



A Summary Analysis of Online Education

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For over a decade, futurists, education theorists, and even business gurus have predicted that online learning would “disrupt” higher education by revolutionizing or even replacing colleges with online alternatives (Cairncross, 2001; Evans, 2014; Christensen et al., 2011). The telecommunications revolution, some said, would soon make face-to-face contact obsolete in virtually all realms, including education (Toffler, 1980; Knoke, 1996; Negroponte, 1995).

So far, this promise remains unfulfilled. MOOC-mania came and went in the early part of this decade without ever having the predicted impact, online degree programs have remained marginal, and for-profit online universities still continue with the same second-class status in higher education. The problem of holding variables constant has long made it difficult to compare online to face-to-face courses, but a randomized, controlled experiment by Bettinger and Loeb (2017) recently found that student learning was significantly higher in face-to-face courses and that taking online courses caused lower student learning in subsequent semesters.

The most basic reason for the resilience of brick-and-mortar college education against online alternatives is that in-person contact is far more valuable than was previously assumed. Gaspar & Glaeser (1998) have shown that co-spatiality is superior to virtual environments for higher-level communication, innovation, socialization, efficiency, attention, and motivation. Storper and Venables (2004), found that, “Face-to-face contact remains central to the coordination of the economy, despite the remarkable reductions in transport costs and the astonishing rise in the complexity and variety of information—verbal, visual, and symbolic—which can be communicated near instantly” (p. 352). Localized interactions promote innovation and allow for the serendipity that is key to novel thinking and the development of unanticipated relationships and ideas.

To better illuminate the value of face-to-face learning in higher education, we can use Chambliss and Takacs’s (2014) framework of “products” that colleges “sell.” I have identified these as:

- 1 Information
- 2 Relationships
- 3 Motivation
- 4 Credentials

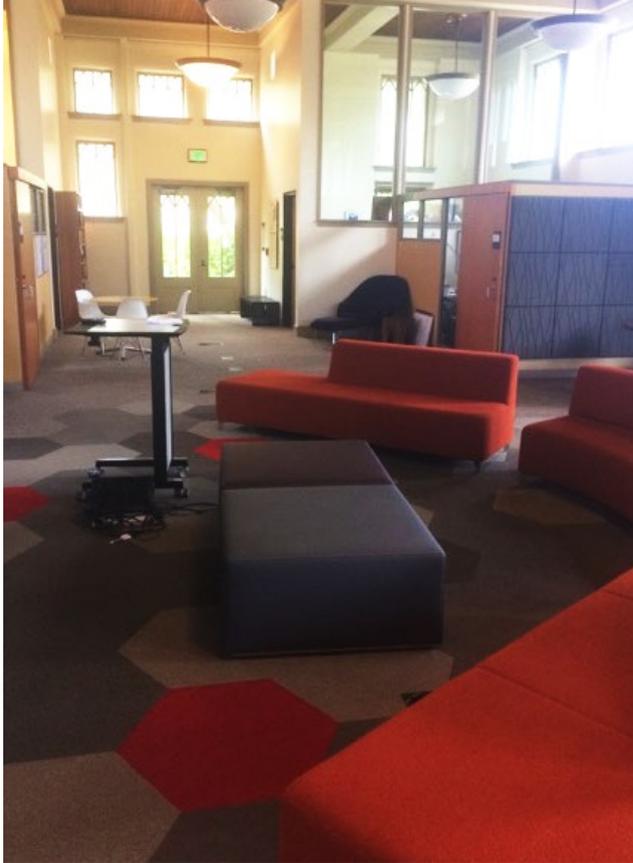
Information

Too many assume that colleges exist mainly to provide students with access to information resources (e.g., professors, libraries, labs, technologies, etc.). Since information can be transmitted online, many assume a college education can also be transmitted online.

But if colleges only sold information, they would have become obsolete long ago with the invention of any number of distance information technologies, e.g., the printing press, the library, the postal service, the phonograph, the telephone, the radio, the movie, the cassette tape, the home video, or the DVD. One of my colleagues joked recently: “The first ever MOOC was the book.” In this sense, online courses are not nearly as novel or revolutionary as many supposed.

Relationships

Colleges are institutions for interacting with important people and ideas as much as they are for dispensing



Lytics Lab and, in the background, my office at Stanford
(interior of Barnum)

information. In the long term, college relationships may matter far more than college content (Chambliss & Takacs, 2014). Tuition buys connections with professors, fellow students, tutors, administrators, roommates, etc., which ultimately amounts to socialization, belonging, and a sense of community. It's the interactions—especially teacher to student and student to student—that make the university experience unique. Physical campus spaces, particularly classrooms, are places of social interaction, not just knowledge transfer. Chambliss and Takacs (2014) point out that college “Is less a collection of programs than a gathering of people” (p. 5) and that “human contact, especially face to face, seems to have an unusual influence on what students choose to do, on the directions their careers take, and on their experience of college” (pp. 3-4). “Personal relationships are a pre-requisite for learning” that helps “students ‘buy into’ the college experience” and “devote time and effort to learning” (p. 101; also see Storper & Venables, 2004). Schwartz et al. (2016) also found that communities have a major role in motivating students to learn.

