Chapter X

Fast Track: School Based Student Software Design

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ABSTRACT

Most studies involving students in designing and developing software involve research teams and other professionals outside of the normal school environment. This pilot study demonstrated that involving students in the design and development of software could take place entirely within the school environment. This methodology was called “fast tracking.” Students could, and did, play demanding and effective roles in the process of software development. Students were responsible for selecting their own roles in the design process and were assertive in selecting the teaching staff they wanted to work with. The students also proved to be adept at selecting a suitable toolkit for implementing the software. The participating students represented a cross section of the entire ability range. A quantitative analysis of “flow” as an indication of the success of the implementation indicated that middle ability students derived the most educational benefit from using software developed under the fast track approach. Relationships between students and teaching staff exhibited changes in the power structure, which were often difficult to redress outside of the pilot study.
INTRODUCTION

Much of the educational software used in schools is ill suited to the task. Poorly conceived design inhibits the educational progress of the students. Many high profile studies have been undertaken to involve students in the design and development of software, in an attempt to enhance the functionality and usability of the material produced. Critically, many of these studies have attempted to harness the child’s perspective on design and utilise the children in a variety of different roles throughout the design cycle (Druin, 1999; Scaife et al., 1997; Jones & Balka, 1998). In the overwhelming majority of cases these studies have relied on the involvement of research teams and professionals outside of the normal school environment. The roles that these outside agencies have undertaken has necessarily been varied but in all cases have caused some disruption to the normal functioning of the school and taken a long period of time to produce a “usable” output.

The aim of this chapter is to develop a new approach, called fast tracking, whereby the involvement of children in the development process can be accelerated using expertise and hardware/software currently available in schools without having to involve external teams of researchers and professionals. The output should be both replicable and transferable. The pilot study arose out of the interest of the Mosslands School for Boys in engaging a group of 20 14-year-old secondary school students and three teachers in the (re)design of science curriculum software. The Mosslands School is situated in Wirral, UK, and has in excess of 1,400 students.

The pilot study was designed to be a small-scale project to be completed in a period of twelve weeks, typically the length of one school term. The objectives of the study were twofold. To investigate the viability of the fast track approach, and to investigate the degree to which students were concentrating (or engaged) when utilising software designed by co-operation with children. Teachers designate this highly desirable state of concentration as being “on task.”

The rest of the chapter is broken down into the following sections. The Background section examines a theoretical framework for the study. The Research Description and Methodology Used section specifies the hypotheses that we were trying to assess. The next three sections describe the work that we actually did. The Fast Tracking section develops the theoretical basis for the fast track methodology and considers how it can be assessed. The Solutions and Recommendations section relates practical steps involved in implementing the fast track methodology. The Analysis section details the results of the quantitative and qualitative data. The Future Trends section specifies how we plan to extend the study. The Conclusion section summarises the findings of the pilot study.

BACKGROUND

There have been many studies designed to categorise the variety of ways that children can assist in the design of software. Druin’s theoretical framework (Druin 2002, 1999) proved invaluable in educating students and teachers in possible methods of including students in the design process. Druin categorises student involvement in software design into four main strands: users, testers, native informants and design.
A Survey of Distance Education Challenges and Technologies
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