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Distance Learning

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Use of online and blended learning continues to grow in higher education. As of 2015, approximately 70% of degree- granting institutions have some online offerings (Allen & Seaman, 2015). Research in online learning has been conducted at micro and macro levels. Micro level research has been conducted at the course or individual case study level, investigating variables such as effective instructional strategies or demographic profiles of successful learners in these environments. Macro level research has been conducted at the national or global levels, investigating access to education via free online courses such as Massively Open Online Courses, otherwise known as MOOCs, and examining global standards for online learning.

This chapter explores several research trends in order to assess the state of online learning and identify opportunities for future research. In order to better understand the research trends, definitions are presented first followed by quality standards for online learning courses, and programs developed by professional organizations are summarized. Student, faculty,

and administrator perceptions of online learning are reviewed in addition to best practices in design and implementation in online learning. Best practices regarding faculty and learner support are also discussed. Finally, the chapter concludes with a list of academic journals dedicated to online learning research, and a review of trends in online learning to watch.

Definitions of Delivery Methods

In this section, we briefly define the various terms involved with online delivery methods.

Table 1. Definition of Online Delivery Methods

Asynchronous online learning	A course where most of the content is delivered online and students can participate in the online course from anywhere at anytime. There are no real time online or face-to-face meetings.
Synchronous online learning	A course where most of the content is delivered online and students can participate in courses from anywhere. There are real time online meetings and students login from anywhere but at the same time to participate in the course.
MOOC	These are Massive Open Online Courses where an unlimited number of students can access the open source content free of cost.

Blended/Hybrid	A course with a combination of face-to-face and asynchronously online delivery with a substantial portion of the course delivered online.
Blended Synchronous	A combination of face-to-face and synchronously online students in the course.
Multi-Modal	A combination of synchronous and asynchronous online learning in the course.

Distance education and online learning are terms that are often used interchangeably. However, online learning and its components are encompassed within distance education, which contains two components that are not representative of online learning: correspondence courses and satellite campuses. Figure 1 is a visual representation of the delivery methods of distance education.

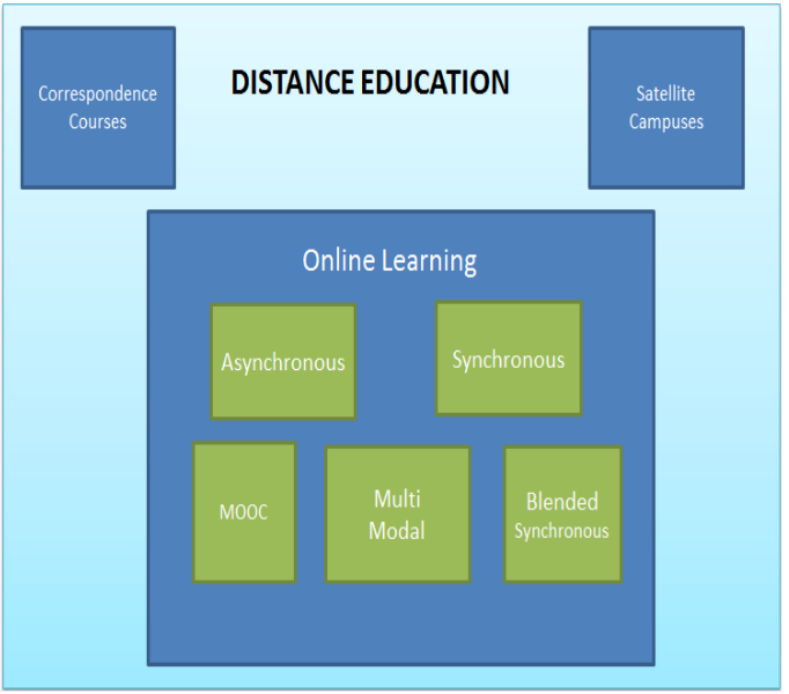

Figure 1. Online Learning Delivery Methods

Standards and Frameworks for Online Learning

Various standards and frameworks are available for instructors and administrators to use when designing and implementing online learning. Shelton (2011) reviewed 13 paradigms for evaluating online learning and suggested a strong need for a common method for assessing the quality of online education programs. Shelton (2011) found that a theme of institutional commitment, support, and leadership was frequently seen in

these standards. At least 10 of the standards included an institutional commitment, support, and leadership theme as a primary indicator of quality. Teaching and learning was the second most cited theme for indicating quality.

Daniel and Uvalic-Trumbic (2013) in their review of quality online learning standards list institutional support (vision, planning, and infrastructure), course development, teaching and learning (instruction), course structure, student support, faculty support, technology, evaluation, student assessment, and examination security as elements essential for quality online learning. They also add that to assure quality online learning in higher education the most essential requirement is the institutional vision, commitment, leadership, and sound planning.

Martin, Polly, Jokiaho, and May (2017) on reviewing twelve different global standards for online learning found that the number of standards varied in these documents from 17 to 184 (Table 21). Instructional analysis, design, and development (N=164); student attributes, support, and satisfaction (N=115); and institutional mission, structure, and support (N=102) were the top categories. Course facilitation, implementation, and dissemination (N=40); policies and planning (N=33); and faculty support and satisfaction (N=27) were rated the lowest three.

Table 2. Standard Details (Name, Year, Sponsor, Number of Sections and Number of Standards). Used with permission from Martin, Polly, Jokiaho & May (2017).

Standard Name	Year	Sponsor	Number of Sections	Number of Standards
Quality on the Line: Benchmarks for Success in Internet Based Distance Education	2000	Institute for Higher Ed Policy, supported by NEA and Blackboard	7	24
Open eQuality Learning Standards (Canada), http://www.eife-l.org/publications/quality/oeqls/intro	2004	Canada	4	25
Online Learning Consortium (Formerly Sloan-C) Quality Scorecard	2005	OLC Consortium	8	75
Blackboard Exemplary Rubric	2000	Blackboard	4	17
Quality Matters	2015, 5th edition	Quality Matters	8	45
CHEA Institute for Research and Study of Accreditation and Quality Assurance	2002 revision 1	Council for Higher Education Accreditation	7	7
NADEOSA (South Africa)	2005 revision of 1996 document		13	184
ACODE (The Australasian Council on Open, Distance and e-learning)	2014	Australasian Council on Open, Distance and e-learning	8	64
AAOU (Asian Association of Open Universities)	no date	Asian Association of Open Universities	10	54
ECBCheck	2012		13	46
UNIQUe	2011		10	71
International Organization for Standardization (ISO)	2005		7	38

These three analyses of the quality standards and frameworks over time echo similar results that institutional factors such as

vision, support, and planning are important indicators of quality online learning.

Perception of Online Learning

Several researchers have examined student, faculty, and administrator perceptions of online learning on various online learning characteristics. In the following section, research studies on key online learning characteristics are categorized.

Student Perception

Table 3 summarizes the key perceptions of students on online learning, including benefits and challenges.

Table 3. Student Perception of Online Learning

Online Learning Characteristics	Research Studies
Flexibility and convenience	Schwartzman (2007); Leasure, Davis, & Thievon (2000); Petrides (2002) ; Schrum (2002); Poole's (2000);, Karaman (2011)
Online discussion helps in providing thoughtful/supporting responses	Meyer (2003);, Petrides (2002);, Vonderwell (2003)
Belongingness in online learning community	Lapointe & Reisette (2008)
Interaction and engagement	Greener (2008); Martin, Parker & Deale (2012)

Self-aware and self-directed	Greener (2008)
Lack of immediacy	Petrides (2002); Vonderwell (2003)
Lack of sense of community/ feeling isolated	Vonderwell (2003); Woods (2002)

Faculty Perception

Table 4 summarizes the key perceptions of faculty on online learning, including benefits and challenges.

