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The Application of Joyful Learning in Mathematics: A Systematic Study of Its Effectiveness and Impact

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Abstract

Education in human life has a crucial role and is considered a fundamental aspect. There are various subject concepts that must be mastered by students when they are in formal education, one of which is mathematics. Facts in the field show that most students assume that mathematics is known as a complicated and difficult subject that is related to numbers and calculations. The purpose of this writing is to provide study results related to the implementation of joyful learning in mathematics learning. The research method used in this writing is a systematic literature review. The research findings are a systematic study of the effectiveness and impact of the implementation of joyful learning in mathematics learning activities, including increasing interest in learning, increasing student learning outcomes, having a positive impact on attitudes towards mathematics, increasing academic achievement, increasing problem-solving skills and critical thinking skills, stimulating learning motivation, developing social and collaboration skills, and increasing understanding of mathematical concepts. The implementation of joyful learning in learning activities is one approach that aims to

create a learning experience that is not boring, full of enthusiasm, and enjoyable. The concept of joyful learning is to prioritize joy and happiness in the learning activities carried out. Learning using joyful learning focuses on activities that create positive experiences, creativity, active interactions, and through the existence of a pleasant atmosphere in learning activities.

Keywords: joyful learning; mathematics learning; effectiveness; impact

INTRODUCTION

The role of education in human life has a crucial role and is considered a fundamental aspect (Uralovich et. al., 2023). There are various subject concepts that must be mastered by students, one of which is mathematics (Bobyliev & Vihrova, 2021). Facts in the field show that most students assume that mathematics is known as a complicated and difficult subject because it is related to numbers and calculations (Siswanto, 2023).

In learning mathematics, of course, a fun and innovative approach is needed that aims to increase the interest and understanding of students (Ramlah, et. al., 2022). There are various approaches that can be applied in learning mathematics, for example through joyful learning (Ashari, et. al., 2023). The implementation of joyful learning aims to create an interesting, fun learning environment, so that students do not feel bored with learning mathematics (Donasari & Rofiah, 2023). This concept emphasizes the principle that learning should not only focus on the end result, but also on a fun process and motivate students to be actively involved in every learning activity (Hsbollah & Hasan, 2022).

Mathematics is one of the basic learning that is given to students since kindergarten with basic mathematical concepts (Papadakis, et. al., 2021). However, the problems

of mathematics learning found in the field are that students are often less interested, feel anxious, and stressed (Petronzi, et. al., 2021). These problems can arise due to the use of conventional or monotonous teaching methods and the lack of active involvement of students in learning activities (Hafiyya & Hadi, 2023) (Depita, 2024). Joyful learning is a solution offered in learning activities to provide the best, most motivating, and enjoyable learning experience (Hidayat, et. al., 2022). Through the application of joyful learning in learning activities, it is hoped that students will understand the basic concepts of mathematics (Ramadan, et. al., 2023), so that they do not only memorize procedures or mathematical formulas (Rezeki & Lutfi, 2024).

In this context, it is important to assess the extent to which the application of this approach is effective in improving the quality of mathematics learning (Tong, et. al., 2022). Research on the application of Joyful Learning in mathematics learning has begun to develop, but is still limited to a few studies that examine its impact in a broader context. Several studies have shown that this approach can increase students' learning motivation, improve conceptual understanding, and create a more positive classroom atmosphere (Diputera & Zulpan, 2024). However, the biggest challenge in implementing Joyful Learning is how to balance between fun and academic goals, so that students can still achieve the expected mathematical competencies without losing the element of fun in the learning process (Smedsrud, et. al., 2022). Mathematics learning activities through joyful learning can provide an easier understanding of mathematical concepts for students. In addition, the implementation of joyful learning can be assisted by project-based activities, interactive media, visual aids, and so on. This aims to understand and improve the understanding of

several mathematical concepts that are still abstract. Through enjoyable learning activities in joyful learning, it is hoped that it can have an impact on increasing material retention in long-term memory (Datu, 2021).

*Joyful learning*in the implementation process, of course, it faces several challenges that can be reviewed from the strategies and methods that are adjusted to the characteristics of the students (Iksan, et. al., 2022). According to the literature study conducted, it is explained that students certainly have different learning styles between one student and another (Sari, et. al., 2022), so adjustments are needed in teaching methods to ensure that each student can feel the benefits of this approach (Priyambada, 2024). Therefore, this study aims to examine in more depth the effectiveness and impact of the application of Joyful Learning in mathematics learning. This systematic study will provide a clearer picture of the contribution of this approach and its impact on motivation and the acquisition of student learning outcomes (Hui & Mahmud, 2023).

