Assignment 2:
CS6460

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1 BACKGROUND

This week, my team and I had a meeting, welcoming a new member to our group. Our shared interest lies in game design for educational technology, and while we've generated a few brainstormed ideas, our research may lead us in a different direction. Currently, we're considering creating a board game aimed at enhancing children's learning experiences. I'm excited about this opportunity to delve into the realm of Educational Technology. I look forward to exploring and defining my specific area of interest as we progress. In the broader context, I'm intrigued by how technology, particularly emerging HCI technologies, can enhance learning.

1.1 Paper 1

Paper Title: "Mathematical modeling for theory-oriented research in educational technology"

APA Citation: Novak, E. (2021). Mathematical modeling for theory-oriented research in educational technology. Educational Technology Research and Development. https://doi.org/10.1007/s11423-021-10069-6

Source: I found this article through the Georgia Tech Library Website Search: *https://library.gatech.edu/search/all?search=educational+technology&s=educational+technology*

Summary: The article talks about how online education has grown a lot and turned into different specialties, but there's no one big theory to tie it all together. It mentions different theories people use to understand online learning and

suggests using math to test and improve them. Basically, it's about using math to figure out what works best for online learning (Novak, 2021).

Main Takeaways: The paper highlights that online education has grown a lot and become quite diverse, and further goes into how it's challenging to encompass and limit to just one big theory to explain everything in the field. Researchers have made advances in the field to understand online learning, but we still need an overarching one. The paper states that math can advance the field by testing these theories and further strive for a deeper understanding in the field of technology education (Novak, 2021).

1.2 Paper 2

Paper Title: " The effect of a video-guided educational technology intervention on the academic self-concept of adolescent students with hearing impairment"

APA Citation: Asogwa, U. D., Ofoegbu, T. O., Eseadi, C., Ogbonna, C. S., Eskay, M., Nji, G. C., Ngwoke, O. R., Nwosumba, V. C., & Onah, B. I. (2020). The effect of a video-guided educational technology intervention on the academic self-concept of adolescent students with hearing impairment. Medicine, 99(30), e21054. https://doi.org/10.1097/md.0000000000021054

Source: I found this article through the Georgia Tech Library Website Search: *https://library.gatech.edu/search/all?search=educational+technology&s=educational+technology*

Summary: The paper discussed how a video guided educational technology program impacts hearing-impaired individuals in public schools within a population of Southeast Nigeria. It included 60 students in a randomized controlled trial and found that it improved the academic success of students. The study also found that students with hearing impairments need additional support and further research in Nigeria would be beneficial (Asogwa, Ofoegbu, Ogbonna, , Eskay, Nji, Ngwoke, Nwosumba, & Onah, 2020).

Main Takeaways: This study discovered that a video-guided educational program really boosted the confidence and academic self-belief of hearing-

impaired teenagers in regular public schools in Southeast Nigeria. Not only did these positive effects stick around, but they also highlighted how personalized learning can help students with special needs (Asogwa, Ofoegbu, Ogbonna, , Eskay, Nji, Ngwoke, Nwosumba, & Onah, 2020).

1.3 Paper 3

Paper Title: "The effect of educational technology on college students' labor market performance"

APA Citation: Lu, Y., & Song, H. (2020). The effect of educational technology on college students' labor market performance. Journal of Population Economics, 33(3), 1101–1126. https://doi.org/10.1007/s00148-019-00756-3

Source: I found this article through the Georgia Tech Library Website Search: *https://library.gatech.edu/search/all?search=educational+technology&s=educational+technology*

Summary: This paper discussed how Information and Communication Technology (ICT) impacted college students' academic and job market outcomes. The program introduced various technology-related components to colleges, by adding more computers, online learning platforms, and online classes. The research finds that ICT helped students find a job. It also increased their chances of getting a job offer with minimal or no effects on academic success in college settings. (Lu, Song, 2020).

Main Takeaways: ICT implementation positively help students find jobs obtain a job with higher wages. However, the program did not really improve students' academic grades in college, hinting that these benefits the labor force more so than academic performance.