Table 4. Faculty Perception of Online Learning

Online Learning Characteristics	Research Studies
Flexibility	Hiltz, Shea, &and Kim (2007)
Reach more diverse students	Hiltz, Shea, &and Kim (2007);, Bolliger & and Wasilik (2009)
Technological difficulties	Bolliger &and Wasilik (2009); , Lieblein (2000);, Hunt, Davis, Richardson, Hammock, Akins, & Russ, (2014)
Workload issues	Bolliger &and Wasilik (2009);, Mandernach, Hudson, & Wise, (2013)
Importance of Institutional Support	Gaytan (2015);, Martin &and Parker (2014)

Administrators Perception

Table 5 summarizes the key perceptions of administrators on online learning, including benefits and challenges.

Table 5. Administrator Perception of Online Learning

Online Learning Characteristics	Research Studies
Time, cost, instructional design, instructor student relationships, reward structure, degree programs, policy, training	Rockwell, Schauer, Fritz, & Marx, (1999)
Measuring seat time, student outcomes, syllabi consistency, faculty support, faculty input, grading policy and criteria, grading disputes, testing	Sellani, & Harrington (2002)
Advocacy for online education, staying informed and learning about online education, collaborating with faculty, procedural changes, changes in schemas and roles	Garza (2009)
Faculty compensation and time; organizational change; and technical expertise, support, and infrastructure for online teaching; institutional direction for online learning	Orr, Williams, & Pennington (2009).

Best Practices for Course Design and Implementation

The research trends in online learning from the course perspective are organized into two sections: course design and implementation. Muilenburg and Berge (2007) conducted a factor analysis study to determine student barriers to online learning. Eight factors were identified: (1) administrative issues, (2) social interaction, (3) academic skills, (4) technical skills, (5) learner motivation, (6) time and support, (7) cost and internet access, and (8) technical problems. Research in online

course design and implementation has tried to address these issues. One example is the development and research of the Community of Inquiry framework (Garrison, Anderson, & Archer, 1999) which provides guidelines for faculty and designers to create meaningful interactive learning experiences that increase the level of social interaction.

Course Design

Recently, Lister (2014) conducted an analysis of online learning literature to identify patterns and themes for the design of online courses. Four themes emerged: course structure, content presentation, collaboration and interaction, and timely feedback. Similarly, Mayes, Luebeck, Ku, Akarasriworn, and Korkmaz (2011) conducted a literature review around six themes to identify specific recommendations for designing quality online courses. The themes used were learners and instructors, medium, community and discourse, pedagogy, assessment, and content. Recommendations identified included structuring courses, developing student-centered interactive learning activities, building collaboration through group projects, incorporating frequent assessments and strategies for equitable scoring such as rubrics, and providing sufficient detail and soliciting student feedback.

Jaggers (2016) developed a course design rubric that assessed organization/orientation, objectives/assessments, interpersonal interaction, and the use of technology for their effects on student achievement. The results showed that well organized courses with specific objectives were more desirable but may not have an impact on student achievement. However, the quality of interpersonal interaction within the courses positively

correlated with student grades. The following sections explore research in course design and implementation trends in more depth.

Instructors may have various levels of control over the design of the course structure, depending on organizational philosophies. Lee, Dickerson, and Winslow (2012) defined three approaches to faculty control of course structure: fully autonomous, basic guidelines, and highly specified. When faculty have less control of their course design, the courses are designed by the institution with instructors serving more as facilitators. Regardless of the amount of faculty control, there are basic elements to course structure that research has shown to be effective such as a having a consistent course structure throughout the course (Swan, 2001).

Gamification and the use of games, virtual worlds, and simulations have also gained traction in the online learning research. Gamification is defined as the application of game design elements, such as digital badges, in non-game contexts. Hamari et al. (2014) conducted a literature review of gamification studies and found that gamification can have positive effects, but those effects depended on the context in which the strategies were implemented and the audience. For example, in the context of applying gamification in an educational setting learners experienced increased motivation and engagement. However, some negative outcomes were also identified such as increased levels of competition. However, in areas such as health and exercise increased levels of competition may not be considered a negative outcome. Similarly, the different qualities of the users may also have effects on levels of motivation and engagements. Merchant et

al. (2014) conducted a meta-analysis to examine the effects of games, virtual worlds, and simulations as instructional methods. The results showed that students had higher learning gains with games over virtual worlds and simulations. More recently, Clark et al. (2016) found similar results when investigating the literature for effects of games on learning outcomes. The effectiveness of the content delivery method depends on the effectiveness of the design of the instruction and the suitability of the method for the context of instruction.

Assessment affects how learners approach learning and the content as well as how learners engage with one another and the instructor (Kolomitro & MacKenzie, 2017). Students access course content based upon the belief that the course will help them learn and have better outcomes (Murray, Perez, Geist, & Hedrick, 2012). Therefore the design of online assessments should promote active learning and ensure that success depends on retaining course content. Martin and Ndoye (2016) examined learner-centered assessment in online learning and how instructors can use learning analytics to improve the design and delivery of instruction to make it more meaningful. They demonstrated several data analytic techniques that instructors can apply to provide feedback to students and to make informed data- driven decisions during instruction as opposed to after instruction. Applying such techniques can increase retention of online students.

Interaction, Collaboration, and Engagement

Transactional distance theory defined the feeling of isolation or psychological distance that online learners often experience (Moore, 1989). To lessen transactional distance, Moore defined

three types of interaction: (a) learner-to-learner, (b) learner-to-instructor, and (c) learner-to-content to guide faculty to create quality distance education experiences. Bernard et al. (2009) conducted a meta-analysis on 74 distance education studies on the effects of Moore's three types of interaction and found support for their importance for achievement.

The Community of Inquiry framework built upon these types of interaction and defined a quality education experience for an online learner in terms of three overlapping presences: cognitive, social, and teaching (Garrison, Anderson, & Archer, 1999). However, the Community of Inquiry framework's ability to create deep and meaningful learning experiences has come into question because much of the research used self-reporting, achievement, and perception measures (Rourke and Kanuka, 2009; Annand, 2011).

Another research lens used to address online learner isolation is learner engagement. Engagement in any learning is important. However in online learning engagement is more important because online learners have fewer chances to interact with each other, the instructor, and the institution. Chickering and Gamson (1987) proposed a framework composed of seven principles of good practices to ensure students' engagement. These principles established high standards for face-to-face courses but can be applied to the design and implementation of online courses in order to increase engagement. The table below lists the principles of engagement proposed by Chickering and Gamson and the comparative principles for effective online teaching proposed by Graham et al., (2001).

Table 6. Principles of Engagement

Seven Principles of Engagement, Chickering and Gamson (1987)	Seven Principles of Effective Online Teaching, Graham, Cagiltay, Lim, Craner, & Duffy (2001)
Increases the contact between student and faculty	Provides clear interaction expectations
Provides opportunities for students to work in cooperation	Facilitates meaningful cooperation through well-designed assignments
Encourages students to use active learning strategies	Requires course project presentations
Provides timely feedback on students' academic progression	Provides information and acknowledgment feedback
Requires students to spend quality time on academic tasks	Uses deadlines and milestones to keep students on track
Communicates high expectations	Creates challenging tasks and case studies, and communicates positive feedback for quality work
Addresses different learner needs in the learning process	Allows students to choose topics for assessments in order to incorporate diverse views

More recently, Dixon (2010) created and validated a scale to measure online learner engagement. The instrument was used to survey 186 online learners from six different campuses. Results showed that multiple communication channels or

meaningful and multiple ways of interaction may result in higher learner engagement. However, more research should be conducted to validate these results.

Research on all of these frameworks echo the importance of collaborative or cooperative learning. Borokhovski et al. (2012) conducted a follow-up study to the Bernard (2009) meta-analysis investigating the effects of online collaborative learning on achievement. The results indicated that collaborative learning activities had higher effects on student achievement. Conversely, Oyarzun and Morrison (2013) conducted a quasi-experimental study investigating the effects of cooperative online learning on achievement and found no significant difference in achievement between students who completed the assignment individually or cooperatively. However, more experimental research is needed to validate the effects of collaborative learning and to identify effective methods of online collaborative learning.

Course Implementation

Muilenburg and Berge (2007) identified several issues related to online learning implementation from the student perspective, including course materials that are not always delivered on time, instructors not knowing how to teach online, lack of timely feedback, and lack of access to instructor. Three of these deal specifically with instructor immediacy or responsiveness. Bodie and Michel (2014) conducted an experimental study manipulating immediacy strategies for 576 participants in an introductory psychology course. Results revealed that learners in the high immediacy group showed greater learning gains and retention. Martin, Wang and Sadaf (2017) investigated the

effects of 12 different facilitation strategies on instructor presence, connection, learning, and engagement. They found that students perceived timely response to questions and feedback on assignments from instructors helpful. It was also noted that instructors' use of video aided in building a connection with the instructor. Timeliness and immediacy are common themes in the research. Again, more experimental research should be conducted to identify specific strategies for faculty.

In addition, Oncu and Cankir (2011) identified four main research goals for course design and implementation to address achievement, engagement, and retention issues in online learning. The four goals are (1) learner engagement & collaboration, (2) effective facilitation, (3) assessment techniques, and (4) designing faculty development. They further recommended that experimental research be conducted to identify effective practices in these areas. Thus, there are many frameworks and principles for effective design and implementation of online learning, but there is still a lack of research validating many of these ideas or providing effective cases.

Faculty and Learner Support

Faculty Support

Several universities who offer online courses are providing online course planning and development support and technology support to their faculty, along with institutional support.

Online teaching can be very demanding on faculty. A recent study found that online teaching demanded 14% more time than traditional teaching and fluctuated considerably during times of advising and assessment (Tomei, 2006). With the spread of online teaching practices in higher education, many academic staff are faced with technological and pedagogical demands that require skills they don't necessarily possess (Weaver, Robbie, & Borland, 2008). The quality of online programs depends upon the pedagogical practices of online teachers; therefore, faculty support in online programs is very important (Baran & Correia, 2014).

Some believe that the success of online teaching depends upon the support of faculty on three main levels: teaching, community, and organization (Baran & Correia, 2014). The teaching level includes assistance with technology, pedagogy, and content through workshops, training programs, and one-on-one assistance. The challenge here is often the fact that academic staff find it hard to adapt to changes in their teaching or to allow someone else to tell them how to teach. Therefore individuals who design online programs need to first establish themselves as experts and to be viewed as such by faculty (Weaver, Robbie & Borland, 2008).

The community level includes collegial learning groups, peer support programs, peer observation, peer evaluation, and mentoring programs. Some have highlighted the importance of creating a supportive community for online instructors who often feel isolated (Eib & Miller, 2006). Building learning communities and communities of practice for online teachers as well as providing opportunities for students and online faculty helps combat feelings of isolation (Eib & Miller, 2006; Top,

2012).

The institutional level of support consists of rewards and recognition and the promotion of a positive organizational culture towards online education (Baran & Correia, 2014, p. 97). Institutional support is seen as supremely important (Baran & Correia, 2014; Weaver, Robbie & Borland, 2008). On one hand, if the deans and department heads do not support online teaching, the faculty who does may feel marginalized, unsupported within their discipline, and isolated. On the other hand, if upper management adopts online teaching and pushes for too many changes too quickly, planned implementation and adequate training can be grossly neglected, resulting in dissatisfaction among academic staff (Weaver, Robbie & Borland, 2008).

Learner Support

Online education is supported by technology-assisted methods of communication, instruction, and assessment. The methods of communication in online learning are very important since feedback given to students depends on them. For some students, synchronous communication helps with receiving direct feedback; whereas, for others, asynchronous communication methods allow for more control on the part of the students to process feedback and respond at their own pace (Gold, 2004). Some have stressed the importance of not simply creating online interaction but rather developing high quality technology-assisted communication to promote student outcomes (Gold, 2004). Students report that the most common negative aspects of online classes are technology problems and feeling lost in cyberspace. On the other hand, they appreciate

the flexibility of online classes and find instructor availability and a sense of community to be positive aspects of online learning (El Mansour & Mupinga, 2007).

Community building in online classes has received more attention in recent years. Social presence refers to "the strength of the social relationships and emotional connection among the members of a class or learning community" (Rubin, 2013, p. 119). On an individual level, social presence refers to how involved and engaged each individual student is in the community, and his or her motivation and drive to share, interact, and learn from others. On a community level, social presence refers to the shared sense of belonging of the students in the classroom. Teachers can influence social presence by designing group assignments, creating discussion forums, rewarding community building behaviors and modeling openness and sharing (Rubin, 2013). Teacher presence refers to designing learning experiences, guiding and leading students' work, providing feedback, and facilitating interaction and community building (Rubin, 2013).

Technology characteristics in online learning are important considerations. Some have suggested that interface design, function, and medium richness play a key role in student satisfaction. The medium should accommodate both synchronous and asynchronous communication and the interface should be appealing, well structured, easy to use, allow for different media such as text, graphics, and audio and video messages, and have the capability of providing prompt feedback to students (Volery & Lord, 2000). Ice, Curtis, Lunt and Curran (2010), Merry and Orsmond (2007) and Philips and Wells (2007) found that students responded positively to audio

feedback.

Within the context of learner support, providing accommodations and support for students with disabilities is also an important consideration in online education. In particular, for students with cognitive impairments, navigating an online course can be particularly challenging, as existing platforms typically do not support such learners (Grabinger, Aplin & Ponnappa-Brenner, 2008).

Trends/ Future Directions of Online Learning

Online learning is bringing about constant change. Smith (2014) in the Educational Technology magazine identified 10 online learning trends to watch. Though this was listed in 2014, these are still trends to consider: (1) big data, (2) gamification, (3) personalization, (4) m-learning, (5) focus on return on investment, (6) APIs, (7) automation, (8) augmented learning, (9) corporate MOOCs, and (10) rise of cloud LMS. In 2017, Friedman (2017) identified the following five online learning trends to watch in 2017: (1) greater emphasis on nontraditional credentials, (2) increased use of big data to measure student performance, (3) greater incorporation of artificial intelligence into classes, (4) growth of nonprofit online programs, and (5) online degrees in surprising and specialized disciplines. It is important for educators to keep up with these changing trends to better prepare students.

Additional Resources

Table 7. Journals focusing on Online Learning

American Journal of Distance Education	http://edtechbooks.org/-Ce
Distance Education: An International Journal	http://edtechbooks.org/-eq
Distance Learning Magazine	http://edtechbooks.org/-mD
European Journal of Open and Distance Learning (EURDL)	http://www.eurodl.org/
International Journal of Instructional Technology & Distance Learning	http://www.itdl.org/index.htm
International Journal on E-Learning	http://edtechbooks.org/-oa
International Journal of Online Pedagogy and Course Design	http://edtechbooks.org/-BV
International Review of Research in Open and Distance Learning (IRRODL)	http://www.irrodl.org/
Journal of Distance Education	http://edtechbooks.org/-VD
Journal of Interactive Online Learning	http://www.ncolr.org/jiol/
Online Journal of Distance Learning Administration	http://edtechbooks.org/-xe
Online Learning Journal (OLJ)	http://edtechbooks.org/-pk
Open Learning: The Journal of Open and Distance Learning	http://edtechbooks.org/-Ku

Application Exercises

- What are the strengths and weaknesses of synchronous and asynchronous online education?
- Describe at least 3 factors which have been shown to have a positive impact on distance learning.

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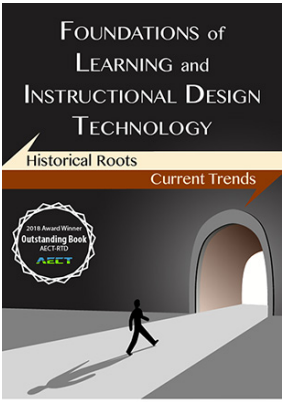

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