Development of MV Maker RPG Game Edublitar Based on Local Wisdom to Improve Numeracy Literacy and Pancasila Profile of Elementary School Students

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KEYWORDS	ABSTRACT
Game, Numeracy Literacy, Pancasila, RPG.	Literacy is an essential basic skill for students from an early age. This ability is not only valuable for academics but also in everyday life. In addition, character education based on Pancasila values is critical to forming a young generation with noble character and love for the homeland. These two things must be integrated into the learning media to improve student skills. This research aims to develop an RPG game MV Maker (Edublitar) based on local wisdom that is valid, practical, and effective for elementary school students to improve numeracy literacy and character education of students based on the profile of Pancasila. The research approach used in this study is mixed methods with an embedded experimental model design adopted by Cresswell. The results of the study show that if Edublitar media is declared valid and practically used as a learning medium by experts, it can increase student learning outcomes by 47.18 and effectiveness by 79.70% of grade 4 elementary school students in Blitar Raya, East Java, Indonesia.

INTRODUCTION

Games are very popular with the community. Gaming has become a hobby and has experienced rapid development. It has also been widely implemented in the field of education [1]. The development of games in the field of education has shown significant progress. The integration of technology and innovative pedagogical approaches drives this. Educational games are increasingly recognized as an effective tool to enhance the learning experience across various disciplines. Educational games offer an interactive and engaging platform that can increase motivation, understanding, and retention of academic content [2] [3]. This trend is evident in various fields of science. Well-designed games can make the learning process more exciting and interactive, motivating students to learn [4]. Many games are designed to train students' critical thinking, problem-solving, decision-making, and creativity skills. Physical or movement-based games can help improve students' eye, hand, and fine motor skills. Cooperative games help students learn to collaborate, communicate, and cooperate with peers [5]. Games can be an effective means to introduce students to information and communication technology from an early age [6]. However, this game also hurts students. Playing too many games can lead to addiction, which can interfere with students' learning and social activities. Less time spent playing games can reduce the time spent doing physical activities that are important for children's growth and development. Some games contain content that is not appropriate for children, such as violence, abusive language, and pornography. Playing games too often until late at night can disrupt students' sleep patterns and impact their concentration and learning performance. Focusing too much on the virtual world can reduce students' social interactions with peers and family [7]. Games can be a handy tool in the learning process, but it is necessary to pay attention to their negative impact. Parents and teachers need to guide children in choosing and using suitable games and limiting the time spent playing them [8]. In addition, periodic evaluations are also needed regarding the use of games to teach student learning outcomes and character education [9]. Thus, games can be an effective means to support children's growth and development holistically.

In the digital age, students' dependence on games is relatively high [7], the necessary problem-solving approach is to play games by prioritizing numeracy, literacy, and character education. Literacy is the ability to process information with reasoning, capture social facts, and form

characters logically and systematically. [10]. Meanwhile, the Pancasila profile student-based character education aims to develop students' character through values such as Faith, Piety to God Almighty, noble character, Global Diversity, Mutual Cooperation, Independence, and Critical and Creative Reasoning. Thus, Pancasila's profile of student-based character education aims to shape students into individuals who are not only intellectually intelligent but also have good character and can contribute positively to society. Numeracy literacy and character education are interrelated [11]. Good numeracy skills can help students analyze data, make rational decisions, and solve problems in everyday life. Meanwhile, Pancasila values such as critical reasoning and independence can encourage students to develop their numeracy skills optimally. However, at this time, based on the analysis of learning needs in Blitar Raya, East Java, Indonesia, it is known that elementary school teachers use conventional media to support learning activities. This impacts students' reasoning when processing the information obtained from the teacher. In addition, many students tend to play games. Based on the research results, students who like to play games without direction are known to have low learning motivation [12]. Playing games needs to be directed so that students can be motivated to learn and hone their reasoning well. Ideally, learning at the elementary level emphasizes the aspects of reasoning, problem-solving, and students' penchant for playing games related to everyday life problems [13]. However, this has not been seen based on the evaluation of elementary school supervisors in Blitar Raya, which was conveyed through discussion activities. Learning innovations are needed to improve students' reasoning [14]. One of the innovations is developing learning media for MV maker RPG games based on local wisdom. The application of games to evaluate numeracy literacy is still being carried out to see the effectiveness of learning in mathematics subjects [15]. One of the subjects in elementary school that needs to be studied for numeracy literacy and character approach is the subject of Social Education.

