

DEWEY IN THE CLOUD

PRAGMATIST EDUCATIONAL THEORY AND E-LEARNING

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1. INTRODUCTION

One hundred years ago John Dewey wrote the book *Democracy and Education* establishing the principles necessary to govern an improved and democratic education system (1944). His ideas travelled across the world and inspired educators in Brazil, Japan, China and Turkey (Popkewitz, 2005). Besides democratizing education, Dewey's focus was on experience in learning and its connection to student reflection. At the present time, we look up to the Cloud as the technology that will help revolutionize education. Multiple research is done to analyze different aspects of Cloud computing and its application in education. Most of the researchers focus on its technical advantages and how to make the system more viable. They scarcely emphasize the need to design a new structure regarding how Cloud technology can be integrated in education (Al-Zoube, 2009). Researchers are also conflicted regarding how to evaluate an online education course; does a survey give them the right answers or observing students throughout the course length offer more insight (Bishop & Verleger, 2013).

This paper presents the author's e-learning experience at a community college in the United States through the auto-ethnographic method (Chang, 2008). The first case study is an analysis of the free online education program by Stanford University called "Stanford Online" (Stanford University, n.d.-a) coupled with an informal interview with a non-USA based student of an online course offered through Coursera to present yet another perspective. Finally, a second case study introduces Flipped Learning as an alternative model that blends traditional classroom with Cloud education. These cases of Cloud education are evaluated for their capacity to complement Dewey's pragmatist educational theory. Further analysis of experiential learning as linked to Dewey's concept of reflection is conducted. The purpose of this research is to assess how industrial design education can best benefit from online education. Therefore, examples of Cloud integration are also presented. Ideas on how to incite students' learning and reflection are discussed as well.

2. LITERATURE REVIEW

In his book *Democracy and Education* written in 1915, John Dewey suggests education improvements through participatory democracy (1944). His work is still considered largely utopian, since according to some scholars he failed to develop a real world implementation strategy (Westbrook,

2001). Benson, Harkavy and Puckett (2007) contest that the solutions he proposed were highly impractical due to his scientism, thus coining the Dewey Problem (p. 33). They further state that effective implementation of participatory democracy in modern education is even more challenging when intended to serve the “Great Community” worldwide. The latter as envisioned by Dewey will enable all human beings to live prosperously (p.126). Dewey’s educational theories faced criticism even during his lifetime. As a response he wrote *Experience and Education* in 1938, clarifying his earlier ideas based on his new experiences with the US public education system (1963). The current debate on what Dewey meant when he spoke of experience still contains similar arguments (Johnston, 2006). Questions about democracy, experience and reflection become even more complex when applied to online education. Many researchers praise the Cloud’s ability to provide fast, inexpensive and high-value education services necessary for a 21st century skill building (Fogel, 2010). The Cloud can help students from underdeveloped parts of the world gain knowledge from professors located across the globe (Bora & Ahmed, 2013). A study at a Taiwanese university found that students’ reflection and motivation in an industrial class were enhanced through the Cloud’s integration with traditional lecture (Lin, Wen, Jou & Wu, 2014).

Less enthusiasm is expressed by researchers who find the Cloud itself as a source of many problems due to its democratic nature. Unethical behavior is observed and expected to rise as more people gain access to computers, which keeps other users from adopting Cloud based services (Ratten, 2012). A rise in plagiarism has also been reported, triggering creation of numerous validation tools (Villano, 2006). Some scholars mention the need to redesign the educational system but only focus on repurposing e-learning for the Cloud (Masud & Huang, 2012). Transition to the Cloud doesn’t resolve the educational issues addressed by Dewey such as the change of roles, environments, and the social context. Scholars do acknowledge these issues but still look to the technological shift for the answers (Fernandez, Peralta, Herrera & Benitez 2012).

Finally, Faust (1996) rejects the either/or propositions such as progressive versus traditional, theory into practice and teacher-centered versus student-centered as fallacies. He supports his claim with Dewey’s stance against divisive rhetoric. This kind of rhetoric is present in this paper solely because it is already used to describe some of the online learning platforms. Instead of rejecting Dewey’s legacy, continuity in nurturing tradition is very much considered through application of his education principles to online education analysis.

