

Student Transitions

Learning and Teaching Enhancement Project Report, June, 2015
Project Title: Framework for Computer Games Industry Applications
School & department: School of Mathematical and Computer Sciences

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1	<u>Names and Heriot-Watt University contact details of project team (please identify the project lead/ report author):</u> Report Author - Stefano Padilla (S.Padilla@hw.ac.uk) Neil Suttie (neilsuttie@gmail.com)
2	<u>Key words:</u> <i>Computer Games, portfolio, game design, games programming, industry, framework, transitions, teaching, materials.</i>
3	<u>The problem being addressed, with background and context:</u> Many Computer Science students apply to games companies after completing our programme. However, jobs in the games industry are exceptionally competitive compared to other areas in the technology sector. The recent boom in Indie game development has seen a multitude of new tools and technologies being made freely available; as a result, students are now being increasingly expected to approach employers having already developed and potentially published their own complete projects on their own or as part of a team. In this project we looked at creating 'how-to' sessions plus technical 'starter' support in the form of accessible game design, production elements and materials. We expect students will be able to successfully transition to this industry by showcase their design knowledge, expertise, teamwork, and personal development. This will be in the form of a portfolio of completed games using the supporting materials from this project. In addition, we expect output games created by the students will also increase the university's impact in this industry.
4	<u>Project overview & aims:</u> The aim of this project is to develop a full game that can be distributed and recreated during modular lab sessions as part of a restructured games programming course to begin in 2016/2017. Lab topics are currently taught independently from the game development process based on the abandoned GLUT libraries for OpenGL. The goal is update the GP course to enable students to design and develop full games, teach the latest technologies used in game development, reinforce key learning concepts in the area, and allow students to develop a portfolio showcasing key techniques (physics, collision, graphics) within the context of a full playable game.

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5	Activities and details of project steps taken to achieve aims: [industry liaison] Professional involved in both game development and recruitment for the games industry were consulted - the focus on which was to discover what key skill were lacking in university graduates looking to break into the industry. [course redevelopment] The industry liaisons lead to a review of similar courses offered by other universities. The aim was to redevelop a stronger focus on game development technologies and what courses/skills will need to be focused on teaching to graduates. [technical requirements] In researching the proposed technology a number of different engines, SDKs, languages and libraries were investigated. Technologies were considered based on how freely available they are, how likely they are to remain freely available, how widespread they are, the maturity of the technology, market analysis of courses, whether they allow for the development/application of advanced techniques, and their perceived benefits towards student portfolios. While, more simpler languages (like Java or C#) are commonly taught for beginning level game programming courses of similar length provided at other UK universities; it was found that in overall programming courses focused on teaching C++ more than any other language. Furthermore, C++ remains the industry standard for PC and Console development and demonstrating strong skills in this area is highly recommended for transitioning students. It was therefore decided that the course should remain focused on teaching students skills in C++. [game prototype / materials] <i>These are the stages currently being developed towards our aim: game design/concept art, gameplay prototype, final game development, course sessions developed.</i>
6	Key points including challenges your team may have encountered: Developing a game of sufficient quality to serve as bedrock for students' industrial applications on a small time scale. Leasing with enough companies to properly develop some formal requirements for the framework. Creating materials for disseminating the results from the projects (lecture modules, websites, and videos).
7	Describe specific project outputs so far: Industry liaison resulting in a retargeting of specific areas of interest for advanced programming topics. Project has so far resulted in successful industry liaison resulting in a set of technical requirements, a gameplay prototype, a complete game design, a programme for remaining development of course material and the started portfolio material.

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8	Please describe how your project has contributed to the to the Heriot-Watt University strategy and priorities for Enhancement: 1. Shorter time to completion for Post-graduate Research students (PGR) 2. Improved retention and progression of undergraduate students: During development the newly formed Game Development student society were contacted on what they would like to see in terms of both material and presentation of materials. Liaison will continue in future to allow the students contribute to the evolving material and to provide a secondary stream of dissemination of the advanced material that extends beyond the basic requirements of the course. Thus allowing students to continue on their portfolio entries out with the confines of the limited course length and grading requirements.
9	Describe how you are sharing good practice within Heriot-Watt and beyond (e.g. plans for papers, attendance at conferences): We are planning to share good practice through a series of publication in various Learning and HCI journals. In addition, we are releasing the materials through various channels including Vision, GitHub, Gamedev's societies, videos and a website if possible.
10	Next steps: The game development and course material will continue to develop under the Heriot-Watt Enhancement scheme with an expected completion date of November 2015.
11	Additional information: Please note Sandy Louchart has moved to Glasgow School of Art – since April 2015 Stefano Padilla has been overlooking this project and in collaboration with Neil Suttie.