In previous research, RPG games have been developed to introduce character education through daily activities. The results of the study are that this RPG game is effectively used to improve the interactive learning experience [16]. However, the research still needs to be based on local wisdom. Learning based on local wisdom can increase students' sense of nationalism to support character education. In Yogyakarta, education teachers have successfully integrated nationalist and tolerant characters into teaching strategies. This integration is achieved through lectures, Q&A sessions, and assignments, supported by media such as videos and books. This strategy helps students understand and appreciate their national identity while promoting tolerance and understanding among diverse groups [17]. In learning activities, cooperation is needed, and students, teachers, and parents must support each other. The results of the study show that support from all parties to students for 8 weeks can support character education by fostering confidence and involvement in learning [18]. At the elementary level, the competence of Social Science material is emphasized in the aspect of students becoming good citizens. The Social Science material given to students combines seven social sciences. This is in line with one of the targets of the MBKM program, namely realizing students of the Pancasila profile, which includes six aspects consisting of 1) Faith, fear of God Almighty and noble morals; 2) independence; 3) cooperation; 4) Global diversity; 5) Critical reasoning; and 6) Creative. These six aspects can be raised in social studies material with the development of MV games for RPG makers based on numeracy literacy social studies material for grade IV to form the character of Pancasila students in elementary schools throughout Blitar Raya. Numerical literacy was chosen as one of the applications to manage information rea, learning, and problem-solving that students can use.

The novelty of this study is that game games based on local wisdom as a game medium have yet to exist in social studies material learning media so far to form the character of Pancasila students with six aspects that have been determined through the MBKM program. At the basic level, learning social studies material emphasizes being a good citizen. Meanwhile, this study aims to develop an RPG Maker Mv game based on local wisdom to improve numeracy literacy and character education based on the Pancasila profile for 4th-grade elementary school students in Blitar Raya, East Java, Indonesia. This research is based on the evaluation submitted by the elementary school supervisor on developing learning media in elementary schools in interviews and discussions with the Blitar Raya Education Office. There is a need for learning media that is expected to help solve problems so that the material provided can be synchronized with students' daily lives. In addition, in today's digital era, it is necessary to integrate into learning media to strengthen students' character. Game-based learning

needs to be applied to elementary school students, considering that so far, it has yet to be used in social studies materials to shape the character of Pancasila students based on the independent learning curriculum. The goal is to make it easier for students to connect the material delivered by the teacher with daily life by playing and learning through the media of MV games made by RPGs. In the game, many features will be adjusted to the competencies of social studies materials for elementary school grade IV. With this research, students can be motivated to learn so that the profile of Pancasila students can appropriately form their reasoning and character. This can be achieved through numeracy literacy of elementary school grade IV social studies material.

LITERATURE REVIEW
Integration of games in education

The use of games in education is indeed rampant at this time. However, there are still pros and cons to their application. Therefore, it is necessary to periodically evaluate the games that are made and integrated into education [9]. Integrating games in education has gained significant traction as an innovative approach to improving the student learning experience. Whether digital, analogue, or augmented reality-based, games offer opportunities to enhance students' motivation and cognitive and social skills. A growing body of research on game-based learning in education supports this integration. The contribution of games to education includes Cognitive and Social Development, Interactive Learning and Engagement, and Cultural and Environmental Awareness. Integrating digital games in education is becoming more widespread, with teachers incorporating them into their instruction to align with students' interests and curriculum goals [19]. Integrating games in education minimises students' addiction to playing games. Many students are currently addicted to playing games [7]. While integrating games into education presents many benefits, addressing the challenges associated with its implementation is essential. Educators must have the necessary skills and resources to incorporate games into their teaching practices effectively. In addition, ongoing research and development in game-based learning can provide further insights into optimizing educational outcomes through innovative game strategies [19].