The study highlights the importance of considering both academia and the labor workforce. (Lu, Song, 2020).

1.4 Paper 4

Paper Title: "Teacher interventions in students' collaborative work in a technology-rich educational makerspace "

APA Citation: Kajamaa, A., Kumpulainen, K., & Olkinuora, H. (2019). Teacher interventions in students' collaborative work in a technology-rich educational makerspace. British Journal of Educational Technology, 51(2), 371–386. https://doi.org/10.1111/bjet.12837

Source: I found this article through the Georgia Tech Library Website Search: *https://library.gatech.edu/search/all?search=educational+technology&s=educational+technology*

Summary: In this study, teachers in a Finnish school's FUSE Studio makerspace use three main strategies: authoritative, orchestrating, and unleashing. These strategies help them guide and support students, depending on the situation. (Kajamaa, Kumpulainen, & Olkinuora, 2019),

Main Takeaways: Teachers have different tools in their toolkit for supporting students, from giving direct guidance to fostering creativity. Students often turn to teachers for help and the type of help they need varies. So it's really important for teachers to be adaptable in each scenario. Teaching in makerspaces is a balancing act between structure and creativity. This highlights the need for ongoing professional development in these tech-rich learning environments. (Kajamaa, Kumpulainen, & Olkinuora, 2019),

1.5 Paper 5

Paper Title: "Engaging preservice teachers in the design of digital breakout games in an educational technology course"

APA Citation: Weisberg, L., Dawson, K., & Dana, N. F. (2022). Engaging preservice teachers in the design of digital breakout games in an educational technology course. Journal of Digital Learning in Teacher Education, 1–18. https://doi.org/10.1080/21532974.2022.2038738

Source: I found this article through the Georgia Tech Library Website Search: *https://library.gatech.edu/search/all?search=educational+technology&s=educational+technology*

Summary: This paper talked about how students used graphics and visual elements in their digital breakout games and that resulted in a better engagement and a better learning experience. The results from the survey showed that students were excited about integrating technology in their schools and learning experience. The paper also talked about the digital breakout game design and how it has a positive impact on teacher's opinions/trust on technology. (Weisberg, Dawson, & Dana, 2022).

Main Takeaways: In this study, students really got creative by using graphics and visuals to spice up their digital breakout games. They found it super fun and realized how important technology can be for teaching. So, it's clear that designing these games can totally boost future teachers' confidence and excitement about using tech in their classrooms. It's a great way to get teachers ready for the digital age. (Weisberg, Dawson, & Dana, 2022).

1.6 Paper 6

Paper Title: "Educational Games based in Information Technology as Innovation Evaluation Activity in Learning"

APA Citation: Juliantari, N. K., Sudarsana, I. K., Sutriyanti, N. K., Astawa, I. N. T., Putri, I. D. a. H., & Saddhono, K. (2018). Educational Games based in Information Technology as Innovation Evaluation Activity in Learning. Journal of Physics, 1114, 012041. https://doi.org/10.1088/1742-6596/1114/1/012041

Source: I found this article through the Georgia Tech Library Website Search: *https://library.gatech.edu/search/all?search=educational+technology&s=educational+technology*

Summary: In this paper, educational games within the realm of IT were developed to make learning more engaging and less intimidating for students. The researchers followed the ADDIE model, creating crossword and word square

games to replace traditional written tests. The results showed that games for IT related classes were liked by students and considered valuable within elementary school Hindu Religious schools. (Juliantari, Sudarsana, Sutriyanti, Astawa, Putri, & Saddhono, 2018).

Main Takeaways: The study highlights the use of IT to make learning evaluation more fun and less scary for students. The researchers created crossword and word square games, which proved to be effective and enjoyable tools for assessing elementary school students in Hindu Religious Education. This approach offers a fresh and engaging way to evaluate learning progress. (Juliantari, Sudarsana, Sutriyanti, Astawa, Putri, & Saddhono, 2018).

