Chapter 10
Understanding Collaborative Digital Media Design in the 3D CVE: A Vygotskian Approach

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ABSTRACT

Digital Media Design (DMD) sits between ICT and the creative arts. DMD uses computers as a design tool. The ubiquity of the computer means DMD is available to a broad range of people. It is used in everyday design practices – creative, professional, commercial, academic, and casual. In an educational context, the way it is taught needs to meet students’ expectations from a broad range of capabilities and requirements. Unlike more traditional forms of design practice, peculiar to DMD is the use of online collaborations. In turn, this demands different cognitive learning structures to traditional design practices. Online collaborations include a socialising element. Hence, current DMD practice is as much about social interaction as it is about design problem solving. Problem solving exercises in design teaching are traditionally explored in a project setting. In DMD this now includes the socialising element of online collaboration. This chapter describes a method for analysing DMD practice and, in particular, online design collaboration using a 3D Collaborative Virtual Environment. It provides a framework for analysis using Vygotsky’s (1978) Zone of Proximal Development (ZPD) and Wenger’s (1999) approach to learning communities and communities of practice, providing a case study for discussion. The results of this study are that a radical shift in teaching approach is needed to foster the sorts of deep learning outcomes graduates of DMD require to meet the demands of contemporary design work practices.

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INTRODUCTION

In general terms, to design is to ‘make a sign’ or ‘mark-out’. Moreover, design is about problem solving. But, design is not an easily understood process, and there are many methods for studying the design process. The work of Cross, Christians and Dorst (1996) in Protocol Analysis (PA) at Delft in the 90s is perhaps the most common method for studying the design process. However, PA relies on the analysis of participant reflections on recorded conversations and actions. These reflections, divorced from the original context, may not be a reliable method for analysing the design activities. Furthermore, PA does not directly address pedagogical settings nor is it a practical method for large groups of students. On the other hand, Activity Theory, while originally conceived in the context of industrial work practices and their social settings, is more suited to studying large groups of participants socially engaged in a problem solving task. In particular, Vygotsky’s Zone of Proximal Development (ZPD).

Vygotsky’s ZPD is focused on shared learning practices in pedagogical settings. It recognises the social dimension of learning as a key factor in individual and group outcomes. It suggests that traditional top-down teaching methods are flawed and that instead deeper learning outcomes are achieved by student-led investigation of the learning material. In short, ZPD can be defined as the distance between the actual developmental level of a learner as determined by independent problem solving and the level of potential development as determined through problem solving under the guidance of a teacher or in collaboration with more capable peers.

According to Vygotsky (1978, 1981), all activity is social by nature. Hence, social interaction is central to any study of learning practices. Vygotsky’s method emphasises the study of patterns of change in behaviour where work activity is the basic unit of study.

Vygotsky’s ZPD was used to analyse the case study outlined in this chapter. It is an investigative research project in the form of an online design project with students collaborating across three continents, cultures and timezones. The participants come from diverse backgrounds and bring a range of skills to the project. A 3D Collaborative Virtual Environment (3D CVE), supported with other design and social software, was used as the vehicle for the study as it simulated the sort of workplace environment the students might encounter on graduation. In this sense it has real-world applicability. The fabled Tower of Babel was used as the project narrative. It was chosen because it is an historically distant concept yet easily understood and lends itself to a design exercise. Although much of the software encountered in the project was new to the students the online socialisation component was already well known to them. The familiarity with the online socialisation component made it easier for them to engage with the project. With the 3D CVE and its support software students could share resources, skills and ideas. The goals of the project were explicit but negotiable from the outset. Hence, the goals were also led by the groups and individuals within groups and across groups.

The sorts of activities performed in the 3D CVE were typical of workplace environments – a common graduate attribute goal of the institutions involved. By contrast, the project, and the way it was organised, was a radical departure from the normal teaching mode. The risk of allowing students to direct their own learning trajectories was not inconsiderable. Vygotsky’s ZPD was instrumental in guiding this process. His ZPD was used to identify changes in patterns of behaviour throughout the project and provided a framework for the role of teachers and students. The results show that, overall, the students were more active in their own learning and problem solving. The tools they used and the cultural artefacts created were unique to the project yet transferable to other design work practices. And, their identity as