*Designing Children-Friendly Gaming Website Using Gamification*

**Project Background**

Gamification has been popular since the early 2000’s[[1]](#endnote-1) and it has contributed greatly to our education sector mostly for the young children in their primary and nursery education[[2]](#endnote-2), according to Nikita Verma[[3]](#endnote-3) a case study concluded that introducing gamification methods in a classroom boosted student performance by 89% compared to when gamification methods were not yet introduced. Furthermore, gamification techniques increased student engagement in class by 65% and helped students recall previous class activities by 40%, this proves the significance of gamification in our modern-day education. I can testify that gamification of class activities in my secondary school education truly helped me learned and remember tasks better, that is why I believe the topic deserves further development and should be implemented in educational facilities worldwide where applicable.

**Project Description**

In response to the growing need for innovative educational tools for young children, this project aims to design a user-friendly and interactive website focused on enhancing children's basic arithmetic and alphabet skills. The primary objective is to create a children-friendly web platform employing gamification techniques. Specifically, the website will help children between the ages of 3 and 8 to learn fundamental arithmetic concepts such as counting and arranging numbers in ascending or descending order. Additionally, the platform will feature engaging games centred around letters of the alphabet, strengthening children's ability to use and recognize letters effectively.

The project's objectives include developing games that facilitate learning of fundamental arithmetic skills such as counting and number sequencing. Interactive activities encouraging children to arrange numbers in both ascending and descending orders will enhance their numerical thinking abilities. Moreover, the project will focus on creating engaging alphabet games to enhance letter recognition and improve children's ability to utilize the alphabet effectively. The implementation of gamification techniques will transform educational tasks into enjoyable and rewarding experiences. These games will be tailored to match the cognitive capacities of the target age group (3 to 8 years old), ensuring both entertainment and educational value. The development process will also emphasize the creation of an intuitive and visually appealing user interface, specifically designed for young children, ensuring ease of navigation and engagement.

By addressing these objectives, the project endeavours to create a dynamic online platform where children can explore, learn, and play in a safe digital environment. The main goal is to foster a love for learning through interactive and entertaining educational experiences, setting a strong intellectual foundation for young learners before they enter formal schooling. Through careful design and a focus on both educational and entertainment value, the project aspires to make a meaningful impact on early childhood education.

**Analysis**

The project intends to also address key issues in the field of educative video games for kids. Protecting children online is a serious matter that need careful content monitoring to shield them from inappropriate information[[4]](#endnote-4). Strict content moderation is necessary to address the problem of internet safety. Children will be protected from unsuitable information by regular manual pre- moderation method which involve reviewing content before it is published in the website and allowed to be viewed by users[[5]](#endnote-5). Implementing this monitoring and filtering method will guarantee a secure online environment.

To enhance educational engagement, gamification techniques or strategies[[6]](#endnote-6) emerge as a powerful solution. Children are inspired to actively participate in the learning process when gaming components are incorporated into class tasks[[7]](#endnote-7), which improves their engagement and comprehension of educational topics. Games like "Count that Number" and "Alphabet Quiz" work as interactive exercises that make learning fun due to a reward system, progress tracking, immediate feedback and collaborative features, the games not only teach fundamental concepts but also engage and motivate young learners.

The foundation of frontend development consists of necessary tools like conventional HTML and CSS combined with JavaScript. These techniques make it possible to design engaging user interfaces that appeal to young users' cognitive capacities. While strategies like the inclusion of incentive programmes, accomplishments, and interactive components, as demonstrated in games like "Match that Number," increase user engagement and motivation, creating a harmony between pleasure and education.

Implementing secure login features, adds an extra layer of security[[8]](#endnote-8). Parental involvement in the login process ensures child safety without compromising user experience. These tools act as the first line of defence, protecting children and the website itself from unsuitable content, unwanted access and cyber-attacks[[9]](#endnote-9).