1.7 Paper 7

Paper Title: " The use of games as an educational web2.0 technology"

APA Citation: Hainey, T., & Connolly, T. (2014). The use of games as an educational web2.0 technology. In Advances in intelligent systems and computing (pp. 719–728). https://doi.org/10.1007/978-3-319-01854-6_73

Source: I found this article through the Georgia Tech Library Website Search: *https://library.gatech.edu/search/all?search=educational+technology&s=educational+technology*

Summary: This paper discusses findings from a survey of 415 Higher Education students. It concludes that challenges are the top motivator for playing computer games, especially when it becomes harder and in educational settings. It also explores game-playing habits, attitudes and skills gained from gaming. The study offers insights into the world of serious games and their potential in education. (Hainey, 2014).

Main Takeaways: The paper found that students really enjoy a good challenge in their games, whether for leisure or learning, and this should be leveraged in educational game design. Additionally, attitudes towards games vary by gender, with males finding games more social and exciting, while females may see them as a bit lonely. Identifying the skills acquired through gaming, such as problem-

solving and teamwork, proves that games are effective in Higher Education learning. (Hainey, 2014).

1.8 Paper 8

Paper Title: "Effects of game-based learning supports on students' math performance and perceived game flow"

APA Citation: Pan, Y., & Ke, F. (2023). Effects of game-based learning supports on students' math performance and perceived game flow. Educational Technology Research and Development, 71(2), 459–479. https://doi.org/10.1007/s11423-022-10183-z

Source: I found this article through the Georgia Tech Library Website Search: *https://library.gatech.edu/search/all?search=educational+technology&s=educational+technology*

Summary: In this study, they looked at how different kinds of help in a math video game affected how well students did in math and how much they enjoyed the game. They found that students who got help with the step-by-step procedures did better in math than the others. But everyone seemed to have a good time playing the game. (Pan, Ke, 2023).

Main Takeaways: Procedures Help Math: Giving students help with the step-by-step procedures in a math game really improved their math skills. Game Fun for Everyone: No matter what kind of help they got, the students all had fun playing the game. More Research Ahead: They need to study this more with bigger groups and different kinds of help to make games even better for learning. (Pan, Ke, 2023).

1.9 Paper 9

Paper Title: "Educational Nanotechnology video game to inspire middle and high school students to pursue STEM related professional careers"

APA Citation: Educational Nanotechnology video game to inspire middle and high school students to pursue STEM related professional careers. (2018, October

1). IEEE Conference Publication | IEEE Xplore. https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8658469

Source: I found this article through the Georgia Tech Library Website Search: *https://library.gatech.edu/search/all?search=educational+technology&s=educational+technology*

Summary: The paper discusses how a team from the University of Puerto Rico made an educational video game called "Nanito and the Secrets of the Unknown Scale". The game was beneficial in encouraging both middle and high school students to pursue careers in the STEM field. Nanotechnology concepts are used to engage students and offers an interactive learning experience through different levels and quizzes. The researchers hope that this video game will effectively motivate more students to consider STEM-related professions.

Main Takeaways: The main takeaways include how the team at the University of Puerto Rico was able to successfully create an an educational video game. The game was a success because it motivated middle and high school students to explore careers in STEM. The game incorporates interactive levels and quizzes to make learning engaging and fun. The goal is to inspire students to pursue STEM-related fields by providing an innovative and effective learning tool.

1.10 Paper 10

Paper Title: "What is Educational Technology?"

APA Citation: Lathan, J., PhD. (2022). What is Educational Technology? [Definition, Examples & Impact]. University of San Diego Online Degrees. https://onlinedegrees.sandiego.edu/what-is-educational-technology-definition-examples-impact/

Source: I found this article through a Google search.

Summary: Educational technology, or edtech, encompasses the use of technology in education, including tools like virtual reality and gamification, as well as innovative teaching approaches. Teachers play a crucial role in effectively

implementing these technologies, and a master's degree in educational technology equips them with the necessary skills. (Lathan, 2022).

