Reading in Minecraft: A Generation Alpha case study

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Abstract

This qualitative case study reports the Four Resource Model (FRM) reading practices used by a Generation Alpha while playing the game Minecraft. The FRM skills of code breaker, text participant, text user and text analyst were investigated through data generated by observation, field notes, semi-structured interviews and a researcher reflective journal. The data was analysed using interpretative phenomenological analysis. Four key themes emerged: language and articulation; social and mentor integration; real-world connection; and, parent and child viewpoints. Across these themes the FRM reading practices are being used by this child to make meaning while playing Minecraft. This game presents a multimodal text which this child is able to successfully navigate while designing and creating a digital story in virtual spaces.

Introduction

We live in an age where there are rapid developments in technology that force us to adapt. Reading and verbal communication appear to be constrained as communication and language needs are expressed in and through devices instantaneously and in an abbreviated form, often using only a touch-screen device (McDonald's Australia, 2017; Watt, 2010). Children are growing up in a digital world that is "infused with technology from the prenatal stage" (Merchant, 2015, p. 3). Access and use of technology devices at home has increased (Clark, Twining & Chambers, 2014). Another interesting point is the increase in use of downloaded applications available through online stores, App Store or Google Play etc., at both home and school (Clark, Twining & Chambers, 2014).

Across society, age groups are classified by their generation. Of particular interest for this case study is Generation Alpha. This age group represents those children born since 2010, which is also the year of the first Apple iPad (Apple, 2017). Generation Alpha have lived surrounded by technology and gaming. Generation Alpha are the first generation that have lived exposed to an advanced technological environment. Bliton (2013, p. 1) reports that parents provide their children with a tablet device so that the children are "occupied for an hour so [they – the parent] can eat in peace." A paradigm shift is taking place focusing on what children do with technology and not the reverse (Kervin, Verenikina, & Rivera, 2015). There are technology and multimedia skills within the twenty-first century which contemporary society encounters (Seely-Flint, Kitson, Lowe & Shaw, 2014). As part of these changes learning within the classroom needs to be relevant and connected to the student's interests and experiences outside of the classroom (Acosta, 2016; Bearne & Reedy, 2018).

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This means then that pedagogy should be evolving and changing to societal and cultural needs (Acosta, 2016; Bearne & Reedy, 2018). Education implemented in the classroom a hundred years ago focused solely on rote learning and memorisation which is no longer the only approach needed to meet the needs of today's student (Shaffer, Squire, Halverson & Gee, 2004). Cash (2017) states that current pedagogy still appears to utilise memorisation and factual teaching. We are in a digital age where schools need to provide current equipment and digital learning experiences (Burnett, 2016) and incorporate multimodal literacy (Bearne & Reedy, 2018). However, learning is not limited just to the classroom. Children learn in various contexts and this study aims to investigate the literacy learning happening outside of the classroom in the home context.

Literature

Literacy is a term that is shaped by cultural, social influences and ideologies (Seeley-Flint et al., 2014). Multimodal literacy includes visual literacy skills which cover both print and digital literacy (Harvey, 2016). Harvey highlighted that there is limited research into literacy studies and education noting that the challenge exists in providing experiences that include today's innovative literacies. This is evidenced by the increase of Information and Communications Technology (ICT) within the classroom where teachers are expected to utilise the multimodal tools available to enhance pedagogy. Leu, et al. (2011) acknowledge that new literacy skills are needed when using ICT where, for example, reading comprehension includes more than just the orthographic or print-based reading. This means that students need technology and literacy competence for multimodal practices.

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According to Gee (2003) games present the user with semiotic domains and new literacies. Video games utilise multi-modality through words, representations, diagrams and visual symbols to communicate specific meanings. Research for game play has focused on the negatives effects of video games, such as addiction, violence and depression; however, there are researched positive effects on the cognitive, motivational, social and emotional domains of the player providing a balanced perspective (Granic, Lobel & Engels, 2014). Our modern world uses various modes of language communication and digital reading where individuals are required to understand and have knowledge within a diverse range of semiotic domains. Between each genre language dramatically alters, which can present a wide spectrum of literacy and learning experiences and this is prevalent to gaming as well (Gee, 2003). Daniels, Brooks, Babson and Ritzhaupt (2010) make an interesting point that gaming is not bound just to the device or the application as it is played, but also includes social engagement.

