The Future of Educational Space: Improving the world's education system?

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Perhaps there will never be a faster growing space than the internet. Without any physical borders or walls, it does not fit into the traditional idea of a space, but it is nonetheless one of the most important and controversial spaces in the modern era. With its rapid growth, the internet has already managed to devour and emulate the purposes that real concrete spaces have served for many years: email now provides a substitute to post-offices, online shopping challenges the traditional in-store shopping model, and e-books minimize the need for library trips. It is now on the brink of changing another aspect of life as we know it: education.

The notion of online education is far from recent, and has been around since 1989, when the University of Phoenix in the U.S. first started its online degree program (University of Phoenix Online Education). MBA degrees were awarded to its first online MBA cohort in 1991 (University of Phoenix Online Education). At that time, with less than 2 in 100 U.S. households able to boast an internet connection (Trends in PC and Internet Access), online learning could never have hoped to revolutionize traditional classroom education.

This, however, has changed in a dramatic way. Education is no longer synonymous with the concept of the classroom, where teachers write on blackboards while students take notes. With initiatives like the Khan Academy, edX, Coursera and Udacity, enrollments for which have increased to over 10 million (Noer), online education has started to be viewed as a possible contender, and even a threat to the traditional classroom learning method. With online education and the traditional classroom lying at opposite ends of the spectrum, there emerges a highly controversial dilemma of deciding which road to take for the future of education. Which method would provide any student around the world the opportunity of getting the best education? Does either method by itself hold the answer to this dilemma?

Andrew Ng and Daphne Koller, co-founders of the educational technology company, Coursera, and professors at Stanford University, look at online education as the key to solving the worlds lack of equal access to education. In one of his lectures, Ng honors education as "the great equalizer" (Johnson), a right that empowers without regard to status, racial or economic. In their Forbes article titled, "Log On and Learn: The Promise of Access in Online Education," both Ng and Koller recognize the inability of many to pay for their education and the over 500% increase in the cost of higher education since 1985. Posing online education as the solution that would allow "college students to graduate without being shackled to a gross amount of debt," they note that the opportunities that online learning opens "would have never been possible without this technology" (Log on and Learn). Although they acknowledge that the in-person classroom experience is unlikely to be replaced by an entirely online curriculum yet, they see the potential of online learning. Koller and Ng refer to online education as the "incredible opportunity to make education what it should be: a fundamental human right."

Pulitzer Prize winner and columnist for the New York Times, Thomas L. Friedman, also welcomes this tide of online education, looking at it as a platform that not only has a massive reach, but also connects people from around the world. In his op-ed, titled "Come the Revolution," he highlights the massive reach of online courses. He quotes Andrew Ng's words, "To reach that many students before, I would have had to teach my normal Stanford class for 250 years." Friedman deems the minute sizes reached by traditional face-to-face learning incomparable to the masses attracted by internet learning. He also notes how the learning system is encouraging formation of study groups in countries all around the world, and observes that a student can pose a question on the online forum at 3 am and get his/her question answered by someone else in an average time of 22 minutes (Friedman), a facility which the traditional classroom cannot provide.

Not everyone, however, believes that instruction through the internet holds the edge over classroom education in the quest to solving an academic crisis. Emily Layden, a writer, teacher, coach, and Stanford alumna, in her Huffington Post article "An Education: Why the Internet Isn't the Solution to America's Academic Crisis," opposes the notion of online education as an alternative to the in-classroom experience. She opposes online education which stresses the "numbers and reach[es] (the ability to lecture to 200,000 rather that 200)," asserting their disregard for "the minutiae of teaching and the value of mentoring." She uses her experience as a college student as an example to underscore the inability of online education to offer the opportunity to have discussions with a small group of students in class, and to offer formative

one-on-one conversations with the professors and mentors. She argues that online education places too much emphasis on degrees, which she believes stands in direct contrast to the principles of in-class, face-to-face learning, where "teachers - not degrees - are the gems of a college campus" (Layden).

Similarly to Layden, Mark Edmundson, a professor of English at the University of Virginia, fails to believe that the internet, as a space for instruction, would ever be able to match the classroom experience. He argues, in his New York Times op-ed titled, "The Trouble with Online Education," that online learning fails miserably in many ways. He highlights that an online learning environment fails to create a "vital community" and "intellectual joy". A teacher himself, Edmundson emphasizes the importance of getting to know students, and highlights the lack of immediacy and sensitivity to room atmosphere faced by a teacher when teaching online. He claims that, for both students and teachers, it is "far more lonely" (Edmundson). He also stresses the importance of dialogue in class, which he believes is essential to effective learning, and contrasts it with the monologue that takes place within online education. Accusing online education as being a "one-size-fits-all" model, Edmundson shuns internet learning as a concept which makes "intellectual life more sterile and abstract than it really is" (Edmundson).

However, this viewpoint is not unanimous, even among professors. Apart from being a founder of an online education platform, Daphne Koller holds a position as a reputed professor at Stanford University. In her "Wilson Schools Technology and Public Policy" lecture series, Koller, in opposition to Edmundson, argues that the "one-size-fits-all" model is actually characteristic of the traditional face-to-face learning method, and not of online education. She presents online education as a path that allows us to "release ourselves from the shackles (Mackay)" of traditional teaching. As a teacher of a challenging Computer Science class at Stanford, she understands that students learn at their own pace, and that online education affords them the opportunity to tailor their learning speed and preferences, and make learning enjoyable and effective.

David Brooks, op-ed columnist for the New York Times, understands both sides of the equation. In his article "The Campus Tsunami," he notes the utility that tailored online education provides, and highlights how it is "especially useful in languageâĂęeducation" (Brooks). Furthermore, he is optimistic about millions of students being able to learn from the best teachers through online education. He does, however, express concern over whether subjects such as philosophy, which are "harder to digest in an online format," will be superseded by the more "functional courses" such as those in business. More importantly, Brooks criticizes online learning because it is, according to Brooks, under the assumption that students are "blank hard drives waiting to be filled with data" (Brooks). He argues that, while online education is effective at making a student absorb information, learning is a process that goes beyond simply absorbing information: "There is reflecting upon information as you reread it and think about it. There is scrambling information as you test it in discussion or try to mesh it with contradictory information. Finally there is synthesis, as you try to organize what you have learned into an argument or a paper" (Brooks).

With viewpoints distributed across the spectrum, can we really claim that either online education or the traditional classroom holds the upper hand over the other? With Daphne Koller and Andrew Ng viewing online education as the solution to the worlds education problem and Thomas Friedman emphasizing its ability to connect the masses around the world, online education seems to be the more altruistic option. As Friedman asks us to consider the "many problems around the world [that] are attributable to the lack of education" (Friedman), and as Mitchell Duneier, professor of sociology at Princeton University, reminds us that "for many students, the choice is between online education and no education at all (Koller and Ng, Log On and Learn)," it is rather compelling to scoff at the spatially limiting classroom, join forces with online education, and be set on educating the worlds masses. We can ask ourselves, however, whether that approach is far too romantic. Both Emily Layden and Mark Edmundson make compelling arguments about the superiority of a traditional classroom education. They explain that, though technology has changed dramatically since the dawn of online education, two decades later, online education is still faced with the challenge of matching the personal connection and communication between teacher and student in the classroom environment.

Even the "old is gold" philosophy, however, may not be idealistic. A meta-analysis, titled "Evaluation of Evidence-Based Practices in Online Learning," published by the U.S. Department of Education, compared the effectiveness of online education against that of classroom learning. It revealed that "students in online conditions performed modestly better, on average, than those learning the same material through traditional face-to-face instruction" (Evaluation of Evidence-Based Practices in Online Learning). So, is the model of education we have been following for many centuriesâĂŤthat of traditional face-to-face instructionâĂŤeffective at all for the student? Faced with the challenge of providing every student around the world the opportunity of getting a high-quality education, it is perhaps time to rethink the foundations of education as we know it.

Perhaps the solution to this challenge may have been best summed up by Roman playwright, Titus Maccius Plautus, "In everything the middle course is best; all things in excess bring trouble" (The Quotations Page). Indeed, the future of education may lie between the two extremes of online education and classroom education: "hybrid learning". Hybrid learning, also called "blended learning", is a system of

learning "which combines the face to face classroom methods with computer mediated activities" (Blended Learning). It has a flipped classroom system in which, Koller describes, "students use interactive videos to watch the content in advance, and classroom time is used for a more meaningful and engaging interaction between faculty and students, and between students themselves" (Central). While it may be argued that the middle course often involves making compromises which detract from the values of either extreme, the concept of hybrid learning, rather than necessitating a compromise between the two extremes, provides a solution which combines the best of both worlds.

It has been experimentally demonstrated that hybrid-learning is very effective: the same meta-analysis which found that online learning held an edge over face-to-face instruction also discovered that "instruction combining online and face-to-face elements had a larger advantage relative to purely face-to-face instruction than did purely online instruction" (Evaluation of Evidence-Based Practices in Online Learning). A math class in a Californian school that adopted the blended approach saw a drastic improvement in students performance, with 18% more students reaching advanced levels (Koller, Death Knell for the Lecture: Technology as a Passport to Personalized Education).