RPG Maker Mv game developer Based on local wisdom

They are developing RPG Maker MV games based on local wisdom by integrating cultural, historical, and social values in specific locations. This approach provides a gaming experience and serves as a medium for artistic and educational preservation. This process requires a deep understanding of local wisdom and collaborative efforts with community members to ensure the authenticity of the culture represented. This is also supported by research on games, which can also be used to increase cultural understanding and environmental awareness. Location-based games, for example, have been used in biology education to foster ecological awareness and motivate students to engage with real-world problems [20]. Using local knowledge and resources to promote sustainable growth and cultural preservation is well integrated with learning. This approach can be applied to game development by incorporating local stories, traditions, and wisdom into the game's design and narrative [21]. By focusing on local wisdom, developers can create unique gaming experiences that reflect a region's different characteristics, thus promoting its cultural diversity [22] [23]. One of the challenges in developing games based on local wisdom is ensuring the accuracy and sensitivity of cultural representation. Developers must navigate the complexities of cultural appropriation and ensure that the game respects and respects the cultural elements it depicts [24]. Meanwhile, developing the RPG Maker MV game based on local wisdom presents a unique opportunity for cultural preservation and education. It also requires a thoughtful and collaborative approach. Engaging with local communities and using participatory methodologies can help ensure that the game is authentic and respects the cultural narrative it seeks to represent. This approach enriches the gaming experience and contributes to broader cultural and social goals.

Numeracy literacy and character education for elementary school students

Numerical literacy is the ability of individuals to understand, use, and interpret quantitative information. This includes the ability to read, write, count, and apply mathematical concepts in everyday life. Simply put, numeracy literacy is our ability to think logically and systematically related to numbers and data. The principles for improving the quality of education based on numeracy

literacy are relevant, contextual, active, meaningful, differentiated, collaborative, technology-based, and oriented towards developing critical thinking skills. Learning materials must be appropriate to students' daily lives and the world of work. Mathematical concepts are taught in an accurate and meaningful context for students. Learning focuses on counting and involves problem-solving in various contexts, such as science, society, and technology. Students are encouraged to participate actively in the learning process, such as conducting experiments, group discussions, and presentations. Learning should provide meaning to students so that students can understand why they are learning specific concepts. Learning must be adjusted to students' individual differences, learning styles, interests, and abilities. Learning is carried out collaboratively, where students learn together and help each other. The use of technology in mathematics learning can increase motivation and learning effectiveness. Learning is not only aimed at memorization, but also to develop students' critical, logical, and analytical thinking skills [25].

To improve the quality of numeracy literacy-based education, several things need to be considered: teachers as facilitators, relevant curriculum, varied learning media, authentic assessments, and collaboration with various parties. Teachers act as facilitators who create a conducive learning environment and motivate students to learn [26]. The curriculum must be well-designed and relevant to students' needs and the times' development [27]. The use of various learning media, such as books, teaching aids, technology, and other learning resources, can make learning more exciting and effective [28]. Assessment focuses on the result, the learning process, and the student's ability to apply mathematical concepts in real life. Improving the quality of education requires collaboration between teachers, students, parents, schools, and the community [29]. Games are used in education to optimize engagement and learning. They involve creating immersive experiences that balance challenges and skills, increasing motivation and learning outcomes [30]. Games have improved cognitive skills such as critical thinking, problem-solving, and computational thinking. Social skills such as communication, empathy, and teamwork can be enhanced through games. For example, the use of group games and severe play in education has been found to increase student motivation, engagement, and self-efficacy while also fostering a sense of belonging and the development of social skills [31]. Similarly, online games have been shown to increase classroom engagement and make learning more fun and interactive[32].

METHODS

The research approach used in this study is mixed methods with an embedded experimental model design adopted by Cresswell [33]. The study population is 416 students in elementary schools in Blitar Raya, East Java Province, Indonesia. The sampling technique is by stratified random samples. The research will be carried out in 2024. The instruments used consist of observations, in-depth interviews, and documentation. Observation is carried out by looking at the implementation of learning directly with indicators; the use of learning media, numeracy literacy activities, and Pancasila student character improvement activities. Interviews were conducted with principals, teachers, and students with indicator aspects; numeracy literacy skills of grade IV elementary school students, Pancasila student characters in elementary school, and RPG Maker MV game learning media. Documentation is in the form of viewing documents from the Institution. In addition, the trend of increasing student learning outcomes before and after the activity was also seen. Validity tests were carried out on material experts, media experts, and linguists. The indicators used consist of the suitability of the material (media display, feasibility of presentation, use of language, and usability of media). In addition, a practicality test was carried out from the observation of teachers in teaching (effective, interactive, and efficient) and students (usefulness, convenience, satisfaction, and character). Meanwhile, the observation of the formation of the character of the Pancasila profile is seen from the indicators 1) Faith, fear of God Almighty, and noble character. 2) Global diversity, 3) cooperation. 4) Independence. 5) Critical reasoning, and 6) Creative. The data from the next research results were analyzed using SPSS.