Opportunities for literacy interaction exist for the gamer within semiotic social spaces; through interactions with others who play; informative books or videos; and interactive online worlds and spaces, both within and outside of the game (Daniels, et al., 2010). Videos on YouTube or Twitch provide resources for gamers world-wide to learn more about the game, enhance their techniques, mimic the creativity of others or share their own work within the game with others. Lastowka (2011) reports that Minecraft does not provide assistance or direction for gamers; however, a search in 2017 on YouTube using the term "Minecraft" revealed 174 million videos showing YouTube is an external tool and resource for Minecraft gamers. Previous research on Minecraft and learning shows that YouTube is a valuable learning resource (Niemeyer & Gerber, 2015; Nebel, Schneider & Rey, 2016). Using YouTube to learn helps gamers to interact with digital tools and create prototypes for diverse audiences, thereby providing opportunities for motivation, tips and stimuli for gaming beginners, aiding them in their experience (Niemeyer & Gerber, 2015; Nebel, Schneider & Rey, 2016).

These online digital environments enable groups of people with similar interests to communicate, develop and connect, thereby promoting and enhancing their learning through informal experiences (Daniels, Brooks, Babson & Ritzhaupt, 2010). Although the study by Daniels, Brooks, Babson and Ritzhaupt (2010) was limited in size it does highlight the need for investigation into the connection between technology and literacy models. Bebbington (2014) specifically states that this type of investigation needs to take place, particularly in regards to the development of reading, again highlighting the gap that exists in the literature. For this study Minecraft was chosen as the application to be connected with the literacy model.

Minecraft is a three-dimensional Lego-like game released in 2011 which has since become one of the most globally used applications with more than 21 million copies sold for mobile devices (Nebel, et al., 2016). It was ranked as the top downloaded, paid application in 2017, by both the App Store and Google Play (Apple, 2017; Google, 2017). This game provides opportunity for the player to create and discover using a simulated landscape. The player explores, builds and learns strategies of survival while playing, through a trial and error process (Dezuanni & O'Mara, 2017). Younger children are reported using laptops, game consoles, and touch screen devices for gaming (Bearne & Reedy, 2018; Burnett, 2016; Kervin et al., 2015; Merchant, 2015). Increasingly, this application is being implemented in classrooms (Bos, Wilder, Cook & O'Donnell, 2014); however, there is limited research or knowledge on the impact that this application may have on a child's literacy development, particularly their reading practice (Neumann, 2016: Neumann & Neumann, 2014). This study aimed to address this gap, investigating one child's perspective of reading elements used when playing Minecraft. It was important in this investigation to interpret the perspective of reading from the child's understanding in relation to gaming using Minecraft, hence the research question: *What facets (if any) of Luke and Freebody's Four Resource Model emerge whilst a seven-year old interacts with the popular application Minecraft?*

For this study the Four Resource Model (FRM)

by Luke and Freebody (1999) was selected as a simple framework to identify reading roles. The FRM provides four reader roles (Luke & Freebody, 1999; Serafini, 2012), namely:

1. Code breaker – decoding textual meaning
2. Text participant – engaging understanding proficiency
3. Text user – exhibiting pragmatic competence
4. Text analyst – modelling critical expertise

The FRM was selected as the academic model because its theoretical framework and contemporary educational use is flexible and appropriate for the new technological age (Luke & Freebody, 1999; Serafini, 2012). Also, it can be applied to multi-literate contexts across all reading ages. Reading abilities range from foundational to competent. The FRM allows for four significant literacy practices to be addressed concurrently, scaffolding literacy help and the teaching of reading skills (Jaeger, 2017; Simandan, 2012). The four reader roles or practices, as listed above, are the methods effective readers use when engaging with texts.