Main Takeaways: Educational technology blends technology tools with innovative teaching practices, impacting both teachers and students. Teachers are essential in leveraging these tools, and a master's degree helps them navigate the complexities of educational technology. (Lathan, 2022).

1.11 Paper 11

Paper Title: "The heart of educational game design"

APA Citation: Victorrivero, V. a. P. B. (2018, February 23). The heart of educational game design. EdTech Digest. https://edtechdigest.blog/2018/02/22/the-heart-of-educational-game-design/#:~:text=Embedded%20Game%20Design%20prioritizes%20learning,applied%20to%20real%2Dlife%20scenarios.

Source: I found this article through a Google search.

Summary: This article discusses the growing trend of gamification and digital learning games in the field of educational technology. It highlights key areas for designing effective educational games, emphasizing the importance of embedded game design principles, immediate and layered feedback, narrative context for situated learning, and student agency in the learning process. (Victorrivero, 2018).

Main Takeaways: Gamification and digital learning games are gaining popularity in education. Effective educational games incorporate embedded game design principles, offering immediate and layered feedback to enhance engagement. Immersive narratives and student agency within games contribute to more meaningful learning experiences. (Victorrivero, 2018).

1.12 Paper 12

Paper Title: "Exploring Gamification and Game-Based Learning Part 1"

APA Citation: Lexischlosser. (2023, May 11). Exploring Gamification and Game-Based Learning Part 1. https://otl.du.edu/exploring-gamification-and-game-based-learning/

Source: I found this article through a Google search.

Summary: This article discusses gamification and game-based learning in education. It highlights the difference between these two approaches, where gamification involves adding game elements to learning experiences, and game-based learning integrates active learning within a game-like framework. The article emphasizes the positive impact of both strategies on student learning, including deeper engagement, improved academic achievement, and enhanced motivation. It also suggests considerations for effectively implementing gamification in courses, such as pacing, intentionality, and clear expectations. (Lexischlosser, 2023).

Main Takeaways: Game-based learning are effective strategies to engage students and enhance learning outcomes. Gamification involves adding game rules and elements to a course to make it more engaging without creating a full game. Lastly the third takeaway is careful planning is important to make sure that game rules and elements align with course objectives, and ultimately don't cause a distraction instead. (Lexischlosser, 2023).

1.13 Paper 13

Paper Title: "Gamification and active learning in higher education: is it possible to match digital society, academia and students' interests?"

APA Citation: Zamorano, L. R. M., Sánchez, J. Á. L., Godoy-Caballero, A. L., & Muñoz, C. B. (2021). Gamification and active learning in higher education: is it possible to match digital society, academia, and students' interests? International Journal of Educational Technology in Higher Education, 18(1). https://doi.org/10.1186/s41239-021-00249-y

Source: I found this article through a reference listed from the previous article.

Summary: Introducing gamification through the Econplus Champions League enhanced students' active learning experience. They had a blast designing the competition, forming teams, and competing without sacrificing their grades or satisfaction levels. In a nutshell, gamification made learning more fun and skill-building without the academic stress. (Zamorano, Sánchez, Godoy-Caballero, & Muñoz, C. B. (2021).

Main Takeaways: Learning is Fun: The Econplus Champions League made learning exciting by involving students in creating teams and setting competition rules. Student-Driven: Giving students a say in the learning process boosted engagement, demonstrating the potential of collaborative gamified learning. Balance Achieved: Gamification strikes a sweet spot between skill development, academic success, and student enjoyment in higher education. (Zamorano, Sánchez, Godoy-Caballero, & Muñoz, C. B. (2021).

1.14 Paper 14

Paper Title: "The Role of Gamification Techniques in Promoting Student Learning: A review and synthesis. Journal of Information Technology Education"

APA Citation: Alomari, I., Al-Samarraie, H., & Yousef, R. (2019). The Role of Gamification Techniques in Promoting Student Learning: A review and synthesis. Journal of Information Technology Education, 18, 395–417. https://doi.org/10.28945/4417

Source: I found this article through the references of the previous article.

