

Initial Plan: Using Minecraft Education to Teach Horse Care and Nutrition

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Project Description

The Welsh Pony and Cob Society (WPCS) is a charity dedicated to the preservation and promotion of Welsh ponies and cobs whilst also educating people about them. WPCS would like a tool to help them teach children about horses' care and nutrition. The WPCS uphold strict standards and requirements for the Welsh pony and cob breeds and advocate for their welfare and the welfare of all horses by maintaining that people need to consider their ability to commit to the care for a horse before owning one and educating people about the work that goes into owning a horse [1].

Using games as an education tool is called gamification and there is research indicating the positive outcomes of using gamification. Gamification can lead to higher engagement from students and students consider gamified education to be 'more motivating, interesting and easier to learn' compared to traditional teaching [2] and it works best and is most engaging when the game features 'freedom to fail, rapid feedback, progression and storytelling' [3]. Linked to the concept of gamification is game-based learning, which is the idea of using video game principles and designs and applying it to real-life teaching. The interactivity and freedom to experiment and explore in games leads to the player being an active participant which, when applied to learning, leads to higher retention of information compared to learning by sitting and listening to a lecture [4].

To do this project, I will be using Minecraft Education. Minecraft Education is a version of the game Minecraft specifically designed for teaching. Minecraft allows players to create and explore large, sandbox worlds of blocks and interact with it any way they wish by breaking and placing these blocks. Minecraft Education, specifically, is designed to be a tool for educators and students to teach and learn a large array of subjects and provides pre-built lessons for students to learn whilst also giving educators the power to create their own lessons.

Thus, depending on WPCS' specific requirements, I will be using Minecraft Education to design a fun and engaging learning and teaching resource to support WPCS in their work in educating primary school aged children in years 5 and 6. I will be working directly with WPCS and the specific goals for the project will be set in collaboration with them. If needed, my project could align with the new Welsh curriculum so it can be used in school settings, by designing additional accompanying materials such as lesson plans and schemes of work.

Aims and Objectives

The following current aims and objectives are tentative as they may vary depending on what the WPCS require from the project and are thus subject to change.

Aims:

- Create a resource using Minecraft Education to teach children about horse care and nutrition

Objectives:

- Research and gain a thorough understanding of:
 - Proper horse care and nutrition
 - Gamification and optimal game-based learning tools
 - Minecraft Education
 - The Welsh curriculum, and where the project can link to it
- Meet with WPCS to establish how they want the resource to be designed, including:
 - Whether the resource is a standalone game or to be used as tool alongside teaching
 - Functional and non-functional requirements
 - Minimum viable product
- Determine evaluation criteria for the resource (i.e. Is information effectively conveyed? Is it an interesting and engaging experience to play?)
- Design and implement the Minecraft world for the game:
 - Plan and implement a story if needed
 - Build the world for the game's setting
 - Implement any code or NPCs (Non-Playable Characters) needed for the resource
- Quality checking:
 - Game is bug free and exploit free (i.e. game runs as intended, players cannot skip story areas or access areas they are not meant to)
 - Game meets the requirements and successfully teaches horse care and nutrition

Feasibility

I think this project is incredibly feasible as I will only need simple ethics approval. I plan to use progression steps and statements of what matter framework laid out in the current Welsh curriculum as means of evaluating my work as a learning tool and testing will be carried out by myself. Furthermore, I will need Minecraft Education which has already been arranged to be provided to me.

Work Plan

Week	Plan
1	<ul style="list-style-type: none">• First supervisor meeting to discuss project• Start conducting background research for initial plan
2	<ul style="list-style-type: none">• Get into contact with WPCS to determine requirements for the project• Continue background research, mainly focusing on horses and game design• Begin process for getting ethical approval• Begin writing Problem and Background section for Final Report

3	<ul style="list-style-type: none"> • Begin planning for the game depending on requirements (story, world, coding, game design) • Begin planning evaluation criteria for the final product • Meet with supervisor to discuss research and plans for the Minecraft Education world
4	<ul style="list-style-type: none"> • Finalise plans for the game and evaluation criteria • Begin implementation of the game (building)
5	<ul style="list-style-type: none"> • Continue implementation of the game (building, code) • Begin writing Solution to the Problem section for Final Report
6	<ul style="list-style-type: none"> • Continue implementation of the game (building, code) • Consult with supervisor and WPCS on progress made and the quality of the game as a teaching resource
7	<ul style="list-style-type: none"> • Continue implementation of the game
8	<ul style="list-style-type: none"> • Finalise implementation of the game
9	<ul style="list-style-type: none"> • Begin evaluation and debugging of the game • Begin writing Evaluation section for Final Report
10	<ul style="list-style-type: none"> • Finalise evaluation and debugging of the game
11	<ul style="list-style-type: none"> • Begin writing Communication and Project Management Skills section for Final Report • Go back and finalise anything not finished for the game or the report
12	<ul style="list-style-type: none"> • Finalise game and Final Report • Submit project

Risk Assessment

Risk	Likelihood	Level of concern	Mitigation strategy
Work loss	Low - Medium	High	Regularly back up work on Cloud service (eg. Microsoft OneDrive) or on separate device
Illness/unforeseen circumstances	Medium	Low - Medium	Apply for Extenuating Circumstances and inform supervisor and WPCS
Issues with Minecraft Education World (bugs, incompatibility with different devices, etc.)	Medium - High	High	Regularly test world on different devices (eg. Laptop vs PC) and debug as necessary
Issues with WPCS (vagueness for requirements, unresponsive, etc.)	Medium	Medium - High	Regularly contact WPCS and update them on progress throughout development for clarity and feedback

Bibliography

- [1] WPCS, "Education and Welfare," [Online]. Available: <https://wpcs.uk.com/join-the-society/education-welfare/>.
- [2] D. Dicheva, C. Dichev, G. Agre and G. Angelova, "Gamification in Education: A Systematic Mapping Study," *Journal of Educational Technology & Society*, vol. 18, no. 3, pp. 75-88, 2015.
- [3] A. Stott and C. Neustaedter, "Analysis of Gamification in Education," 2013. [Online]. Available: <https://clab.iat.sfu.ca/pubs/Stott-Gamification.pdf>.
- [4] S. Bloom, "Game-Based Learning: Using Video Game Design for Safety Training," *Professional Safety*, vol. 54, no. 7, pp. 18-21, 2009.