Each of the **four reader practices** are important for the reading process. The first practice of **code breaker** is where the reader examines the structure and features of the text. Research shows that this practice includes: knowledge and understanding of the alphabet and the letter/sound relationships, connections with spelling, sentence structure, punctuation and grammatical awareness, as well as knowledge and use of intonation (Luke & Freebody, 1999; Simandan, 2012). Luke, Woods and Dooley (2011) stress the need for twenty first century readers to be able to engage with and use written and visual sources, such as lexicon, icons, orthography and hyperlinks, accurately when reading and managing screens. Derouet (2010) and Luke, Woods and Dooley (2011) agree that twenty first century learners as visual code breakers need to also recognise that position and viewpoint significantly influence meaning. These readers need to be able to interpret and encode multimodal texts regarding contextual influences (Simandan, 2012) thereby implementing visual literacy regarding the use of line, colour, style, position, viewpoint and the relationship between visual and written source to interpret the meaning. Much research has been done in the area of deciphering words (Drewry, 2017; Jaeger, 2017; Luke, et al., 2011; Neumann & Neumann, 2014; Simandan, 2012). Further research covers visual cues, auditory codes and multimodal application (Drewry, 2017; Serafini, 2012; Simandan, 2012); yet, little has been done on code breaking in social and cultural contexts (Drewry, 2017).

The second FRM reader practice is that of **text participant**. This skill is a semantic practice which expects the reader to make meaning by reading, interpreting, comprehending and evaluating symbols and visual features in both print and digital texts (Serafini, 2012). Research in this area focuses mostly on text comprehension (Fawcett, 2014) where the reader had to actively participate, make connections, collaborate, interact with others and produce evidence (Seely-Flint, et al., 2014). Across this reader practice there is little proof of research into the reader's perspective. The third FRM reader practice is that of **text user**. Within the FRM the expectation is that readers will expand their understanding, both tacit and explicit, via external resources. Within this skill the reader accesses other sources to enhance and grow their knowledge base. This means that the reader goes beyond the current text and utilises other resources to enhance their learning. The fourth FRM reader practice is that of **text analyst**. For this skill the reader performs critical thinking where they problem solve, make judgements and express themselves more extensively (Cooper, Robinson, Slansky & Kiger, 2018). A text analyst identifies what is important in a text or story and evaluates the story, for example, making predictions and/or decisions about the story.

Derouet (2010) used the FRM as a framework for analysing and discussing picture books across years three and four of primary school. The Derouet study showed the benefit of using the FRM for both verbal and visual modes emphasising the link in current education and the focus on multi-modal texts. Simandan (2012) supports the use of the FRM to record the strengths and weaknesses of literacy learners. The FRM is valued for its holistic application and capacity to conceptualise all literacy elements simultaneously, which can be applied to a host of teaching and learning contexts (Drewry, 2017; Hinrichsen & Coombs, 2013). The pervasive nature of literacy means that it is everywhere. This permeation of literacy provides a diversity of contexts and genres resulting in no single approach to teaching literacy. The FRM is a framework that includes sociocultural models, the authentic life-long learning experiences, as well as new literacies (Drewry, 2017; Seeley-Flint et al., 2014).

The focus of research using the FRM in education is generally analysed through educator perspectives, adult assumptions and questions that inhibit a child expressing their perspective (Arthurson & Cozmescu, 2007). The voice of the child in research is often sparse, with most studies utilising "adult-centric lenses" (Harris, 2017, p. 22). Harris (2017) highlights that children are vital informants and provide unique, holistic and precious input that can significantly impact decision-making.

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It is exactly because of these reasons that this study has been conducted to investigate a seven year old's perspective on what facets of FRM reading practices they use when playing Minecraft.

Method

This qualitative case study drew on data collected through semi-structured interviews, observations and researcher reflections of one seven year old Generation Alpha. This methodology was chosen so that qualitative data could be analysed, interpreted and used to describe the case study (Creswell, 2013; Marshall & Rossman, 2016; Punch, 2014). Ethical clearance was obtained from the Avondale Human Research Ethics Committee prior to data collection. The child and their parent selected for this study are extended family members of one of the researchers, which although convenient, meant that the researcher's presence in the home was not unusual providing a known, comfortable, regular occurrence where a prior relationship was already established with the child and their parent. In addition, this ensured that the participants' schedule, routine and normal behaviour continued throughout the data collection phase. Criteria were also used in selecting the participant to combat bias. This meant that the participant needed to be interested in gaming, be from Generation Alpha and the researcher needed to observe and interview the participant in a natural environment. Using an existing relationship provided rigour and trustworthiness to the data as a result of the natural setting. Throughout this process participant anonymity was ensured as it is crucial that they cannot be identified.

