Scrum Pilot Study Report

Project Name: Insect World

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Introduction:

Insect World is an augmented reality mobile game I contributed to as part of a student project. The goal was to create an engaging, educational experience teaching players about insects. The game highlights the potential of augmented reality and mobile technology for engaging education. It provides an interactive experience to learn about insects in a more visually compelling way compared to textbooks or 2D pictures alone. The proof of concept can be expanded in the future to cover more animals and natural science topics. In this portfolio summarizes my role, the game features, project artifacts, and our Agile process.

Team and Role Character:

As part of the development team, I researched software options for coding the game, integrated 3D animations and audio, debugged issues, added textual descriptions, and collaborated with designers on the user interface. My contributions cantered on bringing the core functionality and insect assets to life.

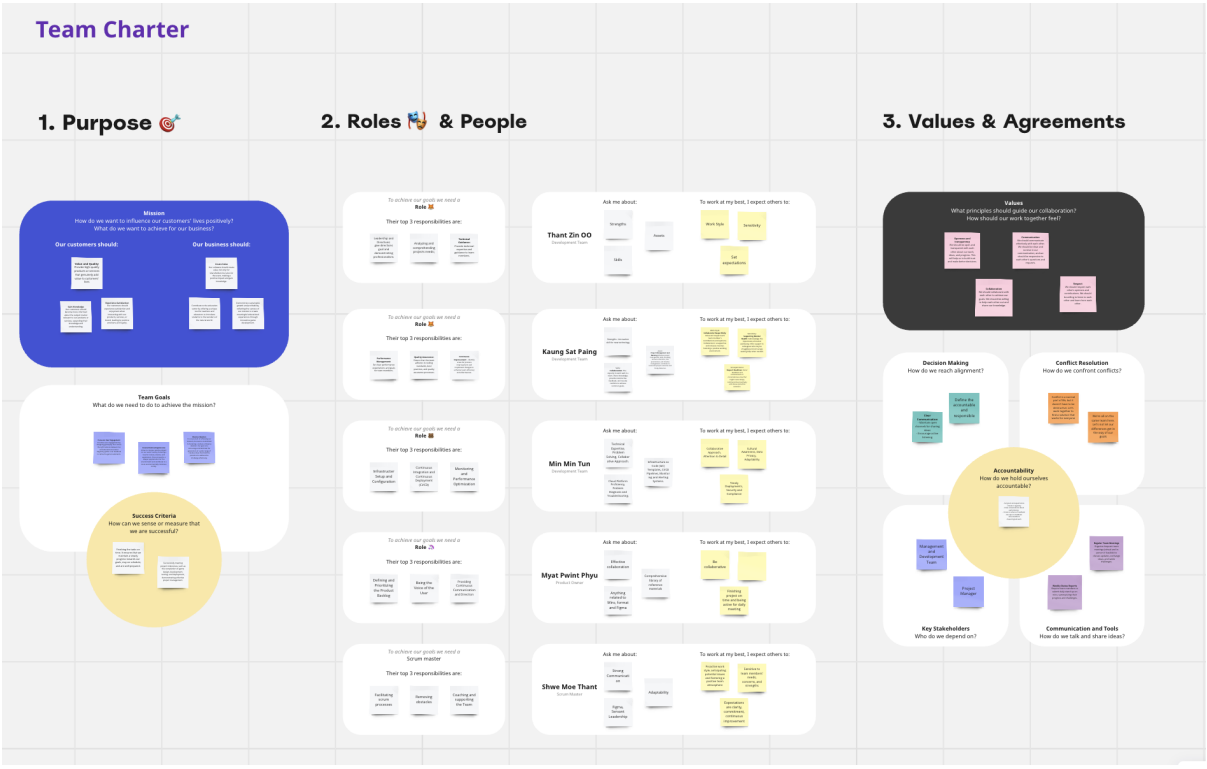

Figure 1. Team Character

Project Challenge:

The goal of "Insect World" is to develop an engaging, educational augmented reality (AR) mobile game that teaches players about various insects. Inspired by existing AR titles, this game will overlay 3D insect models into the player's real-world surroundings and provide interactive learning through detailed visuals and descriptions.