RESULTS AND DISCUSSION
RPG Game Validation

The results of the game validation that have been made are as follows:
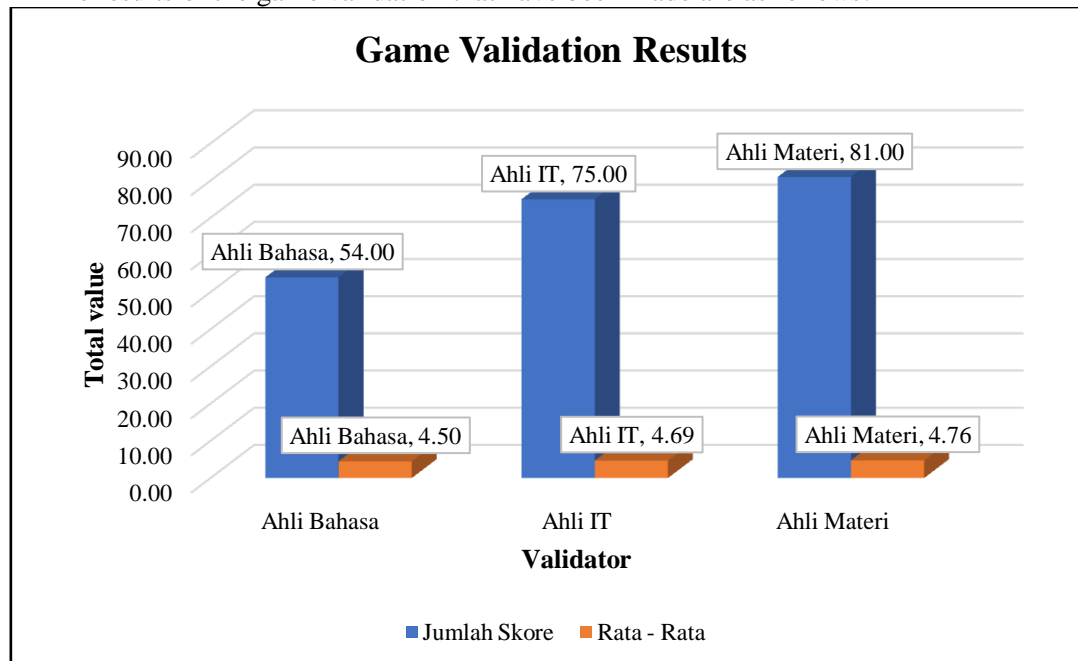
Figure 1. Game Validation Results

The image above shows the results of the validation of the MV Edu Blitar RPG game that has been carried out by validators consisting of linguists (Prof. Dr. Alif M., M.Pd.), IT experts (Dr. M. Anas Thohir, M.pd.) and material experts (Dr. Erif Ahdhianto, M.Pd.). Based on the results of the validation of the suggestions given to the development of this game, namely that the overall presentation of the material in the game is by the characteristics and level of development of students can form the character of Pancasila students. In addition, judging from the average score, the validation results show that when viewed from the language aspect, the average score is 4.50 (good to very good), IT 4.69 (good to very good), and material 4.76 (good to very good). The RGP MV Edu Blitar game can be used for trials to students in elementary schools in Blitar City and Regency. This game can be used as one of the learning media for students [2]. This game also has a teaching module as a reference in learning activities for social studies subjects. Game-based learning has received great attention from educators because it is a motivating and new learning approach. The first study showed that the game's acceptance was high with 61 participants completing a content acceptance/integration questionnaire. A total of 48 participants evaluated the game in the second study with results that generally showed that they enjoyed the game as an alternative to revision with 14% of participants rating the game as very effective and 51% of participants rating it as effective because it allowed them to prepare for class exams. The majority of participants also believed that games could be used in formative and summative assessment capacities in courses for independent study [3]. This is also supported by similar research, namely the resulting learning multimedia is very feasible to be used in the learning process [4]. This gamification program aims to introduce technology that is integrated with the local wisdom of each region [5]. In this study, local wisdom is integrated into the game in the temple of Penataran and the Gebang Palace. This place is a historical place in the city of Blitar and is often visited by people outside Blitar, both in Indonesia and outside Indonesia. The use of local knowledge and resources to promote sustainable growth and cultural preservation is very well integrated with learning. This approach can be applied to game development by incorporating local stories, traditions, and wisdom into the game's design and narrative [21]. By focusing on local wisdom, developers can create unique gaming experiences that reflect the different characteristics of a region, thus promoting the cultural diversity of the region [22] [23].