Previous research by Kinesti & Nisa (2021) explained that the implementation of joyful learning in mathematics teaching and learning activities has the potential to create a fun and interesting learning environment for students. A systematic study of the effectiveness of its impact explains that joyful learning can improve academic achievement, student engagement, conceptual understanding, and increase motivation in learning activities. The review conducted explains that the implementation of joyful learning in learning activities is able to improve problem solving and critical thinking skills. In this case, as an educator, you can design a learning activity that presents a problem context that is related to the learning material. The presentation of these problems can trigger students'

cognitive development in solving a problem that has been presented. Through this, the ability to develop problem-solving skills is not only useful in mathematics, but also in everyday life.

Through the above explanation, the author takes the title "Implementation of Joyful Learning in Mathematics Learning: A Systematic Study of Its Effectiveness and Impact". The purpose of this writing is to provide the results of a study related to the application of joyful learning in mathematics learning. The results of this study are expected to be a reference for further research on the application of this concept in various other learning contexts. That way, it is hoped that mathematics learning can be more interesting and can encourage students to participate more actively in the teaching and learning process.

METHODS

This study uses the Preferred Reporting Items for Systemic and Meta-Analysis (PRISMA) guideline. This guideline includes SLR steps, such as explaining clear criteria, sources of information, search strategies for the selection process and analysis of search results. Figure 1 below explains the PRISMA diagram.

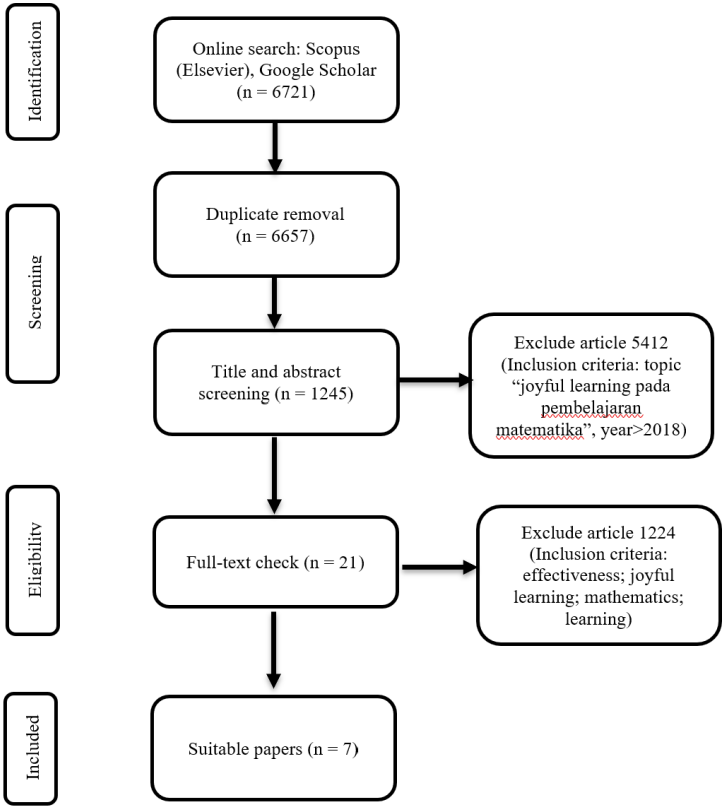

Figure 1. PRISMA Flowchart
Source: Ihsanario & Ridwan (2021)

RESULTS

The results of the data findings are presented in Table 1 with the following details;

Table 1.Analysis Results

No.	Title	Objective	Analysis Results	Reference
1.	"Implementation of Joyful Learning in an Effort to Increase Interest and Learning Outcomes in Mathematics"	Having the aim of providing analytical results related to increasing interest and learning outcomes in mathematics in students through the application of joyful learning in classroom learning activities.	The application of joyful learning in learning activities is one approach that aims to create a learning experience that is not boring, full of enthusiasm, and enjoyable. The concept of joyful learning is to prioritize joy and happiness in the learning activities carried out. Through the application of joyful	Ramadhani, et al., 2024

No.	Title	Objective	Analysis Results	Reference
			learning in mathematics learning, it can have an impact on increasing student interest and learning outcomes. Through fun learning activities, students' interest in learning activities will grow. If students have a high interest in learning activities, then this will certainly have an impact on increasing good learning	

No.	Title	Objective	Analysis Results	Reference
			outcomes. Through this, it is known that in mathematics learning it is appropriate to apply joyful learning.	
2.	"Improving Learning Outcomes and Students' Attitudes Towards Mathematics Through Joyful Learning"	The journal describes the implementation of joyful learning which has a role in improving learning outcomes and student attitudes during mathematics learning activities.	Learning using joyful learning focuses on activities by creating positive experiences, creativity, active interaction, and through a pleasant atmosphere in learning activities. According to literature studies, it is	Istiqomah & Prihatnani, 2019.