3. ANALYSIS

3.1 PERSONAL EXPERIENCE

From 2012 till 2014, I took online courses at a community college in the United States. The cost and credits earned were the same as for the traditional courses. The same syllabus and structure applied to both versions of the course. The flexible schedule worked well with my freelance work. I took web design, management and computer programming courses. Discussions were encouraged in a dedicated section but students used it just enough to earn participation credits. Each student was re-

sponsible for their own work and there were no collaborative projects. Sometimes, students' work was made available for review and this enriched my learning experience.

The course quality was uneven and depended on the professor's enthusiasm for the subject covered. Professors' familiarity with the platform varied, and the online courses were not uniformly designed. Some professors did not even use the school's e-learning platform but their own websites or a cloud service. Some sourced their material from YouTube and other websites. The good professors had well-prepared and well-presented lecture material and personable communication skills.

The required prior knowledge on the subject and weekly workloads were unbalanced. Sometimes I spent more time studying due to difficulty with the subject and lack of assistance. If the professor's response time was within a day or two it made sense to ask for help. Most professors gave out the correct answers after the assignment due date, but some of them didn't. The finals were due on the last day of class with no possibility of feedback. No evaluation forms were given at the end of the semester. In spite of it all, I like online learning and find it comparable to traditional classroom.

3.2 STANFORD ONLINE

Stanford University offers free online courses through a few open source platforms, one of them being OpenEdX founded by Harvard and MIT (Stanford University, n.d.-b). Stanford Online engages students around the globe with various free online courses. The courses are offered as timed sessions, or self-paced and self-study. If the student completes 70% of the classwork she gets a statement of accomplishment signed by the instructor. The online community is treated as part of the regular university where similar policies and rule of conduct apply.

Stanford Teaching Commons is the university online resource helping teachers design their classes (whether on campus or online) as well as offering links to grants and other support services (Stanford University, n.d.-c). Their blog "Teaching Talk" is an online forum where professors can share feedback on their courses and ideas on how to improve their teaching (Stanford University, n.d.-d). The award winning "Teachers on Teaching" brown bag series is comprised of videotaped lectures by award winning professors offering tips on how to teach a specific subject (Stanford University, n.d.-e). The "Signal Blog" provides easy sharing of thoughts on online learning (Stanford University, n.d.-f). Stanford's Office of the Vice Provost for Online Learning webpage on "Instructional Design and Pedagogy" offers resources to professors for online teaching, design of learning activities and course development (Stanford University, n.d.-g). Through their Open Learning Initiative, Stanford University offers an opportunity for teachers to use the online course in conjunction with their regular university course. The Initiative is currently designing courses to meet introductory subject requirements at community college level courses, based on their own leading-edge research in higher education (Stanford University, n.d.-h).

This online program's ongoing innovative approach to online learning has also experimented with self- and peer-grading. For example, the Human-Computer Interaction course taught by Scott Klemmer

focuses on design projects that are graded by the students themselves but also by an on campus teaching assistant (Cooper & Sahami, 2013). The peer based grade is compared to the expert grade and interesting results have been compiled that can help improve this grading system. The HCI class is now available on the University of California, San Diego Coursera portal (UC San Diego, n.d.).

3.3 INTERVIEW WITH A NON-USA BASED COURSERA STUDENT

Coursera is a platform that hosts online classes by various United States universities such as Stanford University, UC San Diego, Johns Hopkins University, lately extending its service to foreign entities such as Peking University, etc. A non-USA based student took a University of Michigan online finance course offered through Coursera in the Spring 2012. She was preparing for her Master of Economics studies commencing the coming fall. Even though the class was introductory and had no prerequisites, she felt that it was very demanding, with at least eight hours of work per week. Working full time made it hard to allocate time to study, and she regrets not completing the course.