Technical challenges include realistically rendering the 3D insects, smoothly incorporating AR functionality across devices, coding complex animations and interactions, and ensuring a polished user interface. We proposed using XCode for development and Blender for 3D modelling based on their robust toolsets for building iOS apps with AR capabilities. However, significant effort is required for modelling highly detailed bugs, balancing entertainment and education, and performance testing on target devices.

Overall, this project requires extensive knowledge of insect anatomy, slick UX/UI design, and mastery of multiple software platforms. But the result has great potential to captivate players as they discover the natural world from entirely new perspectives. Our vision leverages leading-edge technology to inspire genuine curiosity about insects and beyond.

The proposed solution

The proposed solution of using XCode and Blender provides the benefits of leveraging industry-standard tools to develop a high quality, iOS-native application. XCode allows efficient coding for Apple devices while Blender enables creating compelling 3D visuals. Using Figma for UX prototypes also better targets an engaging, educational user experience.

However, we anticipate significant effort across numerous complex tasks - modelling detailed insect assets, programming intricate interactions, balancing entertainment with learning goals, and testing on various devices. The development timeline may be prolonged and success depends heavily on striking the optimal blend of 3D graphics, game mechanics and educational content. Compatibility across iPhone and iPad variants is also crucial to validate. Prioritizing the most critical features for our core audience while pushing the limits of augmented reality technology poses ongoing challenges as well.

The Objectives of Pilot Study section

We will conduct a pilot study to validate two primary technical challenges - smoothly incorporating AR technology and selecting the appropriate coding language.

Firstly, aligning 3D insect assets with the environment poses complex issues across devices. Our study will assess integrating Apple's ARKit framework to anchor models, evaluate alignment accuracy and performance constraints. Secondly, while Python is familiar, we determined it lacks the sophistication for this project's scale and device targets. Instead, we will utilize XCode as the development environment combined with Blender for 3D modelling and animations. However, we encountered occasional issues exporting assets between programs and onto mobile devices.

This pilot explores unproven feasibility aspects while illuminating compatibility risks early. Conducting rigorous tests in a controlled environment will shape toolset decisions before expanding efforts. Determining key constraints will also focus scope on critical app functionality given resource trade-offs. By embracing learnings even from unsuccessful trials, we can incorporate insights to forge an optimal path ahead.

The Sprint Process

Our team followed an iterative agile Scrum approach across 3 main sprints, each building on the last over a 5-week development timeline.

Sprint 1 activities centred on forming a solid foundation through extensive brainstorming of game themes and mechanics. We researched potential codebases for reference but faced challenges in finding directly relevant options optimized for augmented reality and mobile devices. Roles were allocated based on experience such as coding, 3D modelling and UX design. We drafted a basic gameplay loop and user flow for core actions like insect selection and AR interaction. These flows were prototyped in Figma to visualize the MVP user experience. With a focus on bringing the core concept to life, we poured efforts into coding an initial spider character with animations and touch interactions.

In Sprint 2, we expanded the prototypes to include additional insect types like ants and worms. New characters were storyboarded to plan integration. We also finalized broader

visual elements like backgrounds and UI controls for a polished, consistent look and feel true to our art direction. Figma was invaluable for rapid visualization and collaboration to locked down our conceptual vision into a demonstration-ready state. Stand-ups and discussions encouraged constant feedback among the team to save time rather than lose alignment.

Finally in Sprint 3, testing transitioned from internal playtests to external users for qualitative feedback. Their perspectives helped validate overall engagement and educational value while calling out areas for refinement we were too close to notice. We also hardened the app through rigorous error checking, ensuring stability and performance especially as new animated assets were introduced. Tasks were systematically prioritized based on risk and user impact.

By embracing early feedback, we developed an intuitive design grounded in user needs. Rapid iteration empowered us to build, test and improve at a fast pace. With a shared sense of collective ownership over outcomes, we ended up with a compelling proof of concept to show the promise of gamification and emergent technology in the education realm.

