

Minecraft for Education: Promoting Social and Emotional Learning in Mathematics

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ABSTRAK

Penggunaan permainan, yang telah ada sejak lama dan telah menjadi fokus penelitian selama beberapa tahun, merupakan komponen pendidikan matematika. Penggunaan permainan di kelas matematika jauh lebih tinggi daripada mata pelajaran lainnya. Selanjutnya, guru setuju bahwa video game adalah media yang sangat baik untuk mengajar matematika di sekolah menengah. Hal ini menimbulkan pertanyaan apakah siswa di kelas menengah mengubah identitas matematis mereka sebagai hasil dari berpartisipasi dalam unit pengajaran berbasis inkuiri dengan Minecraft. Informasi apakah siswa di kelas menengah mengubah identitas matematika mereka sebagai hasil dari berpartisipasi dalam unit pengajaran berbasis inkuiri dengan Minecraft masih belum jelas. Tujuan dari penelitian ini adalah untuk menganalisis informasi mengenai manfaat menggunakan Minecraft sebagai alat pengajaran, tantangan yang menyertainya, sudut pandang siswa terhadap permainan, dan manfaat pendidikan yang diberikannya. Studi saat ini didasarkan pada unit pengajaran berbasis Minecraft yang dilakukan di kelas dengan total 22 siswa SMA. Studi ini menggunakan wawancara semi-terstruktur dalam upaya penelitian kualitatif kami. Hasil temuan proyek studi ini peneliti susun ke dalam tiga tema, yaitu 1) mahasiswa matematika; 2) Pemain Minecraft siswa matematika; dan 3) direposisi sebagai mahasiswa matematika.

ABSTRACT

The usage of games, which have been around for a very long time and have been the focus of research for a number of years, is a component of mathematical education. The usage of games in mathematics classrooms is far higher than in any other subject. Furthermore, teachers agree that video games are an excellent medium for teaching mathematics in middle school. This raises the question of whether students in the secondary grades change their mathematical identities as a result of participating in an inquiry-based teaching unit with Minecraft. The information whether students in the secondary grades change their mathematical identities as a result of participating in an inquiry-based teaching unit with Minecraft remains unclear. The aims of this study is to analyze information regarding the benefits of using Minecraft as a teaching tool, the challenges that come with it, the viewpoints of students on the game, and the educational benefits it provides. The current study was based on a Minecraft-based teaching unit that was carried out in a class with a total of 22 high school students. This study use semi-structured interviews in our qualitative research endeavor. This study project's findings researcher put into three themes, they are 1) students of mathematics; 2) Minecraft gamer of mathematics students; and 3) repositioned as students of mathematics.

1. INTRODUCTION

The usage of games, which have been around for a very long time and have been the focus of research for a number of years, is a component of mathematical education (Campilla & Castañaga, 2021; Su et al., 2022; Wahyuni et al., 2021). One study found that the use of games in the classroom setting of mathematics is substantially higher than that of any other subject. It was found to be the case (Campilla & Castañaga, 2021; Klegeris & Hurren, 2011). As a consequence of this, there is a widespread view in the field of mathematics education that games hold a substantial amount of potential that has not yet been utilized. According to previous study there are teachers who think that video games are the perfect medium for teaching mathematics in middle school (Su et al., 2022). These teachers believe that video games should be used. Recent meta-analyses, on the other hand, previous study suggest that the use of games in mathematics

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instruction has only a small and only marginally significant positive influence on the learning of the students (Wahyuni et al., 2021). The game possibilities that have been discussed but not yet implemented have not been implemented. One of the issues that was brought up in the evaluations was the fact that the academics who are trying to understand how people learn mathematics through games typically have expertise in subjects other than mathematics education. This was brought up because it was one of the issues that was brought up in the evaluations. Only five of the total of 71 researchers have a background in mathematics education, whereas the rest of the researchers come from the domains of educational technology, computer science, and engineering (Arsić & Milovanović, 2016; Prieto et al., 2019). In this regard, there is a need for greater research on making use of games for mathematical aims, which relates closer to the research subject of mathematics education. The topic of mathematics education has been the focus of a lot of research recently.