This online class however was a unique opportunity for her to listen to lectures by a world renowned professor that she wouldn't have access to otherwise. The supporting material was great, even though some of it was only available for reading online. She assumes that this was due to copyright issues. An online forum was set up for student discussions moderated by a staff member who was also responsible for grading the assignments. One-on-one contact with the professor was not available. At the end of the course, she had to fill out an evaluation form.

Even though she didn't have personal contact with the professor, she holds him in high regard and believes that the class gave her a solid foundation. To quote directly: "It was extremely useful... one of the best professors ever – passionate, full of spirit, he not only explained in a very effective way the concepts, but was also able to successfully transmit his love for the subject... I truly enjoyed it, got goosebumps by listening to him..."

The main issue with online courses for her is how to engage students effectively. It is very much up to student's personal motivation to complete a course. Furthermore, the validity of the certificate is not established and the courses are not standardized. There are differences between universities and amongst professors with regard to how courses are set up and taught. She feels that it is up to the professor how the class is organized and the degree to which it is successful.

3.4 FLIPPED LEARNING

Flipped Learning is the latest fad in online education developed by two high school teachers from Colorado, Jonathan Bergmann and Aaron Sams (Tucker, 2012). Their idea was to enhance student-centered in-classroom learning by moving the traditional teacher-centered lectures and exercises to the Cloud, explains Tucker (2012). Students access lecture videos and supporting documents placed online by the educator at their convenience. In-class time is reserved for group exercises, thus flipping the location of educational activities.

The idea grew into The Flipped Learning Network, a group that provides support to educators interested in implementing flipped learning. This authority established four pillars necessary for flipped

learning to happen. The first one, Flexible Environment, refers to a new learning space open to alteration by students and educator respectively. Learning Culture is the second pillar that supports students initiating and evaluating their learning with little to no assistance from the educator. Intentional Content refers to carefully selected and presented online content that serves the educator's goal the best. The last pillar, Professional Educator, emphasizes the new skillset that the educator now needs in order to successfully implement flipped learning (Flipped Learning Network, 2014).

Besides subject expertise, the educator needs impeccable management skills in order to organize and lead a flipped classroom. Carnegie Mellon University developed the Classroom Salon to help educators enroll students and organize the video and document upload (Classroom Salon, 2015). Students use this annotation platform to leave comments or ask questions in the context. Based on this data, the educator creates his lecture plan. Powerful analytics tools measure consistency, helpful index, engagement index and thought leader index (Guna, 2014). These measures help with another important part of flipped learning strategy - rewarding students' participation.

The Flipped Learning model offers the most opportunities for reflection through experiential learning. It was implemented by the Department of Industrial Design at METU (Middle East Technical University) for a basic design studio class (Akar, Turhan, Ozgen, Coskun & Oraklibel, 2012). Their students could upload work to be critiqued by the tutors to an online studio named KIBIS. The tutors liked the tool because it kept written record of their critiques that eventually became a repository that they can access at any time and place. The students liked the tool but pointed out that it should remain as a support to the face-to-face interactions. They would like to access other students work and leave comments, in addition to being able to reply to tutor's feedback, conclude Akar, Turhan, Ozgen, Coskun and Oraklibel (2012).

4. DISCUSSION

Comparing the author's personal experience with e-learning at a community college to the case study of Stanford Online is unfair considering the wealth and intellectual power involved in the development of the latter. The budget cuts that community colleges experienced in recent years affected the most vulnerable section of society, the low income youth and the unemployed (Williamson, 2014). The cuts also created a burden on the professors now having to work with less resources and an enlarged classroom. Therefore, many community college level professors function without reasonable support and are not properly prepared to conduct online teaching.

Stanford Online is a good example of applying Dewey's educational principles to Cloud education due to its insistence on constant exchange of feedback. Reflection is now dependent upon the efficiency with which experience is shared and documented, and by making that information accessible online. Ward and Prosser (2011) argue that the informative aspect of this exchange should contain relationships that appear in face-to-face communication in order for it to have the same effect (p. 8). They further state that online education should always be in addition to face-to-face education (p. 1).