Summary: This paper talked about how gamification techniques impact student learning in higher education, reviewing 40 studies. It found that techniques like points, badges, and leaderboards can affect learning differently, emphasizing the importance of teaching students about gamification methods before use. Gamification can enhance motivation and engagement, but its effectiveness varies based on context and individual differences among students. (Alomari, Al-Samarraie, Yousef, 2019).

Main Takeaways: Gamification techniques, including points, badges, and leaderboards, have diverse effects on student learning, highlighting the need to educate students about these approaches beforehand. While gamification can boost motivation and engagement, its success hinges on context and student differences. Educators should select suitable gamification methods to stimulate desired learning outcomes effectively. (Alomari, Al-Samarraie, Yousef, 2019).

1.15 Paper 15

Paper Title: "Building empathy, compassion, and achievement in the jigsaw classroom"

APA Citation: Aronson, E. (2002). Building empathy, compassion, and achievement in the jigsaw classroom. In Elsevier eBooks (pp. 209–225). https://doi.org/10.1016/b978-012064455-1/50013-0

Source: I found this article through the references of the previous article.

Summary: In the jigsaw classroom, students are split into groups to learn and share specific content, boosting teamwork and empathy. It's shown to improve academic performance and reduce prejudice. Overall, it creates a friendly and inclusive learning atmosphere. The findings concluded that the method's effectiveness in promoting empathy and reducing prejudice. (Aronson, 2002).

Main Takeaways: The jigsaw classroom method encourages cooperation and empathy among students by dividing them into content-sharing groups. Real-life examples and scientific evidence demonstrate its success in enhancing academic performance and reducing prejudice. This approach creates a supportive and inclusive learning environment, benefiting both struggling students and the overall classroom atmosphere. (Aronson, 2002).

2 SYNTHESES

In the exploration of educational technology, the following key findings were uncovered. A resounding theme is the pressing need for a robust theory in game-based educational technology (Novak, 2021). The papers advocate the application of analytics test theories of game-based learning (Novak, 2021).

Personalized learning stands out prominently (Asogwa, Ofoegbu, Ogbonna, , Eskay, Nji, Ngwoke, Nwosumba, & Onah, 2020). The focus is on tailoring educational games to the diverse needs of individual students (Asogwa, Ofoegbu, Ogbonna, , Eskay, Nji, Ngwoke, Nwosumba, & Onah, 2020).

Another prominent aspect is the balance between preparing students for future employment while maintaining their academic performance (Lu & Song, 2020). Achieving this **IS A** challenge in game design education (Lu & Song, 2020). In teacher preparation, digital breakout games are a transformative force (Weisberg et al., 2022). These immersive experiences are revolutionizing teacher education (Weisberg et al., 2022).

Innovative evaluation methods such as crossword and word square games are also making strides (Juliantari, Sudarsana, Sutriyanti, Astawa, Putri, & Saddhono, 2018). These approaches make learning less daunting and more enjoyable (Juliantari, Sudarsana, Sutriyanti, Astawa, Putri, & Saddhono, 2018). Engagement hinges on challenge, especially as games become more difficult (Hainey & Connolly, 2014). The research highlights that challenging games are particularly effective motivators (Hainey & Connolly, 2014).

For math games, providing students with step-by-step assistance yields remarkable improvements (Pan & Ke, 2023). However, the overarching goal remains to make learning enjoyable for all (Pan & Ke, 2023).

In summary, the landscape of game-based educational technology is constantly changing. Since there are a lot of complexities to the field, there is a focus on personalized learning and the balancing between workforce readiness and academics are main themes. Building trust, immersive experiences, and engaging challenges are key areas of considerations. This research assignment outlines the key expansion areas within educational technology, particularly game design.

3 REFLECTIONS

The journey of finding and dissecting sources in educational technology and game design has been an interesting but sometimes challenging adventure. Discovering a variety of research papers through sources like the Georgia Tech Library website and Google was relatively straightforward but condensing complex ideas into concise summaries proved to be quite thought-provoking.

