

(R)Evolutionary Development of DE

First Wave- Correspondence/ Independent Studies (1840's)

1. Key Scholars (Jeanine Salifou)

In the first wave of DE community, there were many contributions to the field from around the world. There are a few scholars who have researched the origins of correspondence/independent studies more extensively. Their research even dates back to biblical times. To avoid overlapping of their timelines, we have indicated key distinguishing references from DE history from each scholar.

Holmberg, Borje (2005) has mentioned a lot of pioneering contributions to the DE field before the 1840s. He also highlighted more international contributions over in Europe during the 18th century as well.

- During biblical times, there are mentions of DE in the Bible indicating that St. Paul's letters teaching Christianity
- In 1728, Caleb Phillips had an ad in the *Boston Gazette* advertising his new method of shorthand lessons that can be sent weekly to those who live in Boston
- In 1833, there is another ad in the Swedish newspaper, *Lunds Weckoblad* No.30 offering study opportunities
- In 1878, Skerry's College in Scotland prepared students for Civil Service exams
- In 1887, University of London offered external degrees through DE

From Dr. Michael Moore and Dr. Greg Kearsley (2012) here are some of the earliest contributions to the DE field:

- In 1840s, Sir Issac Pittman used the postal system to teach his shorthand system to Great Britain
- In mid-1850s, Charles Toussaint and Gustav Langenscheidt created a correspondence language school in Europe.
- In 1873, Anna Eliot Ticknor, established one of the first home study school for women
- In 1878, Bishop John H. Vincent, creator of the Chautauqua Literary and Scientific Circle in the state of New York, offered a 4-year correspondence course
- In 1891, the International Correspondence Schools was established that offered their courses to many corporations
- In 1892, William Rainey Harper, began the world's first formal program of university distance

	<p>education at the University of Chicago</p> <ul style="list-style-type: none"> • After 1892, many US – higher education schools created similar models to the University of Chicago <p>References:</p> <p>Holmberg, B. (2005). <i>The evolution, principles, and practice of distance education</i> (pp. 13-36). Oldenburg, Germany: BIS-Verlag der Carl von Ossietzky Universität Oldenburg. Available from http://www.box.com/shared/y97qyc7m0t</p> <p>Moore, M. G., & Kearsley, G. (2012). <i>Distance education: A systems view of online learning</i> (Chapter 1, pp. 1-22). USA: Wadsworth-Cengage Learning.</p>
<p>2. Theories/Ways of Understanding DE (Eric Belt)</p>	<p>Pre-Industrial Era – Knowledge is an elite commodity. Western correspondence education consisted of letters and books to exchange ideas. “The mark of a learned man was his ability to discuss ideas and recall passages from the Canon” (Haughey, 2010). Oral and public debate centered the learning experience.</p> <p>Industrial Era (1750-1850) – Development of the mail system. Introduction of teaching via text. The printing press allowed mass production of information. “Distance education during the industrial period developed at the intersection of three powerful forces: social change, technological development, and the need for educational institutions to adapt to changing social needs” (Miller, 2010).</p> <p>Victorian Era (1832-1901) – “The tutor was replaced by the school and the classical curriculum was replaced by a public curriculum set by the local authorities” (Haughey, 2010).</p> <p>Charles Wedemeyer is a notable theorist of correspondence education focusing on the characteristic of independent study that provided access to socially disadvantaged individuals (Garrison, 2010). The distance education theories of Peters, Holmberg and Moore can be discussed in more depth and are better suited for the next wave. Briefly discussed: Peters’ theory focuses on the industrialization of teaching and learning, Moore focuses on transactional distance and Holmberg focuses on guided didactic</p>

	<p>conversation.</p> <p>References</p> <p>Garrison, D.R. (2010). Foundations of distance education. In M. F. Cleveland-Innes & D. R. Garrison, <i>An introduction to distance education: Understanding teaching and learning in a new era</i> (pp. 13-25). New York and London: Routledge</p> <p>Haughey, M. (2010). Teaching and learning in distance education before the digital age. In M. F. Cleveland-Innes & D. R. Garrison, <i>An introduction to distance education: Understanding teaching and learning in a new era</i> (pp. 46-66). New York and London: Routledge</p> <p>Miller, G. E. (2010). Organization and technology of distance education. In M. F. Cleveland Innes & D. R. Garrison, <i>An introduction to distance education: Understanding teaching and learning in a new era</i> (pp. 46-66). New York and London: Routledge</p>
<p>3. Institutional and Organizational Development (systems; ways of operating) (Robin Beavers)</p>	<p>Prior to the industrial revolution, distance education was the bastion of entrepreneurs who recognized that they had something to teach and that there were individuals out there willing to pay to learn (Peters, 2005).</p> <p>In the wake of the industrial revolution institutions and organizations saw an opportunity to take advantage of the demand for education and the money to be made from offering correspondence education (Peters, 2005).</p> <p>The ability to create mass volumes of print material and use of the postal system to provide the connection between tutors and students made it possible. These organizations operated in an asynchronous mode. Books and other printed educational materials were mailed to students who completed the assignments and returned them via mail. Tutors or teachers at organizations would review and grade student assignments offering “correction, criticism and suggestions” (Holmberg, 2005).</p> <p>Some correspondence schools offered structured instruction expecting students to complete assignments within a given time, while others designed their programs to be self paced (Holmberg, 2005).</p>