Although Dewey didn't talk about teacher education per se, Stanford Online has come closer to democratizing education as construed by Hansen (2006): "Dewey undertook to rethink education not as a limited transmission of the highest achievements of the past from a few to a few, but as a discipline of and practice in creative adaptation through solving problems in living for the good of each and for all (p. 178)." By sharing their experience with community colleges, Stanford Online establishes better rapport amongst teachers of all ranks. Encouraging students' participation and feedback on the learning process further enables their reflection through experience.

The non-USA based student's experience with a Coursera hosted online course speaks of yet another democratic aspect of the Cloud. Lectures by World renowned professors are made available to students for whom the access was otherwise impossible. They communicate with students across the World in online forums, thus creating an e-version of Dewey's "Great Community". The uneven evaluation system paired up with status-less certificates are issues that need to be resolved.

An even bigger issue is the onset of plagiarism incidents, despite the fact that the courses are free and not officially recognized (Young, 2012). Most cases of plagiarism are reported during peer-review by fellow students, acknowledges Young (2012). Professors complain of plagiarism being especially rampant with students from non-Western cultures. Unfortunately, this makes the "Great Community" a not so ethical place after all. Instead of focusing on new teaching strategies, professors are figuring out ways to eliminate plagiarism. Numerous detection tools are built to fight plagiarism. Villano suggests that plagiarism has always existed but the Internet helped improve its detection (2006). An instructional design built to deter plagiarism is being proposed by Olt (2007).

Academic research on Flipped Learning shows that a truly flipped classroom is not always established, and its structure varies from class to class. Limited research on its effectiveness was conducted, and there seems to be lack of coherence in terms of what characterizes flipped learning as successful. Bishop and Verleger (2013) assess that in most cases, student-centered learning is analyzed according to cognitive conflict theory by Piaget and Vygotsky's zone of proximal development. Overall, students preferred in-class to video lectures but they also preferred having interaction time as opposed to in-class lectures (Bishop & Verleger, 2013).

In an industrial design class, Flipped Learning can help students focus their research to an area specific to their project. They can videotape the production process and upload it together with the supporting documentation to the flipped classroom forum to be discussed and critiqued by their peers. Students will learn from each other's experiences, and try to improve their projects based on the received feedback (Naskova, 2015). The professor can use this peer review in conjunction with their own evaluation to finalize grading. Kulkarni, Bernstein and Klemmer (2015) discovered that feedback is ineffective if delayed by a day. They invented PeerStudio, a system that entices rapid feedback by recruiting peer reviewers who are online and need review as well.

The Flipped Classroom's process oriented curriculum that emphasizes freedom and self-education is at the core of the Bildung-tradition supported by Dewey (Berding, 1997). Berding stresses Dewey's criticism of technology that monopolizes reason and emphasizes method rather than experience, and

has split means and ends (1997). However, Dewey acknowledges that some of it is needed and it is up to society to apply it in a way that doesn't undermine Bildung theory. According to Berding, Dewey's goal was to diffuse the false conflict between technology and Bildung-theory (1997).

5. CONCLUSION

The proliferation of online learning tools has made the Internet essential for homework production. Some design applications such as AdobeSuite are only available in the Cloud. The challenge now is how to make the numerous learning platforms safe and productive. According to Aivazidis, Lazaridou and Hellden new skills such as personal responsibility, independent thinking and critical communication skills need to be introduced into the traditional roles of teacher and pupil (2006). The same skills have been promoted for the last hundred years, but the transparent nature of online education augments this need. Dalsgaard and Paulsen further believe that by incorporating social networking in online education, a heightened form of transparency is established (2009). This statement resonates with Dewey's (1944) definition of socialization: "Any education given by a group tends to socialize its members, but the quality and value of the socialization depends upon the habits and aims of the group (p. 83)." Dewey (1944) explains that detection of aimful activity is enough to create valuable "function in experience" (p. 103). While the discussed educational platforms vary in design, they are all "acting upon it" in the spirit of Dewey. As long as their functioning is unified with the same goal of promoting democratization and experience in learning, a new era in education is inevitable.

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