



Mini Review

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The Future of Higher Education Online Learning

Qi Zhu*

Department of Computer Science, University of Houston – Victoria, USA

*Corresponding author: Qi Zhu, Department of Computer Science, University of Houston – Victoria, USA.

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Abstract

Most universities and higher education organizations have offered both face-to-face sessions and online sessions to the students for most of courses. However, COVID-19 has forced nearly all students including those who initially selected face-to-face sessions to online instruction during pandemic time. In this paper, we predict that the majority university learning will move from face-to-face to online learning.

Introduction

In recent years, fully online or hybrid/blended online instruction courses are increasing at many higher education institutions in the United States and worldwide [1]. Parker, et al. [2] showed that 89 percent of four-year higher education institutions offered courses taught fully online, or hybrid/blend online. Of all students enrolled in higher education in 2017, 33.5% enrolled in some form of distance education/online learning courses [3]. However, the majority learning mode is still the traditional face-to-face format.

Moore and Kearsley [4] defined the online instruction as “distance education is teaching and planned learning in which teaching normally occurs in a different place from learning, requiring communication through technologies as well as special institutional organization” (p2). Even it is hard to use a uniform definition in rapidly changing online instructional education, but all agree that online instruction has the following advantages over traditional face-to-face instruction [5]:

- To reduce the time and costs for travel.
- To increase opportunities to access and collaborate with expert professionals.
- To provide students with flexibility at their convenience.
- To allow the adjustments to subjects and content.

Literature Review

The traditional instruction is a structured education program that focuses on face-to-face (f2f) contact with students in a classroom

[6]. The instructor plays the central role in helping students learn through organized lectures. Students who enroll in lecture classes consistently expressed several reasons for preferring lecture in a classroom, according to national data collected by Kinney [7]. They preferred to learn by watching an instructor present the material and being able to ask questions during the presentation of the material; they valued the human interaction. Students also pointed out that they frequently benefited when another student asked the instructor a question and they were able to listen to the instructor’s response. Students in lecture courses preferred these types of interactions to the opportunity for more individual attention than in an online course [8].

Online instructional education has grown rapidly in higher education [9]. Online learning has become a major alternative approach to traditional instruction by offering great opportunities for anyone who wants to learn something from the internet, with the advantages to learn anytime and anywhere [10]. Some other benefits of online learning are its ability to utilize various forms of multimedia such as texts, audios, and videos, more flexible self-responsible learning pace, and lower costs [11].

However, studies [12] show that traditional face-to-face learning provides real and meaning interactions among students and teachers. Most students and parents do not feel that the cost for online tuition should be the same as the traditional face-to-face classes [3]. There are concerns and complaints on online instruction including: poor course content, little collaborative

learning, inconsistent instruction, no access to professors, poor instructor preparation, and technical or network problems.

The growing interest in student-directed learning and the rise in popularity of online learning have also resulted in relatively steady growth in Computer Science majors, including the programming courses [13]. Studies show that programmers spend between 20%-30% of their time online for acquiring information and code, even more time than the time spend on coding [14]. A widely adopted online resources such as concrete code examples, some program paradigms, and video tutorials to show a step-by-step guide of how programming solution can be implemented to help students to learn more effectively and efficiently [15].

Also, programming courses are generally regarded as difficult, and often have the highest dropout rates [16]. Appropriate pedagogies and teaching approaches are essential for effective teaching and learning [17].

Future Learning Trends

In March 2019, thousands of colleges and universities in the United States transitioned all face-to-face classes to online learning because of the coronavirus disease 2019 (COVID-19) pandemic. Students who prefer the traditional face-to-face format were forced to change to online learning environment, the COVID-19 pandemic has made access to online instruction a core aspect of higher education. Research has shown that online learning can be as good or better than in-person learning for the students who choose it. With remote learning moving into the long term, we here predict the following trends for the future learning:

- Online courses or hybrid learning will dominate in the universities' learning environment. However, face-to-face format will still exist for some special purpose courses and some special required students.
- More intercollegiate collaboration will happen in the future to save the cost in the form of reduced tuition. If teaching online, why to limit students to their own institutions.
- Machine learning, SMS messaging, and AI are also having a growing impact in optimizing student services and support. Like commercial, universities plan to use AI-based chatbots to support students and answer questions.