Results of the Implementation of RPG Games to Elementary School Students in Blitar Raya

The results of the research on the application of RPG games that have been implemented on 416 grade 4 elementary school students in Blitar Raya and it is known that there is an increase in student scores as follows:
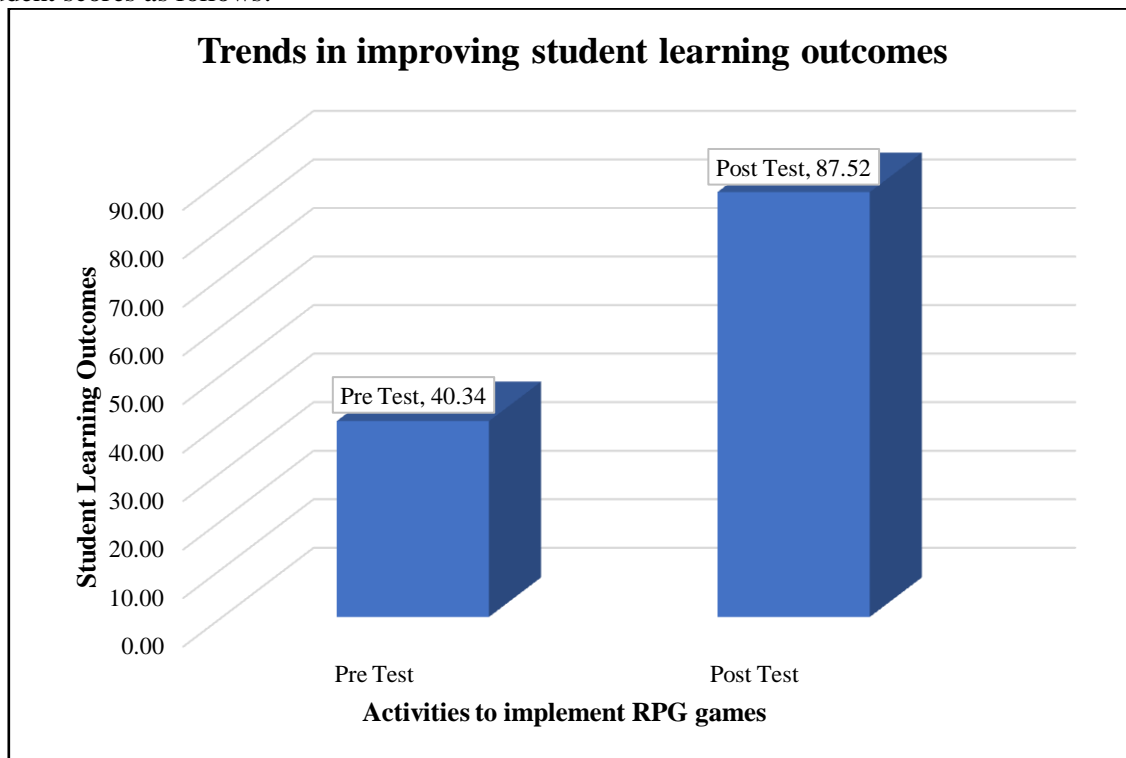
Figure 2. Results of Improving Student Learning Outcomes After Implementing RPG Games

Based on the image above, it is known that before the implementation of the Edu Blitar RPG game, the score of 416 students who were used as research objects was 40.34. Meanwhile, after the implementation of the Edu Blitar RPG game, the student's score rose to 87.52. Similar results have also been applied in elementary schools in several regions and have been found to improve student learning scores [6]. The increase in the score obtained was 47.18. The factors that affect the improvement of student learning outcomes include motivation and engagement, fun learning experiences, strengthening concepts, and skill development. In this research activity, it can be seen that students have high enthusiasm for playing RPG games in the context of learning. RPG games are designed with an engaging storyline, likable characters, and ever-evolving challenges. This makes students more motivated to learn because they feel like they are playing an adventure. Students can focus more on lessons with interactive and dynamic game elements. In addition, rather than just listening to the teacher, they will be more actively involved in the learning process. This can train students' focus and concentration in learning so that students are more critical. In addition, this game can also improve student character development. Students take on the role of characters who evolve as they achieve goals in RPG games. This can increase students' confidence and encourage them to continue to excel in education.