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Data was collected in 2017 over a three month period which included observations and semi-structured interviews at the home of the child and their parent. The researcher reflections were recorded over the three month period. The data was coded using interpretative phenomenological analysis (Larkin, Watts & Clifton, 2006) to evaluate the data, code the data into themes and interpret these into a report for the findings. The reliability and trustworthiness of the data was ensured by using both member checking and data triangulation.

The researcher's reflective journal created transparency in the research process exposing opinions, feelings and thoughts which shaped and informed the investigative process. The semi-structured interview of the child included questions such as:

What are you doing?
What do you have to do?
What is happening?
Do you play other games?
Did you have to learn something to do that?
How did you know what to do?

In addition to these questions the researcher was able to ask,

Can you explain? or
Tell me more …

The semi-structured interview for the parent included questions like:

Tell me about the child's technology usage?
How long has the child been playing games?
Does the child ask anyone questions about the games?
How much do you know about it?
Explain that some more for me.
What do you mean by that?

The participants' responses were audio recorded and transcribed prior to the coding and interpretative phenomenological analysis.

Limitations

There were a number of limitations to this study. Firstly, this was a single case study based on one child using anecdotal evidence and so cannot be generalised. Secondly, the family members could have felt compelled to participate even though they did not want to, which might have skewed the data. In order to address these limitations, it was important to remove all aspects relating to demographics and identifiable characteristics throughout the reporting of this investigation. The researchers included the family in the planning, organisation and scheduling of the data collection period. Across the data collection and analysis stages the family and two researchers were part of the triangulation process thus ensuring the rigour and integrity of the data.

Findings and discussion

Across the data four key findings emerged: language and articulation; social and mentor integration; real-world connection; and, parent and child viewpoints. Each key finding will be presented below.

1. Language and articulation: during the observation and semi-structured interview the child repeated words, expressions and specific terminology when discussing Minecraft. The child used multiple fillers and interjections when speaking, for example, *like*, *oh* and *so*. These fillers and interjections disrupted their speech impacting on the flow of their language highlighting issues with their literacy skills particularly in regards to verbal communication and their ability to explain

effectively. Interestingly, the parent revealed that (child's name) *is only at an Early Stage One level*, which would be three years below their chronological age. This means that although this child is seven years old they are already performing below age in reading. This is a significant factor for this study and reveals that this child, although functioning at a foundational reading level, is still able to apply reading skills within Minecraft.

The repetition of words confirms this foundational level of reading and communication. Repeated words included *you*, *see*, *look* and *here*. These words appeared throughout the transcript, for example, …*so this is how you like create a world. So you go on here. Look you go up to here. See, create new world.* Over and over the child repeated words exposing their use of visual language and their preference of learning through a visual mode. This was confirmed by the parent who stated that (child's name) *is a visual kid and loves Lego*. Although there are concerns regarding the child's literacy skills there was much evidence of the child explaining, reasoning, describing, comprehending and sounding out which are all code breaking reading practices. Examples of this are when the child was sharing elements of the game: …*you can use different texture packs. Umm, different packs they have different blocks. There is like millions of them. It is like these texture packs so you can go to any like you can change your world*. Another instance was during an explanation of using the controller, *…oh, you just press this button here. But in different controllers. I will show you if you get like a PlayStation or something…and how to delete them you just press umm this. You press it again, like two times to get out you just press circle*. The child demonstrated critical thinking and an example of this is when they shared their preference for playing Minecraft on a PlayStation, *…because it's more easier, uh and the iPads harder. It glitches a lot that's why it is bad.*