Conclusion

Online instruction is increasing very fast recently at many higher education institutions, most offer both face-to-face sessions and online sessions to the students. However, COVID-19 has forced nearly all students, including those who initially selected face-to-face sessions to online instruction during pandemic time for one year now.

For the question, will the online learning instruction be dominate in the future education? We do think that will happen, but not very soon. Such as in Computer Science, especially for the first year's programming classes and some advanced hard abstract courses, both f2f and online to the students should be offered.

Even though there are many issues and challenges for the online learning, however, we truly believe that online learning will dominate the universities' education in the future.

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Conflict of Interest

No conflict of interest.

References

1. Sun AQ, Chen X (2016) Online Education and Its Effective Practice: A Research Review, *Journal of Information Technology Education: Research* 15: 157-190.
2. Parker K, Lenhart A, Moore K (2011) *The Digital Revolution and Higher Education: College presidents, public differ on value of Online Learning*, Pew Research Center, Washington DC.
3. Education Data (2020) *Education Data Organization*.
4. Moore M, Kearsley G (2012) *Distance Education: A System view of online learning* (3rd edition). Belmont, CA: Wadsworth.
5. Finch D, Jacobs K (2012) *Online Education: Best Practices to Promote Learning*. Proceedings of the Human Factors and Ergonomics 56th Annual Meeting.
6. Brewer EW, DeJonge JO, Stout VJ (2001) *Moving to Online: Making the Transition from Traditional Instruction and Communication Strategies*, Corwin Press Inc, California, pp. 193.
7. Kinney DP (2001) A comparison of computer-mediated and lecture classes in developmental mathematics. *Research & Teaching in Developmental Education* 18(1): 32-40.
8. Ahmed DT (2019) Which Styles of Teaching and Learning are Effective for Students? – Students Perspective, *International Conference on Computational Science and Computational Intelligence*, pp. 880-883.
9. Norman S (2016) *Traditional Education and Advantages of Online Learning*, Education, Global Themes and Feature Topics, Industries.
10. Santiago L (2014) *E-Learning: Teaching Computer Programming online to first year Engineering Students*, 121st ASEE Annual Conference & Exposition.
11. Clark T, Barbour MK (2015) *Online, Blended, and Distance Education in Schools: Building Successful Program*. Stylus Publishing, USA.
12. Major W (2014) *Contagion in the Classroom Or, What Empathy Can Teach Us about the Importance of Face-to-Face Learning*, *Journal of Liberal Education* Fall, pp 67.
13. Luxton Reilly A, Simon Albluwi I et al. (2018) *Introductory Programming: A Systematic Literature Review*, *ACM ITiCSE Companion 2018*, Cyprus, pp. 55-106.
14. Xia X, Bao L, Lo D, Kochhar PS, Hassan AE, et al. (2017) What do developers Search for on the Web? *Empirical Software Engineering* 22(6): 3149-3185.
15. Rigby PC, Robillard MP (2013) *Discovering Essential Code Elements in Information Documentation*, Proceedings of the 35th International Conference on Software Engineering, pp. 832-841.

16. Robins A, Rountree J, Rountree N (2003) Learning and Teaching Programming: A Review and Discussion. *Computer Science Education* 13(2): 137-172.
17. Escobar Avila J, Venuti D, Penta MD, Haiduc S (2019) A Survey on Online Learning Preferences for Computer Science and Programming, *IEEE/ACM 41st International Conference on Software Engineering: Software Engineering Education and Training*, pp. 170-181.