Unfortunately, these relationships cannot as of yet be fully replicated online. Miller (2014) found that, of the four conditions necessary to create emotionally bonded groups, the first and most important is “physical co-presence.” Online relationships, by contrast, are marked by higher social distance, lower authenticity, lower verbal exchange, and a lower sense of the personal (p. 25). Chambliss and Takacs (2014) have found that co-spatiality leads to the creation of Durkheimian communities in which the magic of synergy occurs; formal and informal encounters have unexpected, serendipitous, and intangible benefits (pp. 79-80). Chambliss and Takacs (2014) observed that, “When a group of people physically gather, with a shared focus of attention, common activities, and a degree of exclusiveness, something happens roughly akin to reaching ‘critical mass’ in a nuclear reaction: excitement grows, and begins to feed on itself, in a self-reinforcing rush of emotional energy” (p. 81). Communities are also strengthened through ritualized common activities meaning that the value of opening class with a prayer, for instance, is validated by research (p. 80).

In short, face-to-face education leads to richer and more productive interactions between teachers, students, and others in the learning institution than does online. Those of us (including myself) who believed online learning would disrupt higher education, didn't fully account for the importance of the personal connections, community, and belonging that are best created in face-to-face settings.

Motivation

Perhaps the most important product sold by colleges is motivation. Walton et al. (2012), Storper and Venables (2004), Miller (2014), and Schwartz et al. (2016) have found a strong connection between face-to-face interactions and the motivation to learn. Chambliss and Takacs (2014) note that “Personal connections are often the central mechanism and daily motivators of the student experience” (p. 101) and “the strongest motivation to work on basic skills comes from an emotionally based face-to-face relationship with specific other people” (p. 132). Social motivation aids students in the cultivation of the “growth mindset,” the development of “grit,” both of which are crucial for goal setting and achievement (Dweck, 2007; Duckworth, 2016; and Walton et al., 2012). Chambliss and Takacs (2014)

summarized by saying, “To remain and thrive in college... sheer physical proximity is fundamental” (p. 31).

Not only does the sense of community incentivize learning, but so do the schedules, infrastructure, plans, institutions, and organization as a whole. Just as we have more motivation and ability to exercise if we sign up for a formal class at a gym, so students have more motivation and ability to learn when signed up for formal classes at a university.

All the information in the world is useless without motivation to learn it. Motivation is the difference between a viewed and unviewed lecture, a taken and untaken quiz, or a read and unread book. For generations, the equivalent of a college-level education has sat on the shelves of most middle-class homes in the form of encyclopedias, but the encyclopedias went unopened for lack of motivation. Few people would up and decide to learn calculus on their own (even though the information was available in easily

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acquired textbooks) but most would learn calculus if it were structured into their life in a college setting.

The face-to-face structure also minimizes the number of “glitches” that inhibit and interrupt learning. Technological malfunctions are a constant, major problem associated with online learning (video not loading, LMS being offline, computer crash, link being moved or removed, etc.) and Miller (2014) showed that they seriously diminish learning “flow.” He also found that they create an artificial inequality among students, discriminating against those of lower technological expertise. A course in English is not designed to assess our technological abilities, but that happens de facto in online courses as tech savvy students receive higher grades and show more learning than do less tech savvy students (p. 25). Online courses also disproportionately benefit students from more individualist and self-motivating cultures and thereby have a discriminatory effect on students from cultures that place greater importance on collective achievement (Kizilceca & Cohen, 2017)).

The lack of a motivating structure in online courses may be the best explanation as to why they have such surprisingly low completion rates. The MOOC dropout rate, for example, is around 90% (Means et al., 2014). As Kizilceca and Cohen (2017) point out, “A lack of external or social pressure to complete courses and little support or guidance in online learning environments” is one of the major problems with MOOCs (p. 1).

Since more advanced students are also, on average, more motivated students, then online learning is more appropriate for upper-division courses. Sadly, lower level courses with introductory students in introductory courses are those that need physical co-presence the most, and yet those are also the courses most likely to be put online (Miller, 2014).

Credentials

Finally, colleges sell credentials. Transcripts, degrees, diplomas, and academic honors are signaling devices that communicate a level of accomplishment, competence, expertise, and work ethic to interested parties (Caplan, 2017). A completed college degree tells potential employers, graduate admissions committees, and society at large that a particular student has demonstrated competence through broad evaluation in various fields. So far, ways to adequately replicate this signaling from online courses are lacking. Until assessment progresses to the point that online measures can match face-to-face measures in honesty, thoroughness, breadth, and reliability, the all-important credentialing function of college courses will remain out of reach for online counterparts.

Conclusion

Although the above makes clear that an online learning “disruption” of higher education is not on the horizon, it should not be taken to suggest that online education has no value. On the contrary: numerous studies have confirmed that, when done correctly in ideal environments, adding online elements to traditional courses has a powerful effect that improve student learning. As I hope to argue in follow-up articles, there is tremendous benefit in using online technologies to supplement and enhance, rather than replace, the traditional college experience (Means et al., 2014). ♦