Nan Yang

eLearning for Quality Teaching in Higher Education

Teachers' Perception, Practice, and Interventions

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Nan Yang
Institute of Higher Education
Beijing Academy of Educational Sciences
Beijing, China

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Nan Yang

Contents

Acronyms

CSCL	Computer-Supported Collaborative Learning
ENA	Epistemic Network Analysis
F2F	Face-to-Face
HEIs	Higher Educational Institutions
ICTs	Information and Communication Technologies

Chapter 1
Introduction

Abstract This chapter provides a general background for topics in the book (such as eLearning, quality in higher education and quality university teaching) and a brief description of the book structure. It aims to introduce readers to open dialogues such as *what does eLearning mean? What does quality mean in higher education? What are the impacts of eLearning on quality university teaching?*

1.1 eLearning as an Umbrella Term

eLearning is an umbrella term. If you search it in the Wikipedia, it will redirects automatically to the term "educational technology" which represents the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources. Since it is such a broad term that can mean different forms of learning such as online learning, blended learning, technology enhanced learning, computer-supported collaborative learning etc., it is necessary to discuss these terms in the very beginning for both a better understanding of the terminologies in educational technology and a clear scope of what forms of learning will be covered under the umbrella term "eLearning" within this book.

1.1.1 Terminologies Discussion

In this part, we are going to review terms that relevant to eLearning in a chronological order. Terms are grouped based on a similar time of the emergence. The time of emergence is defined by two ways. For those terms that have specific time of emergence, supporting references are quoted. For those terms without references that explained its emergence explicitly, the time of emergence is defined based on the result of searching these terms within the fields of abstract, keywords and article

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title in the Scopus.[1] You might discover that some of the terms seems to be used less today while some are still widely adopted. This evolution of terminologies implies the shift of paradigms in the field and terms that compatible with new paradigms exist longer.

1.1.1.1 1960s: Computer Based Learning, Computer Assisted Instruction, Computer Aided Instruction, Computer Assisted Learning

These terms are based on the theory of programmed instruction, which aims to computerized teaching by structuring information, testing learners knowledge, and providing immediate feedback to learners without human intervention [7, 25, 52, 53]. Programmed instruction is based on the psychologist Skinner's "operant conditioning", which argues learning is change in behaviour that can be conditioned by rewarding the right stimulus-response patterns [63]. Beside the impact of psychology on the pedagogy, this form of learning might also be applied due to the societal reality. After World War II, veterans went to colleges according to the G.I. Bill,[2] which had a significant impact on college enrolment [13, 51]. The education system hoped that programmed instruction could make teaching into automation for a low-cost and productive educational process [8]. Skinner's teaching machine [58],[3] CASE [32][4] and PLATO [5][5] are examples of this form of learning. Early practices were in the field of engineering [64] and medical education [35].

1.1.1.2 1970s: Open Learning, Distance Learning, Computer Mediated Communication

Open learning, aims to give access in higher education to all, was one of the most noteworthy development in higher education in the 1970s [14].[6] Open University in the UK, established in 1969 with the first students enrolled in 1971 [15], is centered on the concept "open" [14] and considered as one of the most comprehensive distance learning systems [74]. The term "open learning" emphasizes the openness as the vision while the term "distance learning" emphasizes being distant as the condition. Broadcasting was the main technology for this form of learning

[1] Scopus is the largest abstract and citation database of peer-reviewed literature including scientific journals, books and conference proceedings. https://www.scopus.com/.

[2] The Servicemen's Readjustment Act of 1944, also known as the G.I. Bill, was a law that provided a range of benefits for returning World War II veterans.

[3] Teaching machine and programmed learning https://www.youtube.com/watch?v=jTH3ob1IRFo.

[4] CASE: Computer Aided Software Engineering.

[5] PLATO: Programmed Logic for Automatic Teaching Operations.

[6] The origin of the open university movement can be traced to the University of London, which began offering degrees to external students in 1836. Source: Encyclopaedia Britannica.