Throughout this process, a growing interest in the practical applications of game design within educational technology has become evident. The idea of crafting customized learning experiences and harnessing technology to improve education holds significant appeal. Additionally, an interest for a unified theory in game-based educational technology, academic achievement, and workforce readiness in educational game design, are also areas of research interest. In the coming weeks, the aim is to dive deeper into these areas.

4 PLANNING

Expanding upon my current knowledge base, my upcoming focus will revolve around game design within the sphere of educational technology. In the coming week, I intend to diversify my approach to locating academic papers for further reading, as I found the method of referencing a reference within a paper particularly insightful.

A specific area of interest that I plan to explore further is the realm of game mechanics, encompassing elements like rewards, rules, and user feedback. By homing in on these components, I hope to gain a greater understanding of how they can be effectively used to design educational. Ultimately, my goal for the next week is to acquire more concrete insights into the practical application of game design principles within the realm of educational technology.

5 ACTIVITY

5. 1 Paper to Address RQ1: Asogwa, U. D., Ofoegbu, T. O., Eseadi, C., Ogbonna, C. S., Eskay, M., Nji, G. C., Ngwoke, O. R., Nwosumba, V. C., & Onah, B. I. (2020). The effect of a video-guided educational technology intervention on the academic self-concept of adolescent students with hearing impairment. Medicine, 99(30), e21054. https://doi.org/10.1097/md.0000000000021054

- Needs: They wanted to help students with hearing impairment feel better about their school abilities. The problem they were tackling is that when students doubt their academic skills, it can affect their overall life satisfaction.

- Method: They tried a video-guided educational program with short videos and subtitles to boost the students' academic self-confidence. They did a randomized controlled trial to see if this program worked.

- Audience: 60 middle and high school hearing impaired students who attended regular public schools in Southeast Nigeria.

- Results: The program really helped the students. Those who got the video-guided education felt better about their school skills compared to those who didn't. This positive change lasted even after the program ended, showing that the program had a long-lasting effect.

- Critique: The study's small sample size (60 students) limits the generalizability of its findings and calls for further research with a larger and more diverse group of participants. While the study focused on academic self-concept, a broader examination of the intervention's impact on various aspects of students' lives and academic performance could provide a more comprehensive understanding of its effectiveness.

5.2 Paper to Address RQ2: Kajamaa, A., Kumpulainen, K., & Olkinuora, H. (2019). Teacher interventions in students' collaborative work in a technology-rich educational makerspace. British Journal of Educational Technology, 51(2), 371–386. https://doi.org/10.1111/bjet.12837

- Needs: Explore the how teacher training is a must in makerspaces because it is how they stay sharp and juggle the freedom and structure these cool learning spaces offer. (Kajamaa, Kumpulainen, & Olkinuora, 2019).

- Method: The researchers watched what happened in a real makerspace in a Finnish school. It's like seeing teachers and students in action, not just theories. They didn't just watch; they sorted teacher strategies into three types: bossy, balancing, and unleashing. This gave a close-up look at how teachers help students in different ways. (Kajamaa, Kumpulainen, & Olkinuora, 2019).

- Audience: Teachers and Big Thinkers: Teachers and those in the education industry can learn from this. It helps them make better lessons and training. Researchers can also learn how teachers and students work together in the workplace. (Kajamaa, Kumpulainen, & Olkinuora, 2019).

- Analysis: Students often asked for help first (60% of the time). It's like saying teachers should be ready for all kinds of questions. Teachers need to juggle rules and creativity. Being bossy, balancing things, or letting go a bit – they all matter to make learning fun and owned by students. (Kajamaa, Kumpulainen, & Olkinuora, 2019).

- Critique: The study focused on one specific makerspace in a Finnish school, so it was limited to just one type of school in one area. A larger study sample may have collected additional findings. The research noted more boys participated than girls. (Kajamaa, Kumpulainen, & Olkinuora, 2019).