The incorporation of gaming into the classroom has a number of key aims, one of the primary goals being to increase students' motivation to learn. It has been discovered that the degree to which a student is interested in mathematics is one of the most significant markers of both the student's mathematical performance and the student's commitment to continuing their education in the field (Felszeghy et al., 2019; Tambunan et al., 2021). In addition, one of the most widespread problems faced by teachers of mathematics is the fact that many students do not develop a positive attitude toward mathematics as an activity that might lead to positive outcomes (Govindarajan, 2021; Warti, 2018). According to previous study the cultivation of students' interest in mathematics should be considered an important goal for mathematics teachers (Bouزيد et al., 2021). Furthermore, classroom activities that are worthy of student engagement in their own right, from the perspective of students, is an important part of the cultivation of students' interest in mathematics. In addition, other study argue that classroom activities that are worthy of student engagement in their own right, from the perspective of students, is an important part of the cultivation of students' interest in mathematics (Kang & Kim, 2016). As a result of this, researcher want to address the use of games in math class by employing the conceptual framework of sociomathematical norms in order to gain an understanding of how the use of games impacts the mathematical identities of students.

In the meantime, Minecraft is making its way into schools and universities all around the world as an instructional tool. In a similar line, studies on the use of Minecraft to increase learning have been carried out for a number of years, spanning a broad range of subjects (Petrov, 2019). Numerous research projects have been conducted to explore the efficacy of utilizing the game Minecraft in educational settings for the purpose of instructing students in mathematical skills. Some authors highlight the envisioned potentials for the use of Minecraft for learning mathematics and relate the use of the game to desirable mathematics education standards (Farah, 2019; Hemeli et al., 2019). Other authors highlight the envisioned potentials for the use of Minecraft for learning mathematics and relate it to the game itself. Others have pointed out the construction-related possibilities that could be opened up by using Minecraft (Hughes et al., 2020). The potentials that are studied in these studies are, however, based on an inadequate sample size of real-world situations. The fields of computer science and educational technology are also contributing to the body of knowledge surrounding Minecraft. These papers either report on classroom experiments with Minecraft being used in an educational environment for mathematics or suggest a study with Minecraft being used in an educational setting for mathematics (George, 2021; Mini, 2018).

However, not a single one of these publications makes use of any mathematical educational theories in order to comprehend the learning of students or to analyze data. Previous research stands out as an exceptional case study due to the fact that it was undertaken by both of them (Eielsen, 2020). Using Bishop's six basic categories, they applied an ethnomathematical approach to comprehending the mathematical activity that took place in Minecraft during an after-school program. It allowed them to gain a better understanding of the activity (Dezuani & Macri, 2020; Rosa & Orey, 2011). The research that was conducted by previous study presents evidence of player action in connection to each of the categories (Counting, Measuring, Locating, Designing, Explaining and Playing) (Lina, 2018). They have found that the design of Minecraft has an effect on the activities, which presents a challenge to the students by requiring them to conceptualize and organize their structures in accordance with the social and cultural parameters of the after-school program. This was discovered by the researchers (Julius, 2017; Takeuchi & Vaala, 2019). The students gain knowledge from one another as they collaborate on the development of challenging game narratives that entail complex frameworks. In a summary, the research points to the potentials and promising teaching designs and methods that may be implemented with Minecraft in the classroom to teach mathematics. These possibilities and methods have been highlighted as a result of the research. On the other hand, there are not a lot of articles that concentrate experimentally on the mathematical tasks that the participants are doing. Because of this, there is a need for greater research into the ways in which playing Minecraft can benefit students in the development of their mathematical skills.

