Darwin Fellowship - Interim Report

Due within one month of the half way point of your Fellowship (*maximum 3 pages*)

Remove the blue guidance text before you submit your report.

Darwin Fellowship reference	DPLUS197
Name of Darwin Fellow	Andreas Josephides
Lead organisation	Enalia Physis Environmental Research Centre
Fellow's organisation(s)	Enalia Physis Environmental Research Centre, Joint Services Health Unit (JSHU) in Sovereign Base Areas Cyprus, UK Centre for Ecology & Hydrology, Akrotiri Environmental Education Centre
Fellow's role within the organisation (prior to Fellowship)	Educational Software Advisor, Content Creator
Start/end date of Fellowship	01 April 2023 – 31 March 2025
Location of Fellowship	Sovereign Base Areas of Cyprus (SBAs)
Darwin Fellowship grant value (£)	
Type of work (e.g. research, training, if other please specify)	Educational Interactive Tool Development
Main contact in lead organisation	Marios Papageorgiou
Author(s) and date	Dr Kelly Martinou, Dr Tom August, Dr Helen Roy, Koula Michael, Ioanna Angelidou

1. Background

Prior to joining the Darwin Plus Project (DPLUS197), I collaborated with Dr. Kelly Martinou on the digitization of the Three Mosquiteers characters as part of the Cost European Network project (https://www.ceh.ac.uk/our-science/projects/alien-csi-dissemination-materials).

Utilizing software like Adobe Animate, we worked together to bring conceptual characters to life, contributing to the project's progression through teamwork and shared expertise.

The animated video was showcased to audiences of all ages, effectively raising awareness about invasive alien mosquitoes. Before creating the video, I conducted extensive research and study on software such as Adobe Animate, Adobe After Effects, and Adobe Photoshop to ensure proficiency and efficiency in content creation. Furthermore, I provided valuable guidance and support to Ioanna Angelidou (DPLUS101) in the conceptualization and refinement of an interactive game aimed at raising awareness about biodiversity. Leveraging my background in game development, I collaborated with Ioanna to ensure that the proposed game aligned with industry standards and effectively communicated its message to the target audience.

The aim of the Fellowship is to enhance children's knowledge and raise awareness about significant environmental topics, including mosquitoes, invasive alien species, and pollinators. This will be achieved through the development and implementation of an interactive online tool in the form of a game. The tool aims to engage primary school children both in the classroom and at home, providing them with a fun and interactive learning experience.

The objectives of the Fellowship are as follows:

1) Develop an electronic interactive gaming tool that digitizes The Three Mosquiteers stories. This tool will primarily target primary school children and facilitate learning about mosquitoes, pollinators, and invasive alien species within and beyond the classroom environment.
2) Investigate the perceptions of school children and teachers regarding the utilization of the educational tool. This research will provide valuable insights into the effectiveness and reception of the game-based learning approach.
3) Explore the needs and perspectives for novel technologies and learning tools among School-Based Advisors (SBAs). Understanding the requirements of educators will ensure that the developed tool aligns with educational objectives and practices.

Programme of Work:

- Research and Collaboration: Conduct literature review and participate in biodiversity events to gather insights and network with experts.
- Ideation and Feedback: Engage in collaborative brainstorming sessions with educators and experts to refine game ideas and objectives.
- Audience Research: Administer questionnaires in primary schools to gather feedback and ideas for game features.
- Technology Assessment: Research and select suitable software tools for game development, exploring innovative technologies.
- Artistic Development: Create concept art samples to establish the visual direction of the game.
- Game Design and Content Organization: Implement a structured board to organize game content and features effectively.
- Animation and Asset Expansion: Develop basic animations and expand the game assets library to enrich the gaming experience.
- User Interface Design: Design an intuitive user interface for seamless navigation and engagement.
- Audio Composition: Compose music and sound effects to enhance the immersive experience of the game.
- Quality Assurance: Develop comprehensive documentation for testing methodologies to ensure game stability.
- Promotion and Marketing: Promote the game through various channels, including the creation of promotional videos.

Under the collaborative leadership of Dr. Kelly Martinou (JSHU), Dr. Tom August (UKCEH), and Prof. Roy (UKCEH), who jointly oversee the project, my role entails spearheading the development of the electronic interactive tool (game).