No.	Title	Objective	Analysis Results	Reference
			explained that the implementation of joyful learning has an impact on students' attitudes. Through enjoyable mathematics learning activities, students tend to develop positive attitudes in learning activities. Students no longer have a view of mathematics learning that is considered difficult and scary. In fact,	

No.	Title	Objective	Analysis Results	Reference
			students begin to enjoy the learning with pleasure, interest, and enjoyment. Based on this, it can have an influence on increasing their self-confidence and reducing mathematics anxiety. Things that need to be considered in this learning activity are the assertiveness of the teacher and the attention of	

No.	Title	Objective	Analysis Results	Reference
			the teacher to the mathematics learning process in the classroom.	
3.	"Improving the Mathematics Learning Outcomes of Grade VII Junior High School Students in Algebra Material by Using the Joyful Learning Strategy"	The purpose of writing this journal is to provide an explanation regarding the implementation of the joyful learning strategy in improving learning outcomes as viewed from the academic achievements of students, especially in the	In mathematics learning, there are various strategies or approaches used by educators, one of which is using joyful learning. In the context of mathematics, the implementation of joyful learning can be applied using interesting	2018.

No.	Title	Objective	Analysis Results	Reference
		study of mathematics learning.	methods, such as project-based activities, application of technology, hands-on activities, and implementation of educational games. Through these implementation activities, the learning activities carried out will seem fun and relevant. In the joyful learning activities in mathematics subjects, it can have	

No.	Title	Objective	Analysis Results	Reference
			an impact on increasing academic achievement as reviewed from student learning outcomes. Based on the results of the study, it shows that student academic achievement has increased by using joyful learning. When students are involved in learning with a happy feeling, then indirectly	

No.	Title	Objective	Analysis Results	Reference
			students can face challenges in learning mathematics, which can indirectly have an impact on learning achievement as reviewed from the acquisition of student learning outcomes.	
4.	"Implementation of Smart Board Learning Media Based on Joyfull Learning in Mathematics Subjects	The writing of the journal provides analytical results related to the use of learning media developed based on joyful	The implementation of joyful learning in mathematics teaching and learning activities has the potential to create a fun	Kinesti & Nisa, 2024.

No.	Title	Objective	Analysis Results	Reference
	for Grade 2 at MI Darul Ulum 01 Ngembalrejo Kudus"	learning in learning activities in mathematics subjects for grade II of elementary school/Islamic elementary school.	and interesting learning environment for students. A systematic study of the effectiveness of its impact explains that joyful learning can improve academic achievement, student engagement, conceptual understanding, and increase motivation in learning activities. The review conducted explains that the implementation of	

No.	Title	Objective	Analysis Results	Reference
			joyful learning in learning activities is able to improve problem solving and critical thinking skills. In this case, as an educator, you can design a learning activity that presents a problem context that is related to the learning material. The presentation of the problem can trigger students' cognitive developmen	

No.	Title	Objective	Analysis Results	Reference
			t in solving a problem that has been presented. Through this, the ability to develop problem-solving skills is not only useful in mathematics, but also in everyday life.	
5.	"Implementation of Joyful Learning Model to Strive for Student Learning Motivation in Mathematics Learning"	The purpose of writing the journal presented is to provide an explanation regarding increasing student learning motivation in	Systematic studies in assessing the effectiveness of the implementation of joyful learning in learning activities need to be considered	Harefa & Dirganto ro, 2024.

No.	Title	Objective	Analysis Results	Reference
		mathematics subjects through implementing joyful learning activities in teaching and learning activities in the classroom.	in relation to several dimensions, one of which is increasing student learning motivation. The results of the study explain that increasing learning motivation is one of the goals of joyful learning. If students have good motivation to participate in learning activities, then the material received by students can be absorbed	

No.	Title	Objective	Analysis Results	Reference
			well. In addition, students will also be actively involved in learning activities through the implementation of joyful learning. According to the results of the literature conducted, it describes that problem-solving abilities in students will increase when they have good motivation to learn. To stimulate learning	

No.	Title	Objective	Analysis Results	Reference
			motivation in students, educators can use technology-based learning or use educational games, so that learning activities are more interesting and enjoyable.	
6.	"Implementation of Joyfull Learning Approach to Increase Student Engagement"	This writing aims to provide critical analysis results related to the impact of using joyful learning in increasing student involvement in	Student activities in joyful learning-based learning do not only prioritize the delivery of material contextually. The implementation of joyful	Abrori & Lutfiana, 2025.