One full number on the axis corresponds to the length and height of one block in the game, which is equivalent to one meter in the actual world. In turn, one meter in the real world is equivalent to one block in the game. In order to acquire a better understanding of how the use of Minecraft may influence the engagement of students in mathematics education, researcher will investigate the idea of mathematical identity. According to previous study normative identity is a method of describing the responsibilities that characterize and make up the position of an excellent mathematical student in a specific classroom (Vankúš, 2021). Specifically, normative identity is a way of describing the responsibilities that make up the position of an excellent mathematical student. There are three main buckets into which the obligations that students have in the classroom might be placed. Agency have a conversation about the ways in which the students are able to conduct themselves in an acceptable manner while they are in the classroom (Köroğlu & Yildiz, 2022; Yohan, 2019). There are two main categories, which are as follows: Students' poresearcherr to pick techniques, construct meaning, and establish relationships betresearcheren concepts is referred to as conceptual agency, whereas students' employment of established procedures for problem resolution is referred to as disciplinary agency.

Mathematical competence refers to the student's capacity to reason and debate using mathematical concepts, and it is the third component of the curriculum. This is a reference to the responsibilities that fall on the student's shoulders. Previous study provide the idea of students' personal identities, which is not the least important aspect of their work (Ames & Burrell, 2019). This idea concerns the manner in which students understand their responsibilities and place value on mathematics in the context of the classroom setting. In particular, the researchers are curious about the ways in which students place value on mathematical concepts. This can typically be accomplished in one of three ways: either the students will identify with the responsibilities, they will simply cooperate with the teacher, or they will resist taking part in activities that take place in the classroom.

Subsequently, the purpose of this study was to analyze information regarding the benefits of using Minecraft as a teaching tool, the challenges that come with it, the viewpoints of students on the game, and the educational benefits it provides. These ideas make it possible for researcher to investigate how students see their connection to mathematics and whether or not they find value in mathematics in the form that it takes after the intervention has been applied. Specifically, an investigate whether or not students find value in mathematics in the form that it takes after the intervention has been applied.

2. METHOD

Interviews with participants in this qualitative research with case study method researcherre done in a semi-structured manner in order to elicit as many one-of-a-kind responses as was humanly possible. This was accomplished by asking participants a series of questions. The current investigation was based on a teaching unit that was carried out with Minecraft in a class that had a total of 22 students participating by the random sampling. The class was at the secondary level. The entire unit was broken up into 15 individual lessons that researcherre each given their own day within the span of one researcherek. The interviews researcherre carried out both in-person and over the phone, and they focused on a wide range of essential topics that researcherre directly related to the topic being discussed. It took about 1 month for having intervieresearcherd. The primary goal of the interviews was to collect information about the benefits of utilizing Minecraft as a teaching tool, the difficulties that come along with it, the perspectives of the students and parents on the game and the educational benefits it offers, as researcherll as any other themes that emerged as the interviews progressed. In addition, the interviews researcherre conducted in order to address any questions that arose during the course of conducting the interviews.

This pilot study is a component of an ongoing design-based investigation (Creswell, 2014) that is looking into the ways in which educational goals might be included in commercially available video games. The investigation is looking into the ways in which educational goals might be included in video games. The inquiry is looking into the several ways that educational purposes could be included into video games that are offered for purchase by the general public. The findings of six different semi-structured group interviews (Baškarada, 2014) researcherre each carried out with two students from the secondary grade in each group, and those findings researcherre collated to form the information that was gathered. The teachers reported that the class had a typically poor performance in mathematics. The teachers researcherre of the opinion that the students in the class performed poorly in mathematics on the whole. Horesearcherver, there researcherre just a few students who displayed a significant talent for mathematics. Before the intervention was carried out, the student groups researcherre selected in such a way that the teachers could be confident that they would be representative of a wide spectrum of mathematical achievement that already existed in the classroom. This was done before the intervention was done.

Subsequently, researcher started by digitally recording each interview, and then researcher transcribed it word for word, deleting numerous colloquialisms, voice fillers, and distracting sounds along the way such as coughing and giggling. Reading through the interviews and identifying the numerous topics that needed to be taken into consideration required a process that involved multiple rounds of rewriting. The use of a color-coded system was implemented in the process of developing a visual map of several different ideas in PoresearcherrPoint. After that, these ideas researcherre grouped together into specific themes, and each theme was linked to either the core research question or one of the subquestions. The next phase involved applying the phenomenological analysis to the interview material in order to produce codes from it and organize the codes into a few primary themes (Creswell, 2014).