Engaging and interactive visualizations are often used in RPG games to explain abstract concepts [7]. This makes it easier for students to understand the subject matter. Some RPG games allow students to conduct simulation experiments virtually. This gives them a more real learning experience and allows them to test their own hypotheses. This RPG game applied to schools can be played in groups with other students. This encourages students to work together, exchange ideas, and help each other in completing assignments. Students often encounter the same or similar situations while playing RPG games. This allows them to iterate and deepen their understanding of the ideas they have learned before. RPG games often present problems or challenges that require students to apply the concepts they have learned. This helps students connect theory with practice. In addition,

RPG games provide quick and specific feedback on students' actions. This allows students to immediately know if their answers are correct or incorrect, so they can correct their mistakes. In the development of skills, this game also has a significant impact, including problem-solving, social skills, and digital. RPG games often present complex problems that students must solve. This helps students develop critical thinking and problem-solving skills. Through group play, students can develop social skills such as communication, cooperation, and negotiation. RPG games can also help students develop digital skills such as operating a computer, using software, and searching for information on the internet. This Edu Blitar RPG game is also supported by quality game design, effective integration, and the role of a competent teacher. RPG games that are well-designed, according to the student's level of development, and relevant to the learning material will give better results. The integration of RPG games into learning must be done systematically and planned, paying attention to the learning goals to be achieved. Teachers play an important role in guiding students during the learning process using RPG games, providing additional explanations, and relating game materials to the broader concept of IPAS. The application of RPG games in learning IPAS in grade 4 elementary school has great potential to improve student learning outcomes. By designing engaging games, integrating them effectively, and supported by the active role of teachers, science learning will become more fun and meaningful for students.

The Effectiveness of the Implementation of the Edu Blitar RPG Game

The effectiveness of implementing the Edu Blitar game RPG is as follows.

Table 1. Effectiveness of Student Learning Outcomes with the Application of Edu Blitar RPG Game

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
NGain_Skore	416	0,00	1,00	0,80	0,17
NGain_Prosentase	416	0,00	100,00	79,70	17,01
Valid N (listwise)	416				

Based on the students' pretest and posttest scores, it is known that the Edu Blitar RPG Game is effective (79.70) applied to 416 grade 4 elementary school students in Blitar Raya. The effectiveness of this activity is likely due to the quality game design. In similar research, it is known that the use of RPG games can improve students' critical thinking [8]. Some of these things include relevance to the curriculum, suitability to the level of cognitive development, simple interface in the game, interesting visualizations, and variations in difficulty levels. This game is designed with several levels of difficulty and is expressed in the form of practice questions in the game. Effective integration between games and IPAS subjects is prepared with careful planning. In the making of this game, it has been carried out between the teacher and the developer and the flexibility in this game is a very important point. In this game, the role of the teacher as a facilitator, motivator, and also an evaluator is still required. Therefore, this game is equipped with a learning module and also an LKPD sheet as material for teacher evaluation during learning activities. In addition, this is also supported by students' motivational interests, students' digital skills and cooperation. Elementary school students who are the object of research are very diverse. Some students have adapted well to game-based learning. However, some students must be guided gradually in running the RPG game Rdu Blitar.

No less important is a supportive learning environment [38]. Most of the schools that are used as research objects have been supported by the existence of computers in schools. Naturally, sufficient and properly functioning devices will support the implementation of learning using RPG games. This game is designed not to require the internet so it can be accessed offline by students. A conducive learning atmosphere will make students feel comfortable and focused in learning. Balance to realize meaningful learning activities needs to be maintained. The use of RPG games must be balanced with other learning methods so that students are not too dependent on games. The use of RPG games must be directed towards achieving broader learning goals, namely developing students' critical, creative, and collaborative thinking skills. In this study, the role of teachers is still needed in guiding students. In addition, this game is also equipped with learning objectives that can be used as a reference by teachers in learning activities. The effectiveness of the application of RPG games in learning IPAS in grade 4 elementary school is influenced by many interrelated factors. By paying attention to these

factors, it is hoped that the use of RPG games can be one of the interesting and effective alternatives for improving the quality of learning [9].

CONCLUSION

The study results show that the Edu Blitar RPG game that has been implemented has been validated by experts and is considered valid for use as a learning medium. Based on the trial results, it is known that 416 students who were the object of the trial got an increase in scores after applying the Edu Blitar RPG game as a learning medium. Based on the image above, it is known that before the implementation of the Edu Blitar RPG game, the score of 416 students who were used as research objects was 40.34. Meanwhile, after implementing the Edu Blitar RPG game, the student's score rose to 87.52. Based on the student's pretest and posttest scores, it is known that the Edu Blitar RPG Game is effective (79.70) and applied to 416 grade 4 elementary school students in Blitar Raya. It is obtained from the results of the primary test.

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