# Pipeline Protocol Prototype

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## Keywords
game development, production phases, visual hierarchy, visual design, educational design, prototype

## Format of work
A browser-based game prototype designed to run on any standard desktop computer (PC or Mac) and played through mouse and keyboard.

## DESCRIPTION OF WORK
*Pipeline Protocol* is a browser-based educational game prototype developed in Unity. Designed to run on any standard desktop computer with mouse and keyboard, it can be completed in 5–10 minutes. *Pipeline Protocol* takes the form of a vertical shooter genre, a well-established game genre that provides a clear and familiar structure for progression. Players advance by collecting pickups that represent stages of the traditional game production pipeline. Each pickup introduces a principle of visual hierarchy, such as motion, colour, or contrast, while simultaneously unlocking a corresponding phase of development. For example, early pickups highlight functionality and greyboxing, while later stages focus on refinement, polish, and release. The initial release of *Pipeline Protocol* will be deployed on itch.io as an open-source project.

## RESEARCH STATEMENT
Understanding the game production pipeline can be a challenge for students new to game development. Industry and educational sources describe the pipeline as a sequence of distinct stages including pre-production, production, alpha, beta, polish, gold, launch, and post launch (Chandler 2009, Fullerton 2024, Schell 2008, Macklin and Sharp 2016). Although these terms are widely recognised, they often remain abstract for beginners who lack lived production experience. Students frequently conflate stages or misunderstand their purpose, for example confusing prototype with alpha or assuming polish and gold mean the same thing. This lack of clarity undermines their ability to plan effectively, manage scope, and reflect on their projects. While textbooks provide clear descriptions, production pipelines are iterative and layered, making it difficult to communicate through static instruction alone. Students particularly struggle to understand how the conceptual terminology connects with the tangible progress of functionality and assets, which makes it harder to apply the concepts in practice. Addressing this challenge requires an approach that goes beyond definition and instead creates opportunities for students to experience production as an ordered system. While creating order within an iterative process may appear counter-intuitive, the purpose is not to impose rigid linearity but to support understanding of the distinct stages and how they interact within the broader cycle of development.

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*Pipeline Protocol* addresses this gap by framing the production pipeline through the logic of visual hierarchy. Visual hierarchy, drawing on Gestalt principles, refers to the arrangement of design elements so that their relative importance is clear, guiding perception and establishing order. It focuses on the core elements of size, colour, contrast, alignment, proximity, shape, texture, and motion, which operate together to direct attention and meaning (Lupton and Phillips 2015, 115-123, Figma n.d., Philips and Chapman 2019). Instead of presenting development stages as fixed definitions, the prototype connects each phase to a principle of visual hierarchy. Progression unfolds through the collection of pickups, with each one triggering a change in the game state. When a pickup is obtained, the environment shifts to reflect the corresponding phase of development and the relevant guiding principles (as seen in figure 1). This change in state is accompanied by a short text that explains both the stage of production and the visual rules at play. This creates a natural flow where visual change reinforces conceptual understanding, allowing students to see how production processes and design principles operate in tandem. In this way, specialised terminology becomes a sequence of interactive lessons, with each stage clarifying not only the pipeline but also the design considerations and principles that shape its hierarchy.

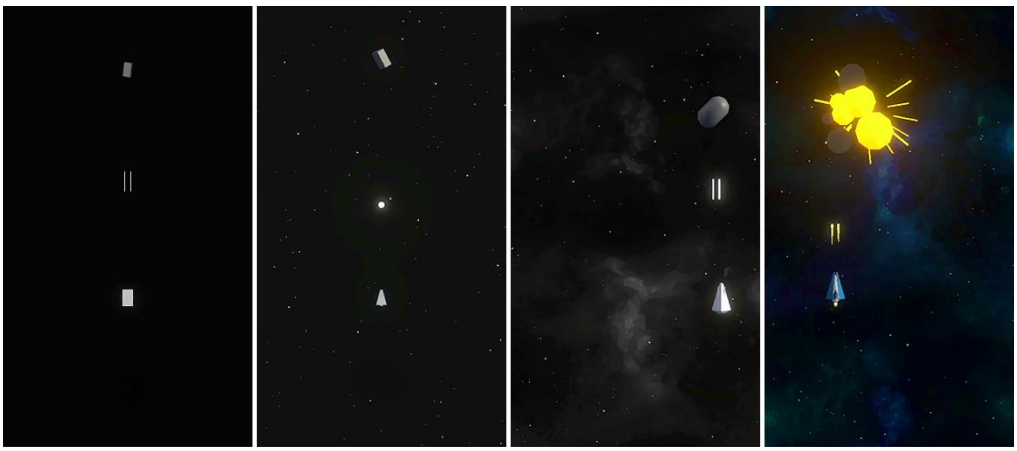

*Figure 1: Screenshots of Pipeline Protocols Progression*

The project also contributes through its choice of format. *Pipeline Protocol* takes the form of a vertical shooter, a genre with deep historical roots in arcade and console traditions (Wolf 2002, Kent 2001). The sequential nature of this genre provides a natural alignment with production phases, while its simplicity ensures accessibility even for players with limited prior game literacy or experience. Furthermore, the project is deliberately positioned as an open-source, iterative work. The initial release on itch.io will serve as a foundation to be adapted over time in response to feedback from educators, industry practitioners, and students. This iterative model mirrors the very pipeline the game seeks to teach, demonstrating that development is an ongoing process shaped by collaboration and reflection.

The significance of *Pipeline Protocol* is that it reconceptualises the production pipeline as a playable system, where students encounter development not through static description but through interactive progression. Its originality lies in the mapping of visual hierarchy principles onto production phases, which provides clear and actionable changes to the game state that supplement the evolving stages of development. This alignment enables learners to perceive the production pipeline as a coherent flow, where each phase is both visually and conceptually reinforced through play. By embedding visual hierarchy into the experience, the project reduces the abstraction of production knowledge and offers students a scaffolded, confidence-building entry point into complex material. For educators, *Pipeline Protocol* demonstrates how game-based

approaches can make theoretical processes accessible, tangible, and reflective, positioning play as a powerful method for engaging with the structure of game development.

**EXHIBITION**

The ideal exhibition setup for *Pipeline Protocol* is a desktop computer with a standard monitor, keyboard, and mouse. The game will be hosted on itch.io as a browser-based prototype, which removes the need for installation but requires an internet connection to access. Interaction will be supported by clear on-screen prompts, along with a concise A5 handout that introduces the project and outlines its purpose. The installation is intended for short, self-directed play sessions, enabling attendees to engage with the prototype independently or while observing others at the station.

## BIO

Dr Joel Bennett is a Lecturer in Digital Media and Game Development at the University of Canberra. His research investigates game development practices, production processes, and creative pedagogy. Joel's work includes a practice-based focus on how emerging technologies shape design and education, alongside an interest in the cultural history and preservation of games in Australia.

Rik (Richard) Lagarto is a Lecturer in Digital Media, Game Development, and Creative Writing at the University of Canberra. Before moving full-time into academia, Rik spent 20 years in game development as a game designer, narrative designer and game writer. His research focuses on digital storytelling, and he is currently completing a PhD that explores the use of AI as a collaborative tool in the creation of steampunk narratives. The project examines how themes of postcolonialism, gender and class can be critically engaged while ensuring that human authorship remains central to the creative process.

## ACKNOWLEDGEMENTS

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