[26, 40]. Computer mediated communication refers to communications that occur via computer-mediated formats such as instant messaging, email, chat rooms, online forums, social network, etc. [72]. This term was coined by Hiltz and Turoff, who combined traditional classroom teaching with online discussion forums [38]. In their book *The network nation: human communication via computer*, computer mediated communication was recommended as the cheapest, most convenient and potentially most powerful option for geographically dispersed groups of people to exchange information regularly.

1.1.1.3 1980s: Microcomputer Based Learning, Computer-Supported Collaborative Learning

In the late 1970s, three generations of microcomputers[7] were successively available [1]. In the 1980s, scholars explored the impact of microcomputers on teaching and learning. Programmed multiple choice questions are implemented in a biochemistry undergraduate course to test important facts and concepts [6]. Lesgold proposed two usages of microcomputers in classrooms including providing practice in word recognition and better diagnostic data on children's progress [48]. Lepper considered the computer as a tool to compare educational philosophies such as instructional drills with educational games or explanatory learning with didactic instruction [47]. Dyke mentioned the limitation of the microcomputer for the QWERTY keyboard is a real barrier for pupils to interact with the machine [18] and Drage reviewed several "alternative keyboard" devices [4]. Computer-supported collaborative learning is a branch of learning sciences that studies how people can learn together with the help of computers. Computers in the classroom are seen by critics as boring and anti-social while CSCL is based on precisely the opposite view that it brings learners together and can offer creative activities for intellectual exploration and social interaction. The earliest workshop addressing CSCL was "Joint Problem Solving and Microcomputers" in San Diego in 1983. In 1989, a NATO[8]-sponsored workshop held in Maratea (Italy) was considered as the birth of the field for it was the first public and international gathering to use the term "computer-supported collaborative learning" in its title [70].

[7] The first generation of microcomputer was the Altair 8800 in 1975 (also the first one that introduced to teachers). The second generation was the Commodore PET and Radio Shack TRS-80 in 1977 (also the first personal computer with black-and-white CRT displays). The third generation were the Atari 400/800, the Texas Instruments 99/4 and Apple II in 1979 with color graphics.

[8] North Atlantic Treaty Organization: an intergovernmental military alliance between 29 North American and European countries.

1.1.1.4 1990s: Online Learning, Digital Learning, Technology Enhanced Learning, Web-Based Learning, Networked Learning, eLearning

The World Wide Web (also called the web) was invented by Tim Berners-Lee and it was released to the public on the Internet in 1991. The web, as a new way of communication and a new "world", also had an impact on education. Online learning means learning that occurs over the Internet [57], which can transform education by promoting student-centred communication, collaboration and inquiry [78]. The web, as a new medium, became a popular way of displaying learning materials. The issue about the ownership of intellectual property in digital learning materials is raised by the Australian National University for it generated large quantities of text and image data for displaying over the web as learning materials [33]. Besides, learning environments can also be transferred to this new "world". University of Minnesota implemented the world's first ubiquitous laptop computing learning environment from 1993 to 1996, which transformed the university from a "paper" to "digital" learning environment [49]. Carnegie Mellon University explored technology enhanced learning through a system known as Carnegie Mellon Online that delivered materials to students both on and off campus [65]. Similar practices used the term "web-based learning" to describe the ways of producing the course materials [45] and the learning environment [55, 56] on the web. Networked learning is another term that describes online learning and web-based learning. The difference is the former emphasizes on the effect that people are learning collaboratively (which naturally forms the "networked learning community") [10, 23, 60, 66] while the latter focus on the web as a medium. Jay Cross coined the term eLearning in 1998 when he judged the use of technologies did not result in self-paced learning and releasing instructors from the learning process [54].