**Plan of Action**

| **Month** | **Tasks** |
| --- | --- |
| **October**  **(approx. 1 to 2 week)** | - Research existing child-friendly gaming platforms. Analyse gamification techniques. Plan gamification elements and reward systems. |
| **November (approx. 2 to 3 weeks)** | - Create interactive prototypes based on designs. Implement gamification elements and rewards. Refine designs based on user feedback. |
| **December (approx.4 weeks)** | - Develop basic frontend including all pages of the website using React, HTML, CSS, Bootstrap. Implement basic game functionalities. Refine designs based on interactive prototypes. |
| **January**  **(approx. 2 to 4 weeks)** | - Enhance frontend features based on feedback. Implement responsive design for various devices but focus on tablets. Integrate complex game mechanics or pending functionalities if applicable. |
| **February**  **(approx. 3 to 4 weeks)** | - Develop complex backend functionalities using JavaScript or PHP. Set up MySQL database for efficient data management and implement login feature. |
| **March**  **(approx. 3 to 4 weeks)** | - Conduct testing: functionality, user experience, security. Iterate game designs based on feedback and fix bugs. |
| **April**  **(approx. 1 to 2 weeks)** | - Conduct cross-browser and device compatibility testing. Finalize documentation: project report, design decisions, outcomes |
| **May**  **(approx. 1 to 2 weeks)** | - Conduct final checks on the website. Prepare for project presentation/demonstration. |

**Reference**

1. Spinify(2023, March 5) *Who Started Gamification?*( <https://spinify.com/blog/gamification-history/#:~:text=Nick%20Pelling%20coined%20the%20term,for%20vending%20machines%20and%20ATMs>) [↑](#endnote-ref-1)
2. Tanvi Bajpai(2023, August 11) *Play, Learn, Succeed: Exploring The Impact Of Gamification On Children's Learning*(<https://elearningindustry.com/play-learn-succeed-exploring-the-impact-of-gamification-on-childrens-learning>) [↑](#endnote-ref-2)
3. Nikita Verma (2023, Feb 19) *How Effective is Gamification in Education? 10 Case Studies and Examples*(<https://axonpark.com/how-effective-is-gamification-in-education-10-case-studies-and-examples/#:~:text=Gamification%20improved%20students'%20understanding%20of,the%20end%20of%20the%20semester>) [↑](#endnote-ref-3)
4. WebPurify(2023, September 11)*Internet safety for kids: why every parent should care about content moderation* (<https://www.webpurify.com/blog/internet-safety-for-kids/>) [↑](#endnote-ref-4)
5. besedo(2023, April 25)*5 Content Moderation Methods You Should Understand*(<https://besedo.com/knowledge-hub/blog/5-moderation-methods-you-should-understand/>) [↑](#endnote-ref-5)
6. Mario Buljan (2021, November 15) *Gamification For Learning: Strategies And Examples* (<https://elearningindustry.com/gamification-for-learning-strategies-and-examples>)

   [↑](#endnote-ref-6)
7. Nand, K., Baghaei, N., Casey, J. *et al.* Engaging children with educational content via Gamification. *Smart Learn. Environ.* **6**, 6 (2019). (<https://doi.org/10.1186/s40561-019-0085-2>) [↑](#endnote-ref-7)
8. Hillary Nyakundi (2023, January 17) *Secure User Authentication Methods – 2FA, Biometric, and Passwordless Login Explained* (<https://www.freecodecamp.org/news/user-authentication-methods-explained/#:~:text=In%20today's%20digital%20world%2C%20user,online%20safety%20of%20both%20parties>.) [↑](#endnote-ref-8)
9. Mary E. Shacklett (2021) *authentication* (<https://www.techtarget.com/searchsecurity/definition/authentication#:~:text=Authentication%20technology%20provides%20access%20control,processes%20and%20enterprise%20information%20security>.) [↑](#endnote-ref-9)