No.	Title	Objective	Analysis Results	Reference
		mathematics learning activities.	learning can be done by involving discussions or group work. Through these activities, it is indirectly able to improve students' social skills, such as collaboration, teamwork, and communication. Discussion activities carried out through group work activities can help them in the process of solving problems in	

No.	Title	Objective	Analysis Results	Reference
			the field of mathematics. This can have an impact on enriching their learning experience and supporting a deeper understanding. Student involvement in these learning activities can be reviewed through social skills. Students can divide group tasks first and carry out discussion activities together if there is a problem	

No.	Title	Objective	Analysis Results	Reference
			that is not yet understood.	
7.	"The Influence of Contextual Learning Model with Joyful Learning Strategy in Distance Learning on Students' Mathematical Concept Understanding Ability at SMP Negeri 97 Jakarta"	This study provides an understanding related to knowing the ability to understand mathematical concepts by using joyful learning-based learning methods in mathematics learning activities by students.	*Joyful learning*is one of the strategies used by educators to make the delivery of learning concepts easier. The use of joyful learning in mathematics learning is a new innovation compared to traditional mathematics learning activities. Where many students experience difficulties, lack of pleasure,	Datu, 2021

No.	Title	Objective	Analysis Results	Reference
			and involvement in understanding the concepts taught by educators. The results of the study showed that mathematics learning activities through joyful learning were able to provide an easier understanding of mathematical concepts for students. In addition, the implementation of joyful learning	

No.	Title	Objective	Analysis Results	Reference
			can be assisted by project-based activities, interactive media, visual aids, and so on. This aims to understand and improve the understanding of several mathematical concepts that are still abstract. Through enjoyable learning activities in joyful learning, it is hoped that it can have an impact on increasing material	

No.	Title	Objective	Analysis Results	Reference
			retention in long-term memory.	

DISCUSSION (this section may be combined with RESULTS)

The application of joyful learning in learning activities is one approach that aims to create a learning experience that is not boring, full of enthusiasm, and enjoyable. The concept of joyful learning is to prioritize joy and happiness in the learning activities carried out. Through the application of joyful learning in mathematics learning, it can have an impact on increasing student interest and learning outcomes. Through fun learning activities, students' interest in learning activities will grow. If students have a high interest in learning activities, then this will certainly have an impact on increasing good learning outcomes. Through this, it is known that in mathematics learning it is appropriate to apply joyful learning (Ramadhani, et al., 2024).

Facts on the ground show that most students assume that mathematics is known as a complicated and difficult subject that is related to numbers and calculations (Siswanto, 2023). Learning using joyful learning focuses on activities by creating positive experiences, creativity, active interaction, and through a pleasant atmosphere in learning activities. According to literature studies, the implementation of joyful learning is related to having an impact on students' attitudes. Through enjoyable mathematics learning activities, students tend to develop positive attitudes in learning activities. Students no longer

have a view of mathematics learning that is considered difficult and scary. In fact, students begin to enjoy the learning with pleasure, interest, and enjoyment. Based on this, it can have an influence on increasing their self-confidence and reducing mathematics anxiety. Things that need to be considered in this learning activity are the assertiveness of the teacher and the attention of the teacher to the mathematics learning process in the classroom (Istiqomah & Prihatnani, 2019).

The implementation of joyful learning aims to create an interesting and enjoyable learning environment so that students do not get bored with mathematics learning (Donasari & Rofiah, 2023). In mathematics learning, there are various strategies or approaches used by educators, one of which is using joyful learning. In the context of mathematics, the implementation of joyful learning can be applied using interesting methods, such as project-based activities, application of technology, hands-on activities, and implementation of educational games. Through these implementation activities, the learning activities carried out will seem fun and relevant. In joyful learning activities in mathematics, it can have an impact on increasing academic achievement as reviewed from student learning outcomes. Based on the results of the study, it shows that student academic achievement has increased by using joyful learning. When students are involved in learning with a happy feeling, then indirectly students can face challenges in learning mathematics, which can indirectly have an impact on learning achievement as reviewed from the acquisition of student learning outcomes (Sidi & Yunianta, 2018).

Learning math requires a fun and innovative approach to increase the students interest and understanding (Ramlah, et. al., 2022). There are various approaches that

can be applied in learning mathematics, for example through joyful learning (Ashari, et. al., 2023). A systematic study in assessing the effectiveness of the implementation of joyful learning in these learning activities needs to be carried out with attention related to several dimensions, one of which is increasing student learning motivation. The results of the study explain that increasing learning motivation is one of the goals of joyful learning. If students have good motivation to participate in learning activities, then the material received by students can be absorbed well. In addition, students will also be actively involved in learning activities through the implementation of joyful learning. According to the results of the literature conducted, it is explained that problem-solving abilities in students will increase when they have good motivation to learn. To stimulate learning motivation in students, educators can use technology-based learning or use educational games, so that learning activities are more interesting and enjoyable (Harefa & Dirgantoro, 2024).

The implementation of joyful learning certainly faces several challenges that can be reviewed from strategies and methods that are adapted to the characteristics of students (Iksan, et. al., 2022). According to the literature study conducted, it is explained that students certainly have different learning styles between one student and another (Sari, et. al., 2022). The implementation of joyful learning in mathematics teaching and learning activities has the potential to create a fun and interesting learning environment for students. A systematic study of the effectiveness of its impact explains that joyful learning can improve academic achievement, student engagement, conceptual understanding, and increase motivation in learning activities. The review conducted explains that the implementation of joyful learning in learning activities is

able to improve problem solving and critical thinking skills. In this case, as an educator, you can design a learning activity that presents a problem context that is related to the learning material. The presentation of these problems can trigger students' cognitive development in solving a problem that has been presented. Through this, the ability to develop problem-solving skills is not only useful in mathematics, but also in everyday life (Kinesti & Nisa, 2021).

Student activities in joyful learning-based learning do not only prioritize the delivery of material contextually. The implementation of joyful learning can be done by involving discussions or group work. Through these activities, it is indirectly able to improve students' social skills, such as collaboration, teamwork, and communication. Discussion activities carried out through group work activities can help them in the process of solving problems in the field of mathematics. This can have an impact on enriching their learning experience and supporting a deeper understanding. Student involvement in these learning activities can be reviewed through social skills. Students can divide group tasks first and carry out discussion activities together if there is a problem that is not yet understood (Abrori & Lutfiana, 2025).

*Joyful learning*is a solution offered in learning activities to provide the best, motivating, and enjoyable learning experience (Hidayat, et al., 2022). Through the application of joyful learning in learning activities, it is hoped that students will understand the basic concepts of mathematics (Ramadan, et al., 2023), so that they do not only memorize procedures or mathematical formulas (Rezeki & Lutfi, 2024). Joyful learning is one of the strategies used by educators to make it easier to convey learning concepts. The use of joyful learning in mathematics

learning is a new innovation compared to traditional mathematics learning activities. Where many students experience difficulties, lack of enjoyment, and involvement in understanding the concepts taught by educators. The results of the study showed that mathematics learning activities through joyful learning were able to provide an easier understanding of mathematical concepts for students. In addition, the implementation of joyful learning can be assisted by project-based activities, interactive media, visual aids, and so on. This aims to understand and improve the understanding of several mathematical concepts that are still abstract. Through enjoyable learning activities in joyful learning, it is hoped that it can have an impact on increasing material retention in long-term memory (Datu, 2021).

CONCLUSION

The conclusion that taken through the explanation above is a systematic study of the effectiveness and impact of the application of joyful learning in mathematics learning activities, including increasing interest in learning, increasing student learning outcomes, providing a positive impact on attitudes towards mathematics, increasing academic achievement, increasing problem-solving skills and critical thinking skills, stimulating learning motivation, developing social and collaboration skills, and increasing understanding of mathematical concepts.The application of joyful learning in learning activities is one approach that aims to create a learning experience that is not boring, full of enthusiasm, and enjoyable. The concept of joyful learning is to prioritize joy and happiness in the learning activities carried out. Learning using joyful learning focuses on activities by creating positive experiences, creativity, active interaction, and through the presence of a pleasant

atmosphere in learning activities. Suggestion addressed to the next research conducted in the field or based on the case study conducted, so that the results of the research are updated. Because, in writing this journal has limitations based only on library research studies. Suggestions are also conveyed to educators or prospective educators to use the joyful learning approach in learning activities.

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