	<p>Correspondence education in non academic organization may be found in the example initiated by an editor in Pennsylvania who created a correspondence course in his newspaper on mine safety. The popularity of the course led to the creation of several correspondence courses and ultimately to the start of the International Correspondence Schools (ICS) in Scranton, Pennsylvania in 1890.</p> <p>The first wave of distance education, correspondence came about because of the industrial revolution; mass printing, demand and money.</p> <p>References</p> <p>Holmberg, B. (2005). <i>The evolution, principles, and practice of distance education</i>. Oldenburg, Germany: BIS-Verlag der Carl von Ossietzky Universität Oldenburg (pp. 37-88, 104-105). Available from https://www.box.com/shared/y97qyc7m0t</p> <p>Peters, O. (2004). The iceberg has not yet melted: Further reflections on the concept of industrialization and distance teaching. In O. Peters, <i>Distance education in transition: Developments and issues</i> (5th edition), (pp. 33-42). Oldenburg, Germany: BIS-Verlag der Carl von Ossietzky Universität Oldenburg. Available from http://www.box.com/shared/ktx7ipccetotqrr11mct</p>
<p>4. Teaching/Learning Methodologies (role of teacher/role of learner) (Keisha Byam)</p>	<p>Teaching Methodology: In The Pre-Industrial Era the role of the teacher was primarily the author and tutor of the curriculum content. The decision for starting, stopping and pacing the course and information is the sole responsibility of the teacher. The planning of learning activities was defined by teachers on a weekly or day by day basis; leaving teachers free to change learning spontaneously. The environment for learning was set by the teacher to follow a format conducive to the teacher’s needs. The overall theme of this time was teacher-centered practices and a dominance of lecture based materials.</p> <p>The role of the teacher shifted during the Industrial Era to one of mass production for learners. Teachers were no longer the primary contributor to the curriculum. A division of labor was created to off-set authoring, tutoring, etc. to other learning parties. A standard approach was created to adapt to all learners versus to the adaptation of one. The teachers’ role of planning the course is now shifted to a planning specialist to coordinate day to day activities. Teachers now move from oral instruction to the utilization of technical devices.</p>

	<p>Learner Methodology: In The Pre-Industrial Era the learner received the information provided by the teacher and adapted to the learning environment set by the teacher. The learner was not responsible for starting, stopping or pacing the course.</p> <p>In the Industrial Era learning became depersonalized creating a one-way communication between the course materials and the student. This one-way communication left the learner responsible for their own learning promoting independent learning. Learners became more responsible for setting their own goals and using different methods for learning conducive to their learning styles.</p> <p>Cognitive-Behaviorism - focuses on the way in which learning was predominantly defined, practiced, and researched in the latter half of the 20th century. Behavioral learning theory begins with notions of learning which are generally defined as new behaviors or changes in behaviors that are acquired as the result of an individual's response to stimuli (Anderson & Dron, 2011, p. 82).</p> <p>Reference: Anderson, T., & Dron, J. (2011). Three generations of distance education pedagogy. <i>International Review of Research in Online and Distance Learning (IRRODL)</i>, 12(3), 80-97. Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/890</p> <p>Peters, O. (2010). The theory of the "most industrialized education". In O. Peters, <i>Distance education in transition: Developments and issues</i> (5th edition) (pp. 11-32). Oldenburg, Germany: BIS-Verlag der Carl von Ossietzky Universität Oldenburg. Available from: http://www.box.com/s/ktx7ipccetotqrr11mct</p>
<p>5. Predominant Technologies (Jenna Campos)</p>	<p>The predominant technology for Distance Education used in the 1840's was the postal system. Teachers would mail reading materials and correspondence to students who would read, study, complete assignments and return the materials to the teacher for grading. The printing press, though it was invented much earlier, was also a critical piece of technology that contributed to the early distance education movement as it allowed materials to be mass produced and books to be published for students.</p> <p>Reference Moore, M., & Kearsley, G. (2005). <i>Distance education: A systems view</i>. (2nd ed.). Belmont, CA: Wadsworth.</p>

6. Forces dominant in the larger context that drove development of DE (Keisha Byam)

Communications Technology: The development of the printing press and utilization of the mail system were two major forces that drove development of DE. With the shift in society of labor shifting from outdoors to indoors there became an emergent need for more theoretical education. This education would have to meet the two defining values of the time; rationality and efficiency. Printing press and mail system allowed instructors to send materials to learners therefore promoting self-instructional teaching.

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Second Wave: Systems Approach to Education / Distance Teaching Institutions

1. Key Scholars (Keisha Byam)

Key Scholars during this wave include and key points:

Dr. Tony Bates

- Discussed student's needs to access assistance from the administrative team to improve self-

learning.