Product Backlog

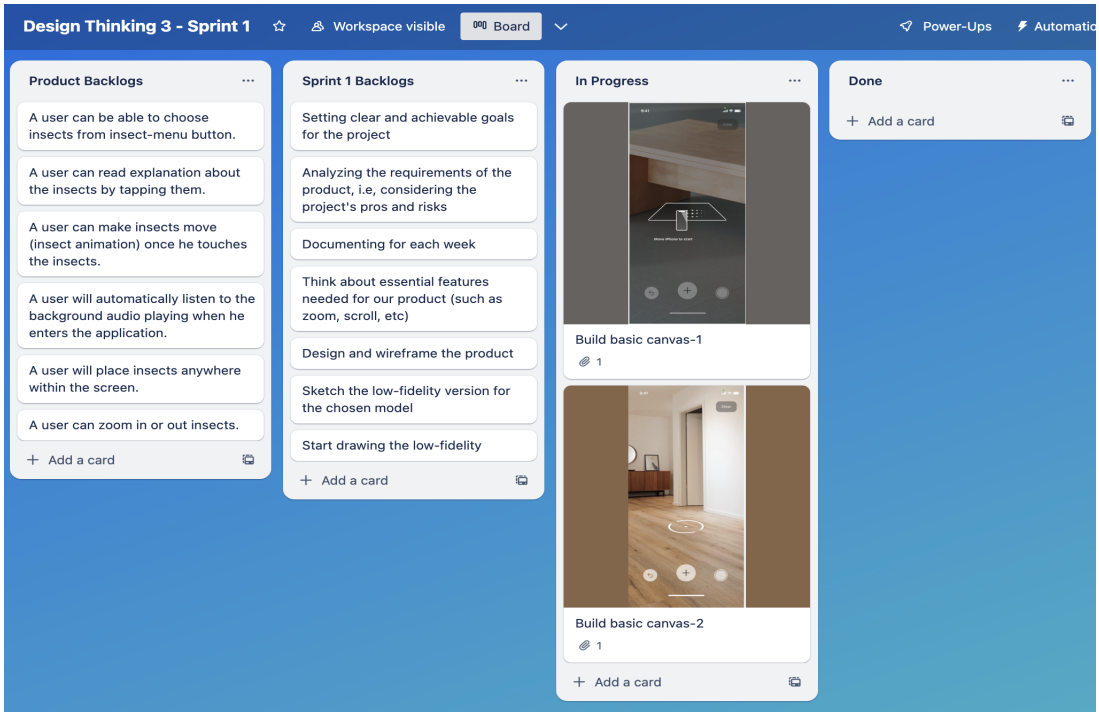

Figure 2. Sprint 1 Product Backlogs and Sprint Backlogs in Trello

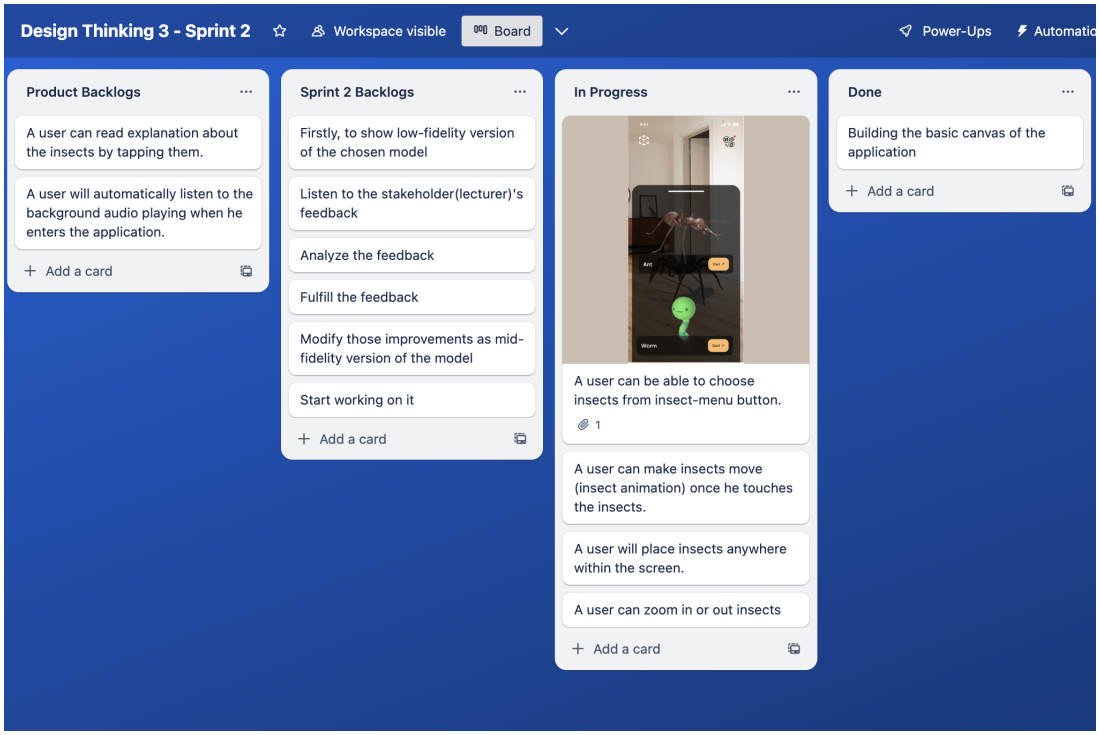

Figure 3. Sprint 2 Product Backlogs and Sprint Backlogs in Trello

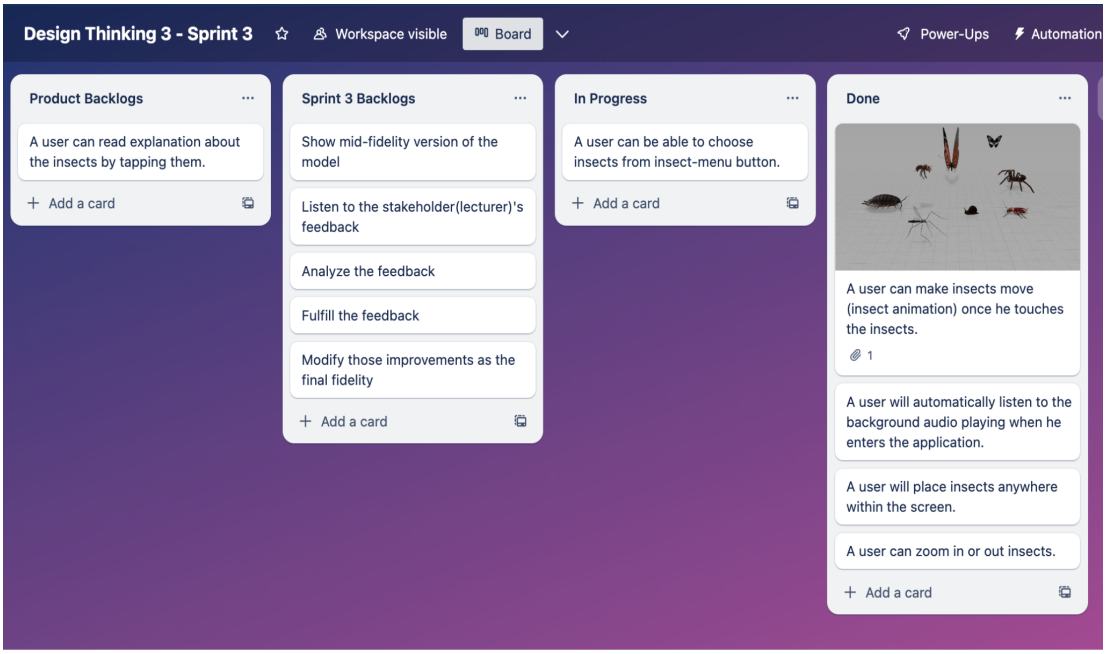

Figure 4. Sprint 3 Product Backlogs and Sprint Backlogs in Trello

Data Artifacts

Fig 5. Burndown Chart

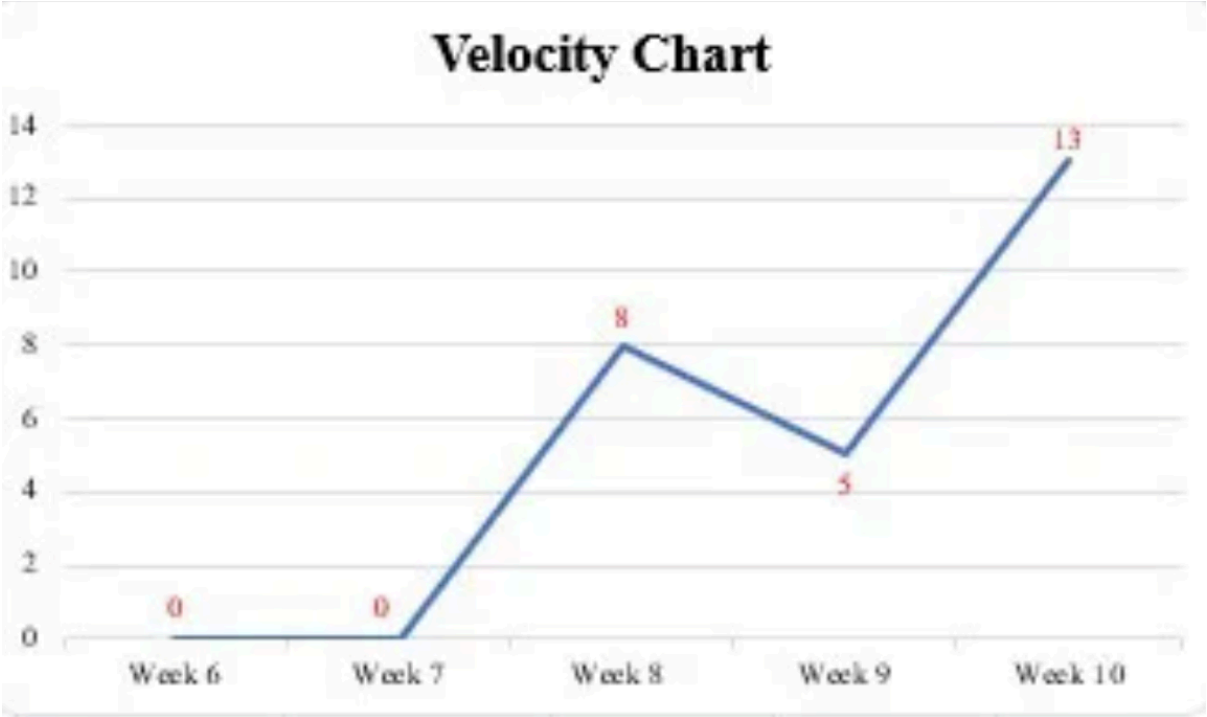

Fig 6. Velocity Chart

Figma Prototype

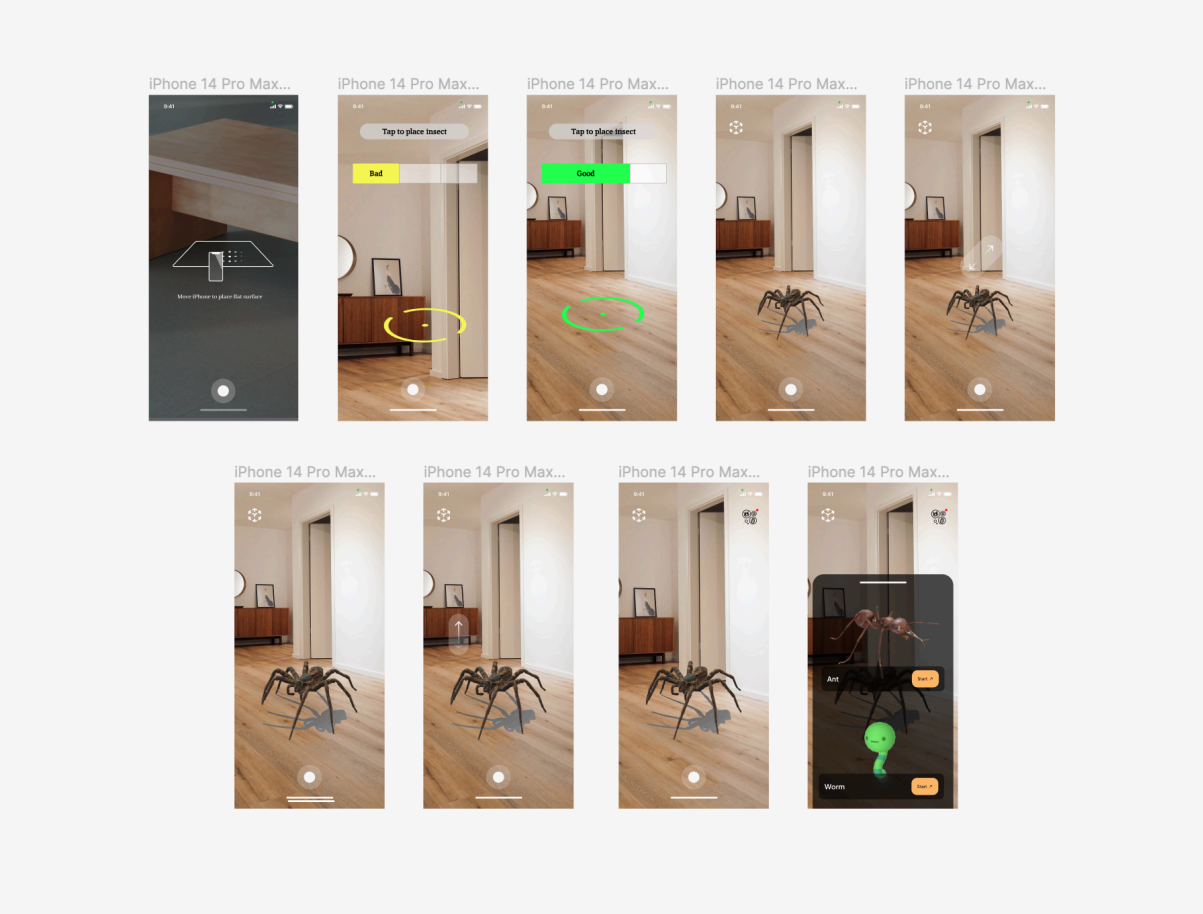

Fig 7. Prototype in Figma

Debug Example:

One issue I debugged was integrating ambient background audio that plays when the app launches. The audio file was not linking properly to the start view. By tracing execution and checking formats, I realized the file path was incorrect. I updated the resource path reference and tested across devices to verify.