There were numerous times where the child experienced difficulty in pronouncing particular words. When unsure of how to enunciate a word, the child would sound it out. Often this resulted in the child separating the word into identifiable sound groups, for example, *I went on add a l-a-y-er, or …like up-d-a-t-ed, and …this is how to crac, cr-ou-ch. This is how to crouch.* Interestingly, the child sounded out the word and then repeated the sentence correctly showing their understanding and knowledge as a FRM code breaker of the letter/sound relationship and sentence structure. Although the child has literacy constraints they are not intimidated by new or unusual words in the game. The child said, *I know what they are because they have their nametags on. So, like if I forget one you can just look on the nametags*. This demonstrates that the child has implemented strategies for comprehension and memory together with resources to assist them while playing Minecraft demonstrating their text participant skills. There was a game update during the data collection phase and the child used prior knowledge and comprehension to ascertain the different elements, stating, *…is there anything new about this one? No. But there is something new about that. Oh! Nothing is new here. Ah, these aren't new. Oh, these are new! Oh, these are so good!.* This again demonstrates the child as text participant using visual cues and knowledge. Another point noted in the data analysis was that the child often articulated their thoughts aloud, asking questions and answering these same questions. Across this key finding while playing Minecraft the child was continuously reading and using information whether it was digital, spoken or visual to complete tasks.

> *"the child was continuously reading and using information whether it was digital, spoken or visual to complete tasks."*

2. Social and mentor integration: the observations and field notes show that Minecraft has aspects of guidance and collaborative play. The child's sibling, who is three years older, was in the lounge area during data collection. The child often used their sibling as a source asking them questions regarding the game, for example, (sibling's name), *what does this say?* and (sibling's name), *how do you do this again?* In addition, the child regularly made statements to the sibling and in general using the term *we* (used thirty nine times). It appears that the child and their sibling engage with Minecraft together where the sibling is a source and mentor for the child. The child confirmed ownership of a Minecraft book which they have chosen not to read or reference. Rather, the child stated that they regularly use YouTube to learn about Minecraft, *I learnt them when they went on the first thing of Minecraft when I watched a video*. It was identified that the child used DanTDM, a Minecraft streamer, on YouTube

as a resource to build and develop their knowledge and skill in playing Minecraft. This confirms previous research that YouTube is used as a learning tool (Niemeyer & Gerber, 2015; Nebel, Schneider & Rey, 2016). The use of this resource provides the child access to verbal and visual modelling strengthening this reader as a text user.

Throughout the data collection phase with the child, they continued to play Minecraft and at times would model components of the game and share what they considered as important and relevant information for the researcher in playing Minecraft. There was evidence of the child sharing only aspects they considered appropriate for a first experience when playing Minecraft thus demonstrating scaffolding. When the researcher asked a question about a certain play the child replied, *I will tell you one day.* Perhaps avoiding the need to answer the question or not wanting to overload the researcher with too much information during the first session. The child did question the researcher whether they had any tips for playing Minecraft. This shows an openness to learning and especially learning from others.

> *"The child appears to exhibit substantial knowledge of Minecraft despite their reading struggles. … [which] do not … impact the child's interest and desire to learn"*

The child did acknowledge that on Minecraft there was the option where *you can write words, but only on the computer* communicating via instant messenger with others around the world. Again, this demonstrates that the child is aware of the social aspect of Minecraft and the options of connecting with others who play Minecraft. According to the parent, the child will talk about Minecraft to anyone who will listen. This confirms what other researchers found about gaming, not being bound just to the device or application as it is played (Daniels, Brooks, Babson & Ritzhaupt, 2010). It was also revealed by the parent that the child usually plays the game with others. This was confirmed when the researcher was interviewing the parent and a friend joined the child playing Minecraft. Social interactions and engagement with multimodal elements also form part of the FRM text user role.

3. Real-world connection: Minecraft is comprised of boxes, objects and situations that allow players to create real life connections. The child was apologetic when destroying an animal for resources and survival within the game, for example, *I am so sorry, donkey.* At one stage during the data collection phase the child decided to make a friend. They built a virtual person and then began addressing them saying, *hi, he is saying hi!* Within Minecraft players creatively and critically design and plan a *digital story* based on their *interest*. Players create homes, safe spaces and other places that they virtually inhabit as part of their "*life*". Creating a meaningful and unique story means that the creator is making meaning and participating in text, which are both FRM reading practices. Players use comprehension to learn the game features, implement strategies and utilise prior knowledge. The child appears to exhibit substantial knowledge of Minecraft despite their reading struggles. These challenges do not appear to impact the child's interest and desire to learn through Minecraft as an application. This behaviour and skill links with the FRM text user who is connected to the multimodal text through interest, proficiency and both cultural and social experience strategically utilising virtual literacy occurrences and texts. The fact that Minecraft provides socially appropriate practices connecting the child through life experiences means that it meets the dimensions of the FRM. Players in Minecraft construct rare and customised experiences through the simulated landscape—manipulating fictional space using basic semiotic hyperlinks, relevant game orthography, unique lexicon, icon reading and the ability to manage, read and navigate the screen location. These are all aspects of the FRM code breaker reading skill.