- Discussed system approach of having faculty, instructional and course designers to provide administrative guide for each course.
- Open University attracted top notch research quality professors to filled the gap in the higher education system.
- In 2003 Dr Bates distinguished 13 different types of distance education organizations. This displayed the possibility of vast structural changes in distance education.

Dr. Michael Moore and Dr. Greg Kearsley

- Discussed distance education as an entity consisting of methods for communicating with the learner and managing the course development
- Drs. Moore and Kearsley also discussed the importance of structure and dialogue to lead an effective program.

Sarah Guri-Rosenblit

- Examined five major organizational models of distance teaching in various higher education systems .
- Guri-Rosenbilt examines the pros and cons associated with the new information and communication in the context of Single, Dual and Mixed Mode, Extensions and Consortia-Type education methods.

Desmond Keegan

- Four generally accepted definitions of distance education. These definition elements were pulled from scholars Holmberg, Peters, Moore and Dohmen.
- Setting DE apart from self-learning approaches by incorporating support for students via support services and organizing learning materials.

References

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2. Theories/Ways of Understanding DE (Jeanine Salifou)

During the second wave of DE, there was an increase of published theories globally. The increase was due to the significant changes that happened in the industry. For example, single-mode institutions (i.e. open universities) that focused on DE only, dedicated journals to the field, and the convening of global conferences to discuss the research of DE.

Theories of DE via the Second Wave:

Andragogy Theory

In 1970, Malcolm Knowles ((Knowles, Swanson, & Holton, 2011, p. 3), a scholar in the adult education field developed the concept of andragogy. He was an advocate for choice, flexibility, and autonomy for adult learners. He believed that teaching and learning approaches for adults should be fundamentally different from those for children. The andragogical approach is a holistic, learner-centered model comprised of the following six principles: 1) Learner's need to know; 2) Self-concept of the learner; 3) Prior experience of the learner; 4) Readiness to learn; 5) Orientation to learning; and 6) Motivation to learn.

Constructivism Theory

The constructivism theory is comprised of the following elements: 1) Active and authentic learning; 2) Learning-by-doing; 3) Scaffolded learning; and 4) Collaboration. (Harasim, 2011, pp. 68-73). New forms of technology that developed during Wave 2 further supported these instructional design elements, thus allowing constructivism to gain a strong foothold in the distance education classroom.

The Elements of DE

In 1980, Keegan (Moore & Kearsley, 2012) stated in the first issue of the Australian journal *Distance Education* the following six elements should be used to define DE: "separation of teacher and student; influence of an educational organization, especially in the planning and preparation of learning materials; use of technical media; provision of two-way communication; possibility of occasional seminars; and participation in the most industrial form of education". These elements were compiled from the DE definitions of Holmberg, Peters, Moore, and the July 1971 law of France.

Guided Didactic Conversation

In 1981, Dr. Holmberg's theory focused on the learner-teacher dialogue. He felt that distance teaching should be in a conversation format or "guided didactic conversation". Using the conversation approach instead of "scholarly" approach would help the teacher to empathize with the learner. The empathy could be shown through the instruction and the dialogue. Because of the teacher's empathy, the learner would feel more motivated to study.

Theory of the Most Industrialized Education

In 1967, Dr. Peters' theory consisted of comparing the techniques of DE and the techniques of an industrial process. He found many similar techniques between the two (Peters, 2010): systematic planning, specialization of the workforce, mass production of materials, automation, standardization, quality control, and modern communication technologies.

Theory of Transactional Distance: Dialogue, Structure, and Learner Autonomy

In Moore & Kearsley (2012) states, "the theory of transactional distance suggests that there are two critical underlying variables, structure and dialogue, and that these are in relationship to learner autonomy. This theory explains the nature of programs and courses. It helps to guide the behaviors of teachers and researchers." Moore's theory states that in a course where there are high levels of dialogue, transactional distance tends to be lower, whereas a higher level of transactional distance often exists in courses where there are low levels of dialogue.

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3. Institutional and Organizational Development (systems; ways of operating) (Eric Belt)

Institutional Development

The second wave of distance education brought about the Open University movement and single-mode universities. These institutions were designed specifically for distance education students (Peters, 2010). Shale (2010) refers to these universities as dedicated distance education universities. The foundation of the OU UK was a cornerstone in the development of distance education. Universities and institutions were created all over the world, a majority of which use the Open University as a developmental model. Miller (2010) explains how national institutions were created for higher education based of the Open University.

“The open university movement began in the 1960s when Great Britain established the first Open University in an attempt to bring into higher education adults and lower-income individuals who had been excluded from the elitist British higher education system” (Miller, p.33).

Organizational Development

The second wave of distance education restructures administration, faculty, staff and overall organization. There are no longer single teachers in charge of content delivery, but rather a team of individuals responsible for course content and design. Peters (2010) explains how the industrialization of distance education allows for mass production and specialization.

Miller (2010) denotes three pre-dominate organizational models as centralized delivery, decentralized delivery and coordinated.

Centralized Delivery: Single administrative unit coordinate nonacademic aