that can explore students' abilities and creativity.

Third, the interviews conducted with the principal and teachers of SDN 3 Ketro show that the school has implemented thematic learning to all classes from grades 1 to 6. The teacher applies the thematic learning following the ongoing curriculum, the 2013 curriculum using a monotonous approach. Teachers need an approach that can increase student interest in learning and creativity. Increase student creativity can be done by giving project assignments. The teacher's project assignment is one of the STEAM approach applications (Science, Technology, Engineering, Arts, and Mathematics). However, the teacher does not yet know that the teacher's project assignments are included in the STEAM approach (Science, Technology, Engineering, Arts, and Mathematics). However, one teacher already knows one aspect of the STEAM approach (Science, Technology, Engineering, Arts, and Mathematics), art-based learning.

Giving questionnaires to respondents in this study, the principal and teachers in grades 4, 5, 6 in SD with 12 students from elementary schools in Kecamatan Karangrayung Grobogan such as SDN 1 Ketro, SDN 2 Ketro, and SDN 3 Ketro. The percentage of questionnaire data can be seen in Figure 1.

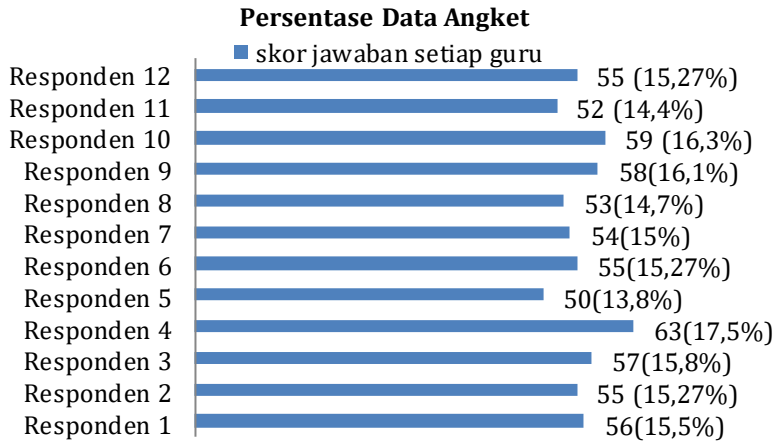


**Figure 1.** Percentage of Questionnaire Data

The questionnaire data in Figure 1 shows the number of answers from each teacher's score. The average is 55.58. The total answer score of each teacher shows that five teachers exceeded the average answer score, 41.6%, and seven teachers who were less than the average, 58.3%, from this average, it can be seen that the greater the number of teachers who do not know the STEAM approach and have difficulty in implementing the STEAM approach than those who know the STEAM approach. It can be seen that teachers are not aware of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach as a new approach that can be applied in learning. The learning activities that teachers carry out have implemented the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach in learning activities. One of the activities is giving students practicum and project assignments. However, in this case, the teacher does not yet know that giving practical assignments or projects to students is included in the STEAM-based approach (Science, Technology, Engineering, Arts, and Mathematics).

Teachers' difficulty in the STEAM approach was that there was no socialization or training from the education office. It makes teachers not aware of the STEAM approach so that teachers have difficulty integrating the STEAM approach in learning. Teachers' difficulty in integrating the STEAM approach is because several aspects of the approach that teachers consider complicated to be applied in learning.

The STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach in the form of project assignments that the teacher has carried out is inseparable from the 2013 Curriculum that has been implemented in each school. Implementing the 2013 Curriculum requires an appropriate approach to assigning project forms, one approach in line with the 2013 curriculum, the STEAM approach. The 2013 curriculum requires teachers to integrate several subjects that require teachers to create creative and innovative learning that can hone students' skills. STEAM (Science, Technology, Engineering, Arts, and Mathematics) is a learning approach that integrates four fields: science, technology, engineering, and mathematics, improving students' higher-order thinking skills to face 21st-century developments. One way to train students' skills by providing learning in the form of projects and practicum.

According to the teacher, giving assignments in the form of projects hones student skills. They teach students to work together in teams if the assignment is included in group assignments. Students are more interested and enthusiastic in accepting the teacher's project assignments in the teacher's opinion. The assignment of this assignment allows the teacher to apply the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach, even though the teacher does not yet know that the name of the assignment is included in the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach. Therefore, teachers must learn more about developing learning tools through social media or independently without relying on socialization from the education office, especially seeking information about learning approaches and media.

Lack of instructional media availability in each school has made teachers not fully utilize available learning media to assist in learning activities. The lack of use of these media can be caused by the teacher not knowing the benefits of learning media as we know that teachers can use learning media to achieve learning goals and as a way to attract students' interest in learning. The existence of learning will increase the interaction between teachers and students by utilizing all the potential students have to achieve their goals by making maximum use of learning media. The use of instructional media is intended to help teachers to create more effective and efficient learning. As we know, learning media has several criteria that confuse teachers in selecting and using these media. Lack of teacher knowledge about the development of learning tools occurs because there has been no training from school principals and teachers' education office.

Now the world community has been in the era of a knowledge-based society. In an era like this, the community or teachers can take advantage of more knowledge and information through internet access, which is now familiar to teachers without training from the education office. The internet access they use can produce much information about the world of education if the teacher desires to get much information about educational developments that can improve the quality of life and improve education quality.

Based on the results of interviews from the three SDN 1 Ketro, SDN 2 Ketro, and SDN 3 Ketro, it can be seen that the three elementary schools have the same problems regarding the approach to learning activities. Teachers should use other approaches in learning so that learning is not monotonous. Teachers can apply one approach is the STEAM approach (Science, Technology, Engineering, Arts, and Mathematics). However, principals and teachers did not know about the STEAM approach (Science, Technology, Engineering, Arts, and Mathematics). The teacher has applied the STEAM (Science, Technology, Engineering, Arts, and Mathematics) learning approach. One example of its application is in the project assignments given to the teacher. From the interview results, one of the teachers from SD N 3 Ketro knows one aspect of the STEAM approach (Science, Technology, Engineering, Arts, and Mathematics), learning Art based.

The difficulty factor experienced by the principal and teachers in the three primary schools in implementing the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach is that there has been no socialization from the education office. These factors make teachers aware of the STEAM approach (Science, Technology, Engineering, Arts, and Mathematics). Even though the teacher's project assignments have implemented STEAM-based learning (Science, Technology, Engineering, Arts, and Mathematics). STEAM (Sciene, Technology, Engineering, Arts, and Mathematics) learning is one lesson that can train students to think critically and develop creativity through project assignments given by the teacher. Following the opinion (Apriliana et al., 2018; Bahrum et al., 2017; Yakman & Lee, 2012), which states that the application of the STEAM approach in learning through project giving provides opportunities for students to be free to create, to explore the ability to be free to create, to explore the ability to produce good and attractive products as possible.

According to the teacher's opinion, the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach is a very difficult approach to apply in learning based on the three primary schools' interviews. However, students are more interested in STEAM-based learning that the teacher applies through project assignments. Thus, it can be said that from the three elementary schools, the teacher felt confused about applying the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach to learning. The teacher does not find it difficult to give assignments in the form of projects that are one of the STEAM approach applications (Science, Technology, Engineering, Arts, and Mathematics).

Based on the questionnaire results, it is known that the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach is one of the new approaches in the world of education. One of the movements was STEAM (Science, Technology, Engineering, and Mathematics) learning which was later developed into STEAM by adding an artistic element. The addition of this artistic element aims to equip students with various skills to face future challenges. The STEAM approach can be applied through giving

project assignments to students that can foster ideas that students have and hone students' skills, through Art which is one aspect of the STEAM approach. In line with (Apriliana et al., 2018; Siswanto, 2018; Yakman & Lee, 2012) findings, students consider learning using the STEAM approach interesting. The integration of STEAM in project-based learning on acid-base material can develop soft skills for students such as cooperation, critical thinking, caring.

The assignment is one way for teachers to apply the STEAM approach. However, the teacher does not yet know that assigning this assignment is one of the STEAM approach applications. Teachers' lack of understanding and difficulties in implementing the STEAM approach occurred due to several factors, including the absence of training or socialization from the education office. Teachers have difficulty integrating the STEAM approach because teachers consider several aspects complicated to apply in learning. Education has constraints in terms of sufficient knowledge of each subject, such as the conceptual relationship between the domains of knowledge that has been given, understanding of the scientific process, and difficulties regarding how to integrate effective STEM-based learning. (Amaliya et al., 2011; Hasanah et al., 2018; Timutiasari et al., 2016).

According to the teacher, students should consider project-based learning to be fun learning because they can create their ideas freely. Learning using the STEAM approach is considered by students to be interesting and fun learning because it adds an element of Art to learning so that students are broader in expressing their ideas through Art. Giving project assignments is considered by the teacher to foster creativity and interest in student learning and teach students to solve problems through the teacher's project assignments. The STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach is essential to make students succeed in learning and develop themselves with realistic and professional attitudes (Apriliana et al., 2018; Bahrum et al., 2017; Yakman & Lee, 2012).

Teachers as educators are required to create learning that can motivate students to think more creatively by giving assignments in the form of projects to students. Project-based learning is an effective educational approach that focuses on creative thinking, problem-solving, and interactions between students and their peers to create and use knowledge (Sukmasari & Rosana, 2017; Vitantri, 2017; Wiyasa, 2018). It can be done by using an approach that supports learning, the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach.