Drawing upon the extensive experience of Dr. Kelly Martinou and Professor Roy in developing educational materials for children, particularly on topics such as mosquitoes, pollinators, and invasive alien species, they will offer invaluable guidance on project planning, organization, and biodiversity education, enriching the content of the educational tool.

Dr. Tom August, leveraging his expertise as a computational ecologist, will provide invaluable guidance on project management strategies aimed at ensuring the success of the game development process. He will offer insights into efficient methodologies to optimize the tool's development.

Furthermore, Ms. Joanna Angelidou, an esteemed Darwin Plus fellow, will provide valuable insights into biology and ecology, particularly focusing on pollination, biological invasions, and mosquitoes.

Lastly, Ms. Koula Michael, an experienced teacher at the Akrotiri Environmental Education Centre, will ensure the game is tailored to suit the needs of school children, ensuring its suitability for educational purposes.

2. Progress

1. Research and Collaboration:

- Conducted extensive research on the game market, playing similar games and analysing their features and design to inform the development of the educational game.
- Engaged in biodiversity events, such as Bioblitz, One Health Workshop and National Habitat Day Workshop, hosted by Enalia in Akrotiri, to network with experts and gather insights related to the project's educational goals.
- Participated in meetings and educational sessions with Dr. Kelly Martinou, Koulla Michael, and other experienced educators and scientists in schools, events and in Akrotiri, discussing educational strategies and gaining valuable input for our game.
- Explored literature on invasive species, mosquitoes, habitats, and other biodiversity-related topics to deepen understanding and inform game content.

2. Creation of Educational Videos:
    - Collaborated with Dr. Kelly Martinou and Ioanna Angelidou (DPLUS00024) to create two educational videos about Alien Invasive Mosquitoes and facts about Mosquitoes and how to protect ourselves. These videos aimed to raise awareness and obtain feedback for the project. Additionally, they can be included in the game to educate students. The videos were translated into Greek and German and published on various social media platforms. (facts about mosquitoes and how to protect ourselves, Invasive Aedes Mosquitoes)
3. Ideation and Feedback:
    - Administered questionnaires in primary schools after students watched the educational videos created, gaining insights into their preferences, interests, and areas of focus. This feedback helped us understand their thought processes, what captures their attention, and areas where improvement may be needed for our game features.
    - Participated in collaborative brainstorming sessions with educators and experts to refine our game ideas and objectives.
    - Regularly attended group and private meetings with other fellows and supervisors to discuss progress and receive feedback.
    - Participated in a competition hosted by the Cyprus Ministry of Education, guiding students in creating a Stop Motion video. This intricate process involved students crafting various figures and meticulously moving them to create an animated sequence. Leveraging my prior experience with animations from the creation of educational videos, I provided guidance to the students. The school's remarkable achievement, reaching the finals and receiving honors, provided valuable insights into our target audience's interests and capabilities. Additionally, the participation video was published by the Cyprus Educational Department. (Έπαινος: Διαδικτυακή ζούγκλα, Δημοτικό Σχολείο Ασωμάτου)
4. Technology Assessment:
    - Researched and evaluated various software tools for game development, selecting those that best align with our project's requirements and goals.
    - Explored innovative technologies to enhance the development process, seeking ways to optimize efficiency and functionality.
    - Utilized Dr. Tom August's expertise to explore development methods, coding approaches, and project management techniques, enhancing efficiency and functionality.
5. Artistic Development:
    - Conducted research to learn how to create and customize art and 3D models appropriate for the game, creating a library of assets that can be used in the game.
    - Developed concept art samples tailored to the project's needs, blending detailed design elements with an appropriate style to appeal to our target audience.
6. Game Design and Content Organization:
    - Implemented a structured board to organize our game content and features effectively, leveraging newly acquired skills in game design.
    - Followed a strict workflow, preplanning, designing, and testing a feature each week to ensure the timely and efficient development of our game.
    - Designed an interactive user interface with sound effects to provide visual feedback, guidance, and educational information, based on research in market examples.
7. Audio Composition:

- Held meetings with Music School Teachers to learn about game music and music educational strategies and technologies.
- Utilized this knowledge to create a library of appropriate sound effects (SFX) to enhance the immersive experience of our game, ensuring that sound enhances the overall player experience.