1.1.1.5 2000s: Blended Learning

Blended learning is a form of learning that combines traditional methods of teaching (such as instructor-led classes held in a physical classroom) with internet-delivered content that is learner-driven and self-paced [76]. Though the learning effectiveness in many ways depends on increased demand for students' convenience [75] and eLearning seems to provide more convenience to student learning (such as time, pace and place of learning), unfortunately it did not achieve the expectation of commentators and players within the industry [62]. Therefore, eLearning is reconsidered as a complement to traditional methods of teaching and training rather than a replacement [62]. The right mix of traditional learning and eLearning is vital to the effectiveness of blended learning [73]. Blended learning was implemented into teacher education [43] and maritime education [37] in its early practices. Besides, scholars found blended learning courses provided a stronger sense of community among students compared to traditional or fully online courses [68].

1.1.1.6 Summary

The idea of reviewing terms in a chronological order aims to present different forms of learning with specific social, economical and technological backgrounds. Several milestones such as the operant conditioning in behavioral psychology, the foundation of Open University in the UK, the popularity of microcomputers, the invention of World Wide Web, led to new forms of learning in the corresponding periods. Terms were coined with specific meanings in their own era and then the meaning of terms evolved over the time. For example, the term computer assisted learning came out in the 1960s. The term computer at that time might mean IBM 1440 [61], which is different compared to computers in the 21st century in terms of both the appearance and functions. The term "distance learning" was used to describe the use of broadcasting on teaching and learning at a distance in the 1970s while it mainly means online learning now. Indeed, it is still "distance learning". The difference is the technique that supports teaching and learning at a distance changed from the broadcasting to the Internet. Therefore, it is quite often that you find terms from different time were used together [28, 59] as they keep adapting. Oppositely, some term sank in the times. The term microcomputer based learning belonged to 1980s. In sum, terms have different life span. Some exist longer while some vanish in the times. The term eLearning, an umbrella term that represents various terms, survives due to its adaptability.

1.1.2 The Scope of eLearning in This Book

As the title of this book, it discusses three parts of eLearning for quality teaching in the context of higher education including teachers' perception, practice, and interventions. These three parts seem to be independent; actually, they are connected to each other for they are three stages of research in my doctoral project. I started with a general exploration of the impact of eLearning on quality university teaching and kept updating the research focus in the next stage according to the research findings of the previous stage. In this sense, the scope of eLearning changed according to the research focus of each stage. Specifically, the scope of eLearning in the first and second stage (teachers' perception and practice) is considerably open. All the technologies including either online (such as learning management system, twitter, etc.) or offline electronic devices or software (such as Microsoft PowerPoint) are considered as eLearning. In the third stage, it has a specific focus on computer-supported collaborative learning, which is a particular form of eLearing.

1.2 Quality: A Complex Issue in Higher Education

Quality is a complex issue in higher education for many issues need to be clarified when discussing quality [31]. In this section, the complexity of quality will be explained in terms of quality culture and dimensions of evaluation.

1.2.1 Quality Culture

Harvey and Green [36] argued five notions of quality culture exist in the system of higher education: quality as exception, quality as perfection, quality as fitness for purpose, quality as value for money, and quality as transformation.

1.2.1.1 Quality as Exception

Exception means distinctive and exclusive. Quality as exception means something that possessed or being accessible by elites. In higher education, this notion of quality means Oxbridge education that inaccessible for the majority. Besides, this notion of quality does not need to be measured as people see the quality due to its exclusiveness.

1.2.1.2 Quality as Perfection

Perception means zero defects. This notion of quality comes from industry where quality means consistency and stability. It emphasizes the prevention of any problem in the products or services by setting predefined and measurable benchmarks to follow.

1.2.1.3 Quality as Value for Money

This notion of quality refers to cost effectiveness that you get what you pay for. At heart, this quality culture is about accountability that public services (such as education) are expected to be accountable for the funders (such as taxpayers) and to the customers (the users of this service).

1.2.1.4 Quality as Transformation

Transformation refers to qualitative change and a fundamental change of form. It is a concept well established in western philosophy that being discussed in the works of Aristotle, Kant, Hegel and Marx. It implies that education is a dialectical process in which the transformation means cognitive transcendence.