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Race Cars and the Hellbox: Understanding the Development of Professional Competence among Computer Animation Students (0085)

Introduction

The computer graphics (CG) field is relatively new as an academic discipline, even more so for CG artists, whose first degree-granting bachelor's programme was introduced in 1994 (Digipen 2011). The quality of CG programmes for artists varies, but based on feedback from industry sources, most universities do not produce graduates that meet professional standards (McCracken 2006, King, Weiss et al. 2008). Demo reels, which are part of an artist portfolio of evidence, provide an example of this. The 'demo reels' are used to determine whether an artist will receive an interview for a job. Unlike other professions, an artist's CV becomes relevant only after this stage of the recruiting process has been successful. According to some estimates, only one of several hundred demo reels shows sufficient promise to warrant an interview (Flaxman 2003).

The problem of poorly educated CG artists is a serious one for recruitment managers. If there are not enough qualified candidates to hire, then staffing projects becomes difficult. One way this problem is made visible is through the heavy workloads given to artists who are qualified. The problem of over-working staff is endemic in the CG industry and contributes to significant stress and quality of life problems for CG artists (Allen 2006). This paper develops this nascent area of enquiry, focusing on the nature of expertise in computer graphic arts as a professional practice, about how it develops in an educational setting, and about how educators assess that developing expertise. Students of the Computer Graphics programme of an international university focusing on applied sciences, industry partners, and employed graduates all participated in the study. This made it possible to observe the development of expertise among students as they progressed from novice to a professionally competent level of ability in this domain of practice. Further, the project explored what performance measures are used to determine the levels of expertise development within the student learning experience.

Methodology

The DevX study used a mixed qualitative/quantitative methodology. The qualitative methods were designed to extract insights from students and experts about their perceptions on the development and definition of expertise. Quantitative measures were used to validate crucial aspects of the qualitative

data collected. Participants included 18 first year undergraduate computer graphics visual arts students, 5 employed graduates, and 5 industry experts.

The first phase of the study involved first testing students on their spatial ability prior to the beginning of a fundamental first-year course, then observing their progress over the term. Student participants kept learning logs, which were handed in after they turned in their final project. They then took a survey regarding the course. The learning logs and surveys were used as the basis for a one hour semi-structured interview. Results of the spatial visualization tests were compared with final grades for the course to determine if they were predictive of class outcomes. This first phase data was then used as the starting point for the second phase of data collection.

In phase two, Industry participants were shown a subset of final student projects. These projects were assessed against professional standards for work produced in industry. The principal goal of this was to determine whether student work met a common professional standard. Secondarily, industry participants were asked to explain the criteria they used to assess the work presented. This assessment method would then be compared to other industry participants and to the standards used at the university the work was produced at by comparing grades given by the university to grades assigned by industry professionals. The goal of this was to determine whether there is a common industry standard for this type of work and then to determine whether that standard was reflected in the assessment practices of the university where the work was done.

Graduate interviews focused on how former students transitioned from being professionally competent, as they were in school, to becoming true experts while working in industry.

Results

Most students responded that the course helped them to acquire generic transferrable skills such as confidence and problem-solving that they found themselves using in other classes and situations. Industry participants agreed that the student work they evaluated met the professional standard they used when evaluating work by their own employees or job candidates at their place of work. The Industry participants were unanimous in their surprise that novices could so rapidly acquire this level of skill in a difficult specialty. Graduate participants provided data supporting a conclusion that both professional competence and expertise can be rapidly acquired. These former students were hired immediately upon graduation or shortly thereafter, where they were given responsibilities over time that indicated tacit acknowledgement on the part of their employers that they were indeed becoming or had become experts. Graduate and industry participants agreed that while professional competence is necessary to work in industry, expertise is expected only at the supervisory, managerial, or creative level of a project.

Discussion and conclusion

Expertise research suggests that many years of practice are required to achieve an expert level of fluency in any given domain (Chase and Simon 1973). Despite this, the DevX study shows that students can

achieve results that are as good as or better than what is expected of a working professional during a nine week class. This does not mean that the students are experts, but that their work meets the same professional standard expected of employees in a demanding technically-oriented industry setting.

Interviews with employed graduates show that the transition from professional competence to expertise takes place after they have chosen a specialization and spent at least six months studying it. These students highlighted the importance of core transferable skills that they associated with "professionalism" rather than with the domain they were studying. Confidence, willingness to correct errors, personal responsibility, and organization are some of the skills these participants highlighted as components of what they called "professionalism." To them, it was not domain-specific knowledge that made them professionally competent, but professionalism that allowed domain-specific knowledge to be relevant in a professional context.