Key App Features:

- 3D insect models overlayed into augmented reality environment
- Animations and sounds activated by tapping insects.
- Text descriptions for details on each insect
- Background audio for immersion

Assessment of Outcomes

Assessing Scrum's appropriateness as the development methodology for the project work involves evaluating whether Scrum, a specific agile framework, is well-suited to the unique requirements and goals of the project. It aims to determine if Scrum's principles, practices, and iterative approach align with the project's nature, team dynamics, and desired outcomes. Initially, our team faced challenges in adapting to SCRUM, as it was a completely novel concept for us. Based on our experience with the pilot study and the application of Scrum as our new development methodology, we find that Scrum has demonstrated both strengths and potential areas for improvement.

Firstly, the iterative nature of Scrum has allowed us to adapt to changing requirements quickly, ensuring that our development aligns with evolving needs. The regular sprint cycles, backlog refinement and daily stand-up meetings have improved team communication, proving the methodology's suitability for our dynamic project. This approach allowed us to prioritize tasks, address challenges promptly, and maintain a clear project vision throughout the three weeks of Sprint.

Secondly, regarding the technical feasibility of the project, the pilot study served as a test run for various aspects. We found that using AR technology for scanning insects worked well, although there's still room for improvement to make it even smoother on different devices. We managed to add 3D models and animations using Blender and XCode, but we need to fine-tune them for the best experience. Our pilot study for the game "Insect World" was a success, as we completed most of our product backlog and made insects appear when you scan the surroundings, making sure they fit well with the real world and run smoothly on various devices.

The team collaborated effectively during the pilot study, communicating clearly and working together to achieve common goals. They demonstrated a strong sense of teamwork and were motivated to succeed. The team believes that their strong working relationship will be essential for the success of the project, and they are committed to continuing to work together effectively and to supporting each other throughout the development process.