It may be argued, however, that empirical evidence is not the best indicator of an educational method, and that other factors, such as emotion, must also be taken into account. Undoubtedly, education is a highly personal field, where the connection between teacher and student is of supreme importance. In India, a "guru," Sanskrit for teacher, is seen as one who does much more than simply teach; the word "guru" translates literally into "[one who] dispels the darkness of ignorance" (Guru). In a hybrid learning system, the sacred bond between teacher and student is maintained: as a professor of business at San Jose State University, Randall Stross, notes, "Those relationships âĂŤ with humans in the flesh âĂŤ help students to persevere" (Stross). With the classroom component of hybrid learning keeping human contact alive, the student, through the teacher, can still be inspired, motivated, and directed to the best of his/her abilities, face-to-face.

However, not all students have access to the best teachers. In his New York Times opinion piece, Arun Ramanathan, Executive Director of The Education TrustâĂŤWest, notes that "low-income students are far less likely to have access to the best teachers" (Ramanathan). Firing such teachers is not always a feasible option, and with too many students for only a handful of great teachers to instruct in-person, not having access to the best teachers can prevent students from reaching their academic potential. Hybrid learning once again holds a solution to this challenge. With its online component, hybrid learning allows students to listen to online lectures delivered by the best of professors, who, as Brooks writes, "would provide different perspectives from around the world." With "a global boom in cheap, high-speed Internet", students around the world, regardless of economic status, can learn from Stanford professors "for 50 cents to $1" (Anders). Furthermore, the teacher, no more burdened with the task of teaching the subject matter thoroughly, can then dedicate classroom time to stimulating discussions, as students reflect upon the material they have learned online, and formulate ideas and arguments of their own. With a students success no more bounded by the teaching quality of his teacher, a student with a mediocre classroom teacher has the same opportunity to succeed as one who has a great classroom teacher.

It would, however, be misrepresentative to view the online component of hybrid learning simply as a substitute for a mediocre classroom learning experience. It was shown in 1984, with the "Blooms 2 Sigma problem" phenomenon, that "the average student tutored one-to-one...performed two standard deviations better than students who learn via conventional instructional methods" (Bloom's 2 Sigma Problem). With massive classroom sizes, which make understanding each students progress in the class difficult, tutoring is far from one-on-one. In such classes, providing individualized feedback is a non-trivial task, and âĂŸnumbers become the only indicators of progress. With a hybrid learning system, however, the one-on-one tutoring is provided by technology. Terse online concept quizzes allow students immediate feedback: students can quickly evaluate their strengths and weaknesses in the material for a class, and focus on what requires most attention. With technology rapidly developing to fill in the gaps of classroom education, Koller may indeed be right in saying, "By using technology in the service of education, we can change the world in our lifetime" (Koller, Death Knell for the Lecture: Technology as a Passport to Personalized Education).

The evaluation of hybrid learning, however, remains incomprehensive without taking into account the stakeholders, other than students. Although students are critical to any method of learning, there are others involved. At the Techonomy conference in San Francisco, when one woman asked Bill Gates whether he thought that online education could potentially supersede in-person education, Gates noted that education up through high-school "is partly about babysitting the kids, so the parents can do other things" (Spark). In providing this privilege to parents, while offering a high-quality education to students, hybrid learning holds the edge over purely online learning. Gates also believes in supporting teachers as technology becomes an increasingly important part of education, "Teachers are the engine. They are the agents of change. We need to encourage teachers to try some new approaches and support them as they find creative ways to use these new tools" (Gates). With online education, which would necessitate only a few handful of

teachers teaching the entire world online, it would leave classroom teachers without jobs in the industry. With hybrid learning, teachers do not have to be worried about losing their jobs to their online counterparts, but are bolstered in their teachings with the online component. With hybrid learning proving to be advantageous in so many different ways, is it the educational method of the future? While Coursera has almost touched 2 million students within a year of its release (Coursera), and Khan Academy celebrates its 10 millionth student milestone (Noer), it is without doubt that, as Stanford President Hennessy says, "A Tsunami is coming" (Brooks). With hybrid learning beginning to emerge as the possible solution to challenges faced in modern-day education, only time will tell whether or not it proves to be a victor over both classroom and online education. Perhaps the solution to our dilemma may have once again been best summed up by Roman playwright Titus Maccius Plautus, "Patience is the best remedy for every trouble." (The Quotations Page). So while we prepare our grand recipe for hybrid learning, we can take the best seat in the arena, crunch away at a large bucket of popcorn, and in Friedman's words, "Let the revolution begin" (Come the Revolution).

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