5.3 Paper to Address RQ3: Weisberg, L., Dawson, K., & Dana, N. F. (2022). Engaging preservice teachers in the design of digital breakout games in an educational technology course. Journal of Digital Learning in Teacher Education, 1–18. https://doi.org/10.1080/21532974.2022.2038738

- Needs: Meeting the demand for training techniques of teachers so they can better incorporate technology in their teaching ways, and making teachers more confident in using technology effectively, i.e., like digital breakout game design.

- Method: Use surveys and data analysis to explore the impact of digital breakout game design amongst teachers. Offer an evidence based look at how digital breakout game design benefits teacher preparation programs.

- Audience: Targeting teacher educators and researchers in educational technology and teacher training.

- Analysis: How digital breakout game design lines up with 21st-century learning's 4Cs and inspires preservice teachers to embrace technology integration.

- Critique: Limitations included replying on self-reported data from preservice teachers, which have caused a bias. Since the data is based on participants' individual perceptions, it might not have fully captured the actual impact of digital breakout game design.

5.4 Paper to Address RQ4: Juliantari, N. K., Sudarsana, I. K., Sutriyanti, N. K., Astawa, I. N. T., Putri, I. D. a. H., & Saddhono, K. (2018). Educational Games based in Information Technology as Innovation Evaluation Activity in Learning. Journal of Physics, 1114, 012041. https://doi.org/10.1088/1742-6596/1114/1/012041

- Needs: There is a growing need to address students' anxieties associated with traditional evaluation methods and explore innovative ways to make learning assessments more enjoyable.

- Method: The ADDIE model has emerged as a valuable framework for developing IT-based educational games. The research paper uses crossword and word square games as methods to evaluate students' progress and understanding in Hindu Religious Education.

- Audience: Elementary school students, specifically those in Hindu Religious Education classes, represent the primary audience benefiting from IT-based educational games.

- Analysis: The analysis phase involves assessing potential, identifying problems with traditional evaluation approaches, reviewing relevant literature,

determining competencies and objectives, and understanding student characteristics.

- Critique: The research primarily focuses on Hindu Religious Education in elementary schools, limiting its generalizability to other subjects and grade levels. The exclusive reliance on the ADDIE model may overlook alternative methodologies for developing IT-based educational games, potentially constraining their adaptability to diverse educational settings.

5.5 Paper to Address RQ5: Hainey, T., & Connolly, T. (2014). The use of games as an educational web2.0 technology. In Advances in intelligent systems and computing (pp. 719–728). https://doi.org/10.1007/978-3-319-01854-6_73

- Needs: The research highlights a need for educational game designers to prioritize challenge as a key motivator, both for leisure and learning. This suggests that future educational games should include proper elements to effectively engage students. There's a need to explore the gender differences in attitudes towards computer games more deeply, as males tend to view games as more social and exciting, while females may perceive them as lonely. Understanding these gender dynamics could help tailor educational gaming experiences. (Hainey, 2014).

- Method: The survey-based research method shows answers into the motivations, attitudes, and habits of Higher Education students relative to computer games. (Hainey, 2014).

- Audience: This research primarily targets Higher Education students, emphasizing the importance of understanding their preferences and motivations for playing computer games. Educational game designers and institutions can benefit from these insights to create more engaging and effective learning experiences. (Hainey, 2014).

- Analysis: The analysis concludes that challenge is a driving factor in computer game engagement. Gender-based analysis suggests that males and females have varying attitudes towards computer games, indicating the need for more

inclusive game design that accommodates diverse player preferences and experiences. (Hainey, 2014).

- Critique: One limitation of this research lies in the sample size and its focus on a single Higher Education institution. Expanding the study to encompass a more diverse and representative sample from various educational backgrounds and regions would enhance its external validity. The survey-based approach relies on self-reporting, which may introduce response bias and subjectivity. Combining survey data with behavioral observations or gameplay analytics could offer a more comprehensive understanding of player motivations and attitudes. (Hainey, 2014).

5 REFERENCES

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