3. RESULT AND DISCUSSION

Result

The study is based on a thematic analysis of the data with deductive approach, and it is organized around four overarching themes that relate to the mathematical identities of the students and their experiences in the various domains. The study will illustrate a number of new linkages between the various domains, as well as how the normative identity as a doer of mathematics in the intervention was different from what they experienced in their typical math class. In the analysis, these preexisting as well as newly conceivable ways of identifying oneself with a math class are described as available positions for students.

Students of Mathematics

This section investigates the students' perceptions of the responsibilities that are inherent in the everyday mathematics instruction that they receive in the context of a typical mathematics class. Specifically, the focus of this investigation is on how the students view their own roles in the learning process. One of the concepts that keeps coming up is that in order to be called mathematically competent, an individual needs to have the ability to perform computations quickly. When did respondent first understand that mathematics was one of her strengths? This inquiry is directed toward her at this juncture: *"Whenever I have new information. Or if I have listened carefully and comprehended what was said. Then I will be able to act promptly and provide a prompt response."*

The opinion that the key to being a successful math student is being able to provide solutions to problems in a timely manner. This may be accomplished either by having prior knowledge or by having the capacity to comprehend the teacher's explanation. Respondent makes use of the word "speed" to illustrate another another facet of what it takes to be a great student and said, *"... You need to be proficient at calculating quickly and accurately."* The examples illustrate that the rate at which one can generate answer is a significant factor in both the quality of the ansresearcherrs generated and the level of mathematical expertise achieved by the student. This is demonstrated by the fact that the rate at which one can generate answers is demonstrated by the examples. Heru continues his explanation by noting that it is often simply advantageous to know new concepts and answer before they are taught by the teacher. This provides you with an advantage in terms of responding quickly and correctly, which argues is simply useful.

During the course of the intervention, respondent was introduced to the concept of the coordinate system for the first time. This is significant since the coordinate system is one of those concepts that has applications in fields other than mathematics. He has only very seldom come across the phenomenon of coming to the knowledge that mathematics is related to the ordinary sphere. He says this is because he has only very rarely encountered it. Horesearcherver, it also suggests that he may have had the experience, or that he is aware that the things he learns in math class can have parallels to the real world. In other words, it suggests that he has experience. The fact that he uses the word "first" lends credence to the idea that he believes there will be other links made in the future. Horesearcherver, the subject domain of mathematics is characterized by being isolated from other subject domains, and the way in which it is encountered in typical mathematics classes is an excellent example of this separation.

As the preceding examples and topics have shown, a normative identity in an ordinary math class entails attentively listening to the teachers and paying attention to what is being presented on the whiteboard, particularly when the teachers is doing so. This is especially important when the teachers is presenting the material. Students are able to demonstrate agency in the classroom through the use of disciplinary agency, which is the primary and most valid method. It is often regarded immoral for students to discuss a task with one another, and the majority of the accountability that students are responsible for is focused toward the teachers because very little authority is granted to the class as a whole. When the students researcherre given the opportunity to apply mathematical principles to specific situations that researcherre not linked to mathematics, new positions emerged in the classroom. In the following paragraphs, researcher shall explain in greater depth how these newly created jobs came to be.

Minecraft Gamer of Mathematical Students

Being a mathematical Minecraft player means having the experiences that the students have had while using the coordinate system to remember and find places in Minecraft. This position is referred to as holding the position of holding the position of holding the position of holding the position. When students realize that they can use the coordinate system in a game to solve the mathematical task that was given to them by their teacher in math class, they establish new connections between the two already established, but initially separate domains; mathematics and the everyday domain. In other words, when students realize that they can use the coordinate system in a game to solve the mathematical task that was given to them by their teacher in math class, they establish new connections between the two. Both of these spheres will undergo a change as a direct result of the newly formed links.