There are examples of applying the STEAM approach in assigning project assignments: making catapults that integrate Science, Technology, Engineering, Arts, and Mathematics. Through this aspect, it can be explained that science uses muscle and frictional forces. Technology, through internet tutorials displayed on LCD. The manufacture requires tools and materials, such as wood, rubber rope, knives, scissors, saws, used motorcycle seat covers. The technique, look for a stick from a wooden branch, then cut it with a saw, clean the chop with a knife. When ready to cut the rubber rope about 20 cm, after the rubber is ready, we prepare the bullet holder, where the gravel is made from the former motor seat cover, the size of the gravel container 5 cm long and 3 cm wide with a pinched tip, after all is ready to stay put together with a small rope made of rubber. Art, color selection, and decoration according to the wishes of students. Mathematics, measuring rubber ropes, and measuring gravel spots. These aspects are included in the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach.

Efforts to improve the quality of education cannot be separated from the role of teachers. Teachers possess the knowledge and skills to create varied and enjoyable learning. (Purwanti et al., 2014; Umi et al., 2019; Wardana, 2018) States that to create varied learning, teachers are required to have eight skills: (a) able to operate and understand computers or laptops; (b) master various software such as Microsoft Office or the like; (c) can operate a video camera, because however bringing recordings or photos into the classroom can help students learn; the presence of advanced camera phones is of great help in this regard; (d) able to edit images or videos (can make simple films for study purposes); (e) can make presentations and have the skills to give attractive presentations; (f) can write simple essays or stories; (g) familiar with social networks and the internet; g. know the world of blogging or at least have your blog even though it's simple. Teachers can improve their abilities by following the development of learning tools in education, the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach.

(Apriliana et al., 2018; Bahrum et al., 2017; Yakman & Lee, 2012) Stated that STEAM is a development of the STEM approach by adding Art (Art) elements. STEAM is a learning approach that integrates four fields (Science, Technology, Engineering, and mathematics) which can improve students' higher-order thinking skills to face the development of the 21st century. The STEAM learning movement's growth in basic and tertiary education is an attraction for more educational reasons. The STEAM approach can develop soft skills of students, working together, thinking critically, caring for the environment, responsibility, adapting skills, and creative thinking to face the challenges of the 21st century (Amran et al., 2019; Jayadi et al., 2020; Ningsih et al., 2019).

STEAM aims to inform an example of a STEAM education framework in the US for Korea and provide descriptive, and analysis of STEAM teaching and learning as an innovative integrated converged education. The integration of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach will generate and develop student soft-skills and train students' ability to think critically by providing solutions to problems that arise (Marudut et al., 2020; Putri et al., 2020; Suriasa, 2018).

STEAM (Science, Technology, Engineering, Arts, and Mathematics) has several benefits. Students can use knowledge and skills from all subjects to support project work. Students are encouraged to recognize and respect their own and others' skills and interests. Students are taught to adapt themselves to the people around them as a team form according to their respective roles (Apriliana et al., 2018; Bahrum et al., 2017; Yakman & Lee, 2012). STEAM (Science, Technology, Engineering, Arts, and Mathematics) also has several advantages and disadvantages. The advantages are that the STEAM approach shows positive results in scientific knowledge, the STEAM approach teaches students to think actively, creatively, and innovatively solve problems, through technology students can create their ideas into the latest technology, the STEAM approach can bridge abstract concepts mathematically into science, technology, inquiry, and Art (Arisantiani et al., 2017; Huppert et al., 2002; Listyono, 2012).

The weakness of STEAM is that education has constraints in terms of sufficient knowledge of each subject, such as the conceptual relationship between the domains of knowledge that has been given, understanding of the scientific process, and difficulties regarding how to integrate effective STEM-based learning (Apriliana et al., 2018; Bahrum et al., 2017; Yakman & Lee, 2012). On the other hand, many researchers have previously examined the weaknesses of STEM. Education must encourage students not only to learn about skills but also to learn problem-solving.

Some previous studies support STEAM (Science, Technology, Engineering, Arts, and Mathematics) research. The first research by (Bahrum et al., 2017) shows that the STEM approach by adding artistic elements can improve students' thinking skills. Both studies were conducted by (Apriliana et al., 2018) with the findings. Students consider learning using the STEAM approach to be interesting learning. The third is research conducted by (Siswanto, 2018). With the research results, physics learning with the STEAM approach effectively increases student creativity.

The implication of research on elementary school teachers' understanding of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach in Kecamatan Karangrayung Grobogan, which will research SDN 1Ketro, SDN 2 Ketro, and SDN 3 Ketro is to develop soft skills of students, work together, think critically, care about the environment, responsibility, adaptation skills and think creatively.

## 4. Conclusion

Based on the results of data analysis and discussion, it can be concluded that the principal and teachers in Kecamatan Karangrayung Grobogan, SDN 1 Ketro, SDN 2 Ketro, and SDN 3 Ketro do not yet know about the STEAM (Science, Technology, Engineering, Arts, and, Mathematics) approach as an approach, which can be used in the learning process that involves student activity. This research aims to develop students' soft skills, cooperation, critical thinking, environmental care, responsibility, adaptation skills, and creative thinking.

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