   The parent reflected that the child almost lives in the world. Like if you spoke, *you wouldn't get a response. You can see it in (name of child's) eyes, like [name of child] is still in the game even when away from it.* Interestingly, the child overhead this comment and agreed, *yeah! You just saying you're in your 'game world'*. This concept contributed to the viewpoints expressed during the data collection.

4. Parent and child viewpoints: Each of these viewpoints were key contributors to the attitudes displayed as well as to the actions taken and observed. Firstly, the parent, as shown above, has a strong view on gaming and stated that (child's name) *is restricted more in school than during holidays and would prefer* (child's name) *outside than on anything.* In regards to Minecraft the parent stated, *I*

just can't stand the movement. I don't like it at all. When the researcher commented that the game has peaceful music, the parent said, *it is about the only good thing you can say about it.* Clearly, the parent is not favourable towards this application later stating that Minecraft *has nothing to do for the mind. I don't see how it helps them at all.* Despite this viewpoint the parent still allows the child to play Minecraft.

Throughout the data collection phase the child was clearly passionate and knowledgeable regarding Minecraft. Although the child has learning difficulties they pursue the game and learn new ways of doing aspects within the game. The child revealed that they used cheats in Minecraft showing that although they make mistakes in the game they can reverse the mistake and correct their attempt without penalty. This is clearly a chosen scaffolding tool that the child uses to improve their skill and understanding within the game. Across the data this is how this child learns. This process of mastery helps students re-evaluate their decisions and improve.

The child prefers concepts to be modelled allowing them to visually perceive what they need to do and then attempt it. The child finds it easier to demonstrate what needs to be done, instead of verbally explaining within the game, which in no way hinders the child's ability to continue playing and problem-solving. The child confidently and comfortably uses the digital tools available for exploration, trial-and-error and in order to continue when they are stuck in the game. These actions present a child who is comfortable problem-solving when needed, displaying the FRM text analyst skill. Throughout the data the child used expressions, emotions and a tone that showed they were engaged in the activity. Participating in the game was a joy and delight for this child who passionately demonstrated self-awareness and connection with the game. Further, the child did not get distracted by various noises while playing Minecraft.

Table 1: The FRM reading practice in each key finding area

Key finding area	FRM reading practice
language and articulation	code breaker text participant text analyst
social and mentor integration	text participant text user text analyst
real-world connection	code breaker text participant
parent and child viewpoints	text participant text analyst

Conclusion

Across each of these four key findings the child as code breaker, text participant, text user and text analyst used the reading practices to make meaning of the game and its multimodal texts, successfully playing and creating within the available virtual spaces. Table 1 shows the FRM reading practices evident in each of the key finding areas.

Although these four key findings highlight the positive reading practices used in Minecraft, there are a number of significant elements from within the FRM missing. These missing elements pertain to foundational readers and include:

- correct pronunciation guidance and assistance within the game to ensure accurate semantics and graphophonics for the reader as code breaker; and,
- fundamental explicit teaching of reading skills, for example, phonological awareness, syntax, spelling, etc.

> *Although these four key findings highlight the positive reading practices used in Minecraft, there are a … significant elements from within the FRM missing.*

These missing FRM elements perhaps have not been a factor in the design of the game and we would suggest that Minecraft introduce them to enhance its potential as a serious game. More research into the FRM and Minecraft is needed to unpack more than one child's perspective. These perspectives could include those of teachers, parents and various aged students. Further research is needed into whether Minecraft impacts student's comprehension, verbal literacy development or reading accuracy. Another area for investigation is the 'restarting' ability of the game and the impact this could have on the real-world experience of children who make mistakes which cannot be reversed. Research into the impact of targeted, interactive, reading video games on improvements in code breaker skills for children who struggle with reading in the early years of schooling, is recommended. We believe that future research needs to be conducted into the educational and literary benefits of the use of Minecraft in the classroom. TEACH

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