Appendix

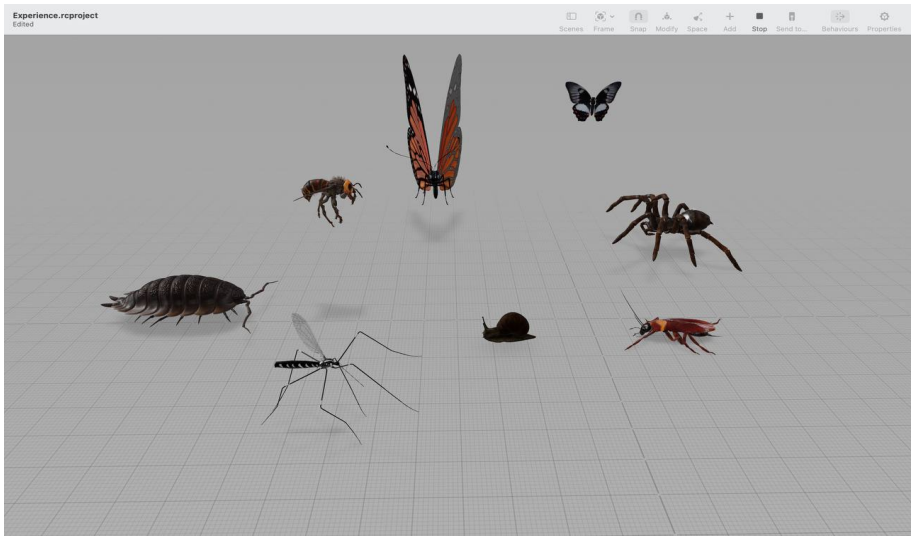

Figure 8. Overall Game View

Figure 9. In-game design college

Team Performance & Scrum Journey

Our team collaborated effectively throughout the project, motivated to innovate in educational technology. However, adopting Scrum was initially challenging given the new practices. Through retrospective feedback loops we incrementally improved - enhancing communication, balancing complexity, and prioritizing customer-centric decisions. Key takeaways included embracing transparency and feedback to strengthen team dynamics. By striving for continuous improvement, we overcame early Scrum difficulties through shared learnings. This revealed how aligned vision and accountability enables flexibility in agile development. With improved fluidity across roles, our team is well-positioned to explore future edtech innovations.

Conclusion

Through the Insect World project, we gained valuable experience bringing an augmented reality game vision to life by applying agile development practices. While complex at times, the end result is an engaging, educational proof of concept with strong technical foundations.

My key takeaways working on this game as part of the development team include:

- Learning effective research and debugging skills that resolved issues with 3D model optimization, audio integration, and iOS compatibility.

- Sharpening my ability to collaborate within a Scrum framework - breaking work into sprints, contributing consistently through daily standups, responding to changing priorities from the product owner.

- Developing a better creative eye for balancing user engagement and education through gaming mechanics and UI design

- Realizing how emerging technologies can provide rich opportunity to improve learning experiences far beyond traditional classrooms.

With a solid team and process now established, I'm confident that by continuing to apply an agile mindset with rapid iterations, we can evolve Insect World into an even more polished and impactful application for nature education. Adding a summary like this helps wrap up your presentation, re-ground the key goals, highlight your personal growth, and set the stage for where things can go in the future.

Links

Miro Link :
https://miro.com/welcomeonboard/SnZJMGNBODNmSzV6RnprcUJBUFowWU5HdEpQT0dLMkhTZHhoT0hQRTJ1cjZwVEVUQ2Nid1phNFBRVklIR2tRbHwzNDU4NzY0NTQxOTQyODkzMzQwfDI=?share_link_id=937791057338

Trello Board Link::

https://trello.com/invite/b/oFzcvxwb/ATTI46158156ff1dc8954694b461e981fd009DEC2206/design-thinking-3-sprint-1

Figma Link:

https://www.figma.com/file/MMvdKYcV46B3JzwmEM6FDR/Design-Thinking-3?type=design&node-id=0%3A1&mode=design&t=23mUyU891SC3FgT2-1

GitHub Link:

https://github.com/ShweMoeThantAurum/Insect-World