Chapter 5

TLC for MOOCS: Teaching and Learning Communities for Computer Programming

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ABSTRACT

This chapter reports on efforts to create a sustainable model to increase engagement, success, and retention in a MOOC for learning computer programming, for a U.S.-based national vocational program. In 2014, the training organization was one of a few national and regional organizations who were awarded scholarships by a telecommunication’s company to participate in a MOOC whose curriculum was informed and designed by multinational corporations to try and address the dearth of young computer programming talent. The vocational training program aimed to convert MOOC registrations into active and supported participation, with a view to increase completion. Theoretical frameworks were employed to ramp up knowledge of an unknown subject area and skill. Social connectedness methods were used to create teaching and learning communities (TLC) of support. Key results allowed the organization’s trainees to outperform all other participating organizations. Resulting in the organization being awarded 500 more scholarships for computer programming that could be used over a three-year period.

INTRODUCTION

Massive Open Online Courses (MOOCs) offer digitized courses for the masses. MOOCs are still highly popular as indicated by the number of people who register for them. However, less than 5% to 7% of people who register, complete the MOOC course (Dillahunt, Wang, & Teasley, 2014; Evans, & Baker, 2016; Rai, & Chunrao, 2016). Using Gartner’s hype cycle of emerging technologies (LeHong, Fenn, & Leeb-du Toit, 2013), the verdict seems to still be out on whether it has hit its peak, or levelled out at the trough of disillusionment. One technology training organization was invited amongst 20 others to participate in a sponsored participation of MOOCs on computer scripting and programming. The invitation stemmed from various technology companies and the Obama administration to address the dearth in computer programming talent. Each of the participating organizations worked on their own as they
approached the opportunity and challenges of having their young talent participate in a forum that sees massive attrition.

There are many challenges with participating in MOOCs. Separately from the attrition and maintaining interest, other challenges within this specific MOOC endeavor ranged from an intensely high and rapid learning curve, untrained trainers, lack of, or rather less than desirable insight of learning and progress transparency. There was a need to address the challenges as well as the other general MOOC stumbling blocks, which ranged from significant drops in engagement, inability to retain the initial number of participants who registered, as well as a lack of drive to complete the course. These difficulties were further compounded by the physical distance between trainees and their on-the-ground-support staff (Atlanta), and the project managers and tutors (New York) guiding and supporting the effort.

To address and to overcome these challenges; the rapid and intense learning curve, untrained or lack of Subject Matter Expertise (SME), and lack of learning transparency, some aspects of social connectedness were employed. Other theories that informed the practical pedagogy were cognitive constructivism in the form of building on prior knowledge and utilizing zones of proximal development methods with collaborative learning engagements. Additionally, a schedule was set up for in-person contact time as well as contact time with the virtual tutors and project managers. The virtual meetings were between the virtual tutors and the on-the-ground instructor, and separately with the students and trainer. The methodologies used, and practices implemented were informed by computer mediated collaborative learning (Beetham, & Sharpe, 2013; Majchrzak, Rice, King, Malhotra, & Ba; 2014; Walther, Hoter, Ganayem, & Shonfeld, 2015), otherwise also known as computer supported collaborative learning theories (Andriessen, Baker, & Suthers, 2013; Fischer, Kollar, Stegmann, & Wecker, 2013; Goodyear, Jones, & Thompson, 2014).

BACKGROUND

This chapter reports on methodologies used to cultivate social connectedness for a learning community participating in a Massively Open Online Course (MOOC). The participating urban young adults were part of a workforce training program that were trying to expand its curriculum offerings to target the labor market need of computer programming. The trainees had little, to no computer programming knowledge or skill. Data from a preliminary survey indicated that only a few of the 21 students had some HTML exposure, but have not necessarily fully built out a website with HTML and CSS, not any JavaScript or Java exposure. This first phase of 21 students were part of an initial pilot to determine the viability of a concept product and process. If successful, a larger scale second phase of hundreds of students would be considered to participate in similar MOOC models to learn programming skills.

The modus operandi of the national training organization, was to offer a six-month, intensive training program, followed by a six-month internship. The Learning and Development (L&D) organization provides urban young adults, ages 18-24, with a combination of technical and professional skills, college credits, an educational stipend, and an internship. At the time of the TLC MOOC effort, the organization operated in 14 cities, with 8 of those cities having their own instructors. The L&D organization was invited to participate in the MOOC with the backdrop of trying to provide a workforce with skills to hit current and future labor market programming needs.

Further background information is that the national training organization had been in existence for about 12 years, and only piloted blended e-learning models in 2012, with a 100% soft roll-out in 2013 to eight of its eight training sites (Mentor, 2016). Blended learning is the thoughtful integration of
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