8. Quality Assurance:
    - Developed comprehensive documentation for testing methodologies to ensure the stability and functionality of our game.
    - Conducted regular quality checks to maintain content accuracy and educational alignment, demonstrating proficiency in quality assurance practices.
9. Promotion and Marketing:
    - Shared the educational videos created across multiple social media forums and other related platforms and websites.

Problems encountered and measurements to overcome them:

1. Adjusting Game Content and Development Detail:
   Initially, there was a need to refine the game content to prevent delays and meet project deadlines. A trade-off was made between the desire for a highly detailed game and the need to maintain project timelines. It was decided that adopting a more cartoonish and simple low-poly art style would expedite asset creation while still allowing for attention to important educational details. This adjustment ensured that the game remained fun, interactive, and aesthetically pleasing while meeting educational goals.

2. Managing Research and Learning Curve:
   The extensive research and knowledge required for the project initially caused delays in the development process. To address this, dedicated time was allocated to studying and learning about creating and customizing assets, including available models in the market. Additionally, I gained proficiency in modifying animations for models and UI elements to enhance the game's entertainment value and attractiveness. Furthermore, I acquired skills in designing better system architecture to facilitate the seamless addition of new content and ensure error-free code. Understanding feature systems according to the game's needs and learning about design patterns to improve performance and structure were also integral aspects of overcoming this challenge.

3. Time Consuming Educational Video Development:
   The creation of the two educational videos posed a significant time constraint and temporarily slowed game development. However, this process provided invaluable insights into animation editing tools and biodiversity information related to mosquitoes, invasive species, and habitats. Moreover, engaging with schools and students during the video development phase yielded valuable feedback that will enhance the game's educational content.

4. Efficiency in Asset Creation:
   Creating various assets from scratch proved to be time-consuming. To expedite this process, tools were identified and utilized to accelerate asset creation. While these tools initially posed a learning curve and delayed development progress, they ultimately improved proficiency in 3D modeling and asset creation.

Upon Dr. Tom's recommendation, a Risk Registry document was created to catalog potential problems, assess their severity levels, and propose solutions. This proactive approach to risk management has proven invaluable in identifying and addressing challenges as they arise, ensuring smoother progress towards meeting project objectives.

3. Achievements and Outcomes

Main Achievements and Outcomes to Date:

1. Acquired comprehensive knowledge on topics related to alien invasive species, pollinators, and disease vectors, enhancing understanding of biodiversity conservation and education methodologies.
2. Produced and published two animated videos addressing invasive species and disease vectors, effectively disseminating educational content to a wide audience. Received feedback from both young children and experts through questionnaires, ensuring content relevance and educational effectiveness.
3. Demonstrated significant improvement in computational skills and software development approaches, facilitating more efficient and effective game development processes. Expanded proficiency in animation techniques, contributing to the creation of engaging and visually appealing content. Furthermore, honed marketing techniques to effectively promote educational materials and engage with target audiences.
4. Engaged actively in collaborative learning environments, contributing to discussions, sharing insights, and benefiting from the expertise of peers and mentors. This collaborative approach has fostered a dynamic learning environment conducive to personal and professional growth.

4. Impact of COVID-19 on Fellowship

COVID-19 did not impact the Fellowship in any way. Although I got infected with COVID-19 during January of early 2024, I distanced myself working from home to ensure the health and safety of everyone involved in the Fellowship.

5. Safeguarding

Please tick this box if any safeguarding or human rights violations have occurred during this financial year. ☐

If you have ticked the box, please ensure these are reported to ODA.safeguarding@defra.gov.uk as indicated in the T&Cs.

6. Next Steps

Forthcoming Activities, Events, and Milestones:

- Advance game development to create a comprehensive prototype that showcases key features and mechanics. Solicit feedback from target audiences to refine gameplay and educational content iteratively.
- Maintain regular communication with project supervisors, fellow collaborators, and educators from Akrotiri to ensure alignment with project goals and educational objectives. Actively seek input and insights to streamline development processes and enhance educational value.
- Participate in biodiversity-related events such as Bioblitz to deepen understanding of relevant topics, including mosquitoes and invasive alien species. Collaborate with experts to explore potential game features and mechanics that align with educational goals and audience preferences.
- Maintain detailed documentation of project progress, milestones achieved, and key learnings. Prepare regular reports and updates for project stakeholders to ensure transparency and accountability throughout the fellowship period.