Respondent was aware that by pressing the F3 key, he might be provided with a series of facts; yet, he was unable to decipher the information in any way that was significant to him. After having gained a knowledge of what the numbers stand for, he usually employs their utilization in order to locate items. Respondent draws an analogy between the actions in Minecraft, which are part of the gaming domain, and the coordinate system, which is part of the mathematics domain, in order to show why the coordinate system is helpful. As a result of his actions, he creates a robust connection between the many different places. For example, the fact that he uses the coordinate system in Minecraft leads to the development of a hitherto unexplored mode of interaction between players and the game. In order to comprehend the changes that Ilham has made to the way that he plays the game, it will be helpful if researcher widens the notion of agency that researcher covers in the math lesson. Because it is possible to use the coordinate system to solve actual problems that occur in the game of Minecraft, his words confirm the usage of the coordinate system as a legitimate manner of expressing what researcher could call player agency in the game. This is because the coordinate system can be used to solve actual problems that occur in the game.

Repositioned as Students of Mathematics

The picture that was shown above indicated how the intervention created new student roles with regard to participating in mathematical Minecraft games. On the other hand, the intervention had an impact on the individual identities of the students in terms of their relationship to mathematics. For the purpose of this example, researcher will focus on two students, as stated by the teacher, are the most capable math students in the class. In this section, respondent explains how constantly being the first to complete responsibilities would leave them in a dangerous situation and how this may be troublesome for them and how it could be problematic for them to always be the first to do duties.

When mathematical competence is determined by how quickly problems can be solved and when the same students consistently finish assignments first, the other students find themselves in a scenario in which it is difficult for them to be considered mathematically competent. When mathematical competence is determined by how quickly problems can be solved, it would appear that the other students have come to the conclusion that they do not have a possibility of becoming the first to do the work. They did not have much experience with Minecraft, but as researcher will see, they were easily able to identify with the mathematical principles that researcher presented in the instructional unit. They were able to do this since the unit was based on Minecraft. It's possible that this is because respondent found the consistent demands of the classroom to be difficult to balance with their other responsibilities. This could be because other students felt frustrated when they were unable to accomplish a work that respondent were able to finish in a timely manner. Respondent were able to finish the work.

The intervention depends on prior knowledge from the disciplines of mathematics and gaming in connection to Minecraft because it uses Minecraft. The manner in which respondent describes the necessity of learning from the other students can be interpreted as a renegotiation of the authority in the classroom toward a more distributed form of teaching and learning than they are accustomed to experiencing. This is something that respondent are not used to experiencing. Take, for example, the fact that the teachers is not a Minecraft; this means that playing the game gives students the ability to express their agency in more conceptual ways through crosslinks across the many domains. It is not enough to be the first person to finish a mathematical job in order to have important information; the individual who is able to integrate their knowledge of various subjects is the one who has the most valuable knowledge. As a result of this, respondents are presented with the challenge of increasing their grasp of Minecraft, which is a crucial and significant component of becoming competent in the intervention. Because the abilities of the students are dispersed across a range of domains, it is not always the case that students who are exceptionally talented in mathematics are also adept at playing Minecraft. Both respondent have had the experience of being more on the same level as the other students, which liberates them from the traditional obligations of the classroom to complete tasks as rapidly as is humanly feasible. However, the issue that they are aiming to

address by making this change is not the fact that students will no longer have the opportunity to show off their mathematical skills to the teachers. In point of fact, being freed from this obligation is "great," because it signals a shift toward positive identity. It brings to light the reality that the emphasis placed on finishing first provides a vanishingly small number of opportunities for the students to identify with the obligations of the classroom.

Discussion

The social and emotional learning technique state by previous study integrates competence enhancement and youth development frameworks for loresearcherring risk factors and developing protective mechanisms for positive adjustment (Ames & Burrell, 2019). According to the Collaborative for Academic, Social, and Emotional Learning, the "proximal goals for Social and Emotion Learning (SEL) programs are to foster the development of five inter-related sets of cognitive, affective, and behavioral competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision making." These five sets of competencies are self-awareness, self-management, social awareness, and relationship skills. This remark is more pertinent to this project than any other statement.

Previous study conducted a follow-up study to build on the findings research and investigate the effects of school-based SEL interventions and programs on the long-term outcomes of the students who participated in them (Dar, 2021). This was done in order to build on the findings that had uncovered. Students that participated in SEL programs "benefited much more than controls across all of the social and emotional assets and positive and negative markers of researcherll-being," as stated in the findings of the research study (Ellison et al., 2016). The fact that these programs were effective for all of the different demographic groups that investigated was another topic that was covered in this study. The findings of this study are applicable to each and every one of these kids, despite the fact that they come from a diverse range of racial groupings and socioeconomic backgrounds.

The results of these research all came to the same conclusion, which was that it was impossible to foresee what would happen. It was emphasized the outcomes for each individual student will be unique and that it is hard to forecast how much growth each kid will experience as a result of making use of these forms of programming. Both of these points are true, another item that ought to be taken into consideration was the possibility that there is very little. Space for growth for students who already have a knowledge of the aforementioned competencies. This was something that ought to be taken into mind. Previous study mentions that the age of the participants was a factor that was taken into consideration during the research (Couling, 2019). It would indicate that the implementation of SEL treatments throughout early childhood, as opposed to early adolescence, is most likely to provide the desired results.

The research demonstrates how the intervention led to a change in students' identities, with a greater emphasis on their appreciation of mathematics as an integral component of their lifeworld and as a resource that can be utilized in Minecraft. This appreciation of mathematics as an integral component of their lifeworld and as a resource that can be utilized in Minecraft was a direct result of the intervention. This was a major break from the "doing mathematics" that the students researcherre utilized to performing in their day-to-day lives and was a new experience for them. Researcher believe that the primary factor that contributes to the successful transfer of knowledge betresearcheren the game and the academic realms is the fact that students are actually able to use the coordinate system in Minecraft to overcome meaningful obstacles that are pertinent to them. This is the primary factor that researcher believe contributes to the successful transfer of knowledge.

Previous study express that using a game like Minecraft provides a number of affordances that can be exploited when translating experiences gained in one domain to those gained in another, as researcher have demonstrated (West-Olatunji et al., 2018). These affordances include: Researcher believe that one of the most important factors in determining whether or not this will be successful is whether or not the game gives players the opportunity to access an underlying mathematical aspect of the game, such as the coordinate system, and gives them the ability to interact with it. This is one of the factors that will determine whether or not this will be successful. The fact that the activities that researcherre part of the intervention researcherre planned to be used in such a way as to improve the manner in which the students played Minecraft by supplying them with fresh possibilities to navigate the environment of the game is an additional crucial component. Also, other study found the students who given the opportunity to participate in what the students regard to be a significant practice from the everyday sphere, but in a manner that was mathematically serious (Ming, 2020). This indicates the need for a more in-depth research of the ways in which particular mathematical ideas are featured in various games and the ways in which students can use these concepts to better their engagement with the games.

When it comes to the students' experiences of their responsibilities in math class, the intervention encourages shifts in both authority and agency, as researcherll as shifts in their perceptions of their own

levels of ability. Additionally, previous study state the shifts in authority and agency are accompanied by shifts in their perceptions of their own levels of ability (Alawajee & Delafield-Butt, 2021). These modifications can be explained, at least in part, by the fact that the learning goals of the interventions lie in the intersection of domains and are not limited to the subject domain alone. This is an important distinction to make, as it allows the subject domain to no longer be the only domain of focus. Because of this, there will be a bigger range of ways for individuals to be competent when participating in the intervention because having a grasp of Minecraft will be required (Hughes et al., 2020; Marie, 2021). Consequently, there will be a greater diversity of ways for people to be competent. This runs opposite to the traditional approach that is taken in order to adhere with the rules of the classroom, which is to offer responses as quickly as humanly possible. Which for one student is interpreted to some degree, where already knowing the new concepts being introduced, and therefore being able to answer research questions quickly and correctly, is a way of explaining what it means to be a good student. This interpretation comes from the idea that being able to answer research questions quickly and correctly is a sign of a good student. This interpretation is predicated on the notion that a person's academic success can be inferred from their capacity to provide accurate and prompt responses to inquiries. The problematic nature of putting an emphasis on speed is brought to light as a result of this. This, of course, is something that is going to depend on the objectives that the teachers has in mind while they are introducing new ideas to the class. Because this is the case if the objective is to assist the students in better comprehending the concepts, it is counterintuitive for some students to believe that their best chance of participating in the activity in a mathematically competent manner is to already be familiar with the new concepts that are being introduced. If the objective is to help the students better comprehend the concepts, then this is the case.

One of the numerous ways in which the game can be put to use is by taking advantage of the online multiplayer server that Minecraft provides. This server is an excellent resource for teachers who wish to combine a variety of social studies and technology topics into a single course. In spite of the findings that research presented in the review of the pertinent literature that research somewhat contradictory with regard to the function of video games in educational settings, the vast majority of the data on the utilization of online games revealed results that research overwhelmingly positive (Hughes et al., 2020; Julius, 2017; Yohan, 2019). For instance, each of the three teachers mentioned that they are able to address a variety of concerns pertaining to online security and digital literacy by making use of the multiplayer server. Additionally, they research able to instruct students on how to behave and resolve conflicts while interacting with one another in virtual spaces. It is possible to efficiently control these digital abilities, which Ilham refers to as the "most significant skills in the world," through the utilization of the multiplayer server and the permitting of player contact with one another.

Respondent brought up another fascinating example, which was the growing number of high school students who wished to help younger students with their Minecraft activities. Despite the fact that it's likely that they were more motivated by selfish concerns when they volunteered their time, this is still the case. This finding is consistent with the findings that researcher who reported that playing online games led to a large rise in supportive student behavior (Jensen & Hanghøj, 2019; Kenna, 2019). This finding is in line with the findings that students who play Minecraft may "develop their leadership skills and maybe transfer them into the real world (Vankúš, 2021; Yohan, 2019). This is because the high school students who participated in these activities held leadership roles and research frequently responsible for supporting younger kids and advising them with any game-related questions. Another reason for this is that the high school students in charge of the programs.

The implication of research on Minecraft for Education for promoting social and emotional learning in mathematics is significant. Minecraft is a popular game that allows players to build structures, explore new worlds, and engage in creative activities. It has been found that Minecraft can be a useful tool for promoting social and emotional learning (SEL) in mathematics. One implication of this research is that Minecraft can be used as a valuable tool for promoting SEL in mathematics education. Minecraft allows students to engage in creative problem-solving activities, which can help them develop important SEL skills such as collaboration, communication, and empathy. By using Minecraft in mathematics education, teachers can help students develop these important skills while also improving their mathematical abilities. However, there are also some limitations to using Minecraft for promoting SEL in mathematics. One limitation is that not all students may have access to Minecraft or the necessary technology to use it. Additionally, some students may not be interested in Minecraft or may not respond well to using video games as a learning tool. Another limitation is that while Minecraft can be a useful tool for promoting SEL in mathematics, it is not a complete solution. Teachers need to use a variety of teaching strategies and tools to promote SEL in their students, and Minecraft should be used as part of a broader approach.

4. CONCLUSION

According to the findings, utilizing Minecraft in a mathematics classroom that takes an inquiry-based approach could improve students' identification with mathematics as researcherll as develop new methods of participating in and "doing mathematics." The point being made here is not that playing Minecraft in and of itself is a significant practice for the education of mathematics; rather, the point is that when the game is used to build significant mathematical practices, the intervention opens up new avenues for participation in that practice. This can lead to new ways of identifying with mathematics, helping students bridge the gap between the subject area and their day-to-day lives. The fact that the game is enjoyable for a diverse group of players, that it is already researcherll-known, that it can be played in a variety of different ways, that it is versatile and multidimensional, and that it already has a variety of support options are all benefits of the product. In addition, the fact that the product already has a variety of support options is another benefit of the product. The video game gives off the impression of having therapeutic potential, and it could be used to help students who are having difficulty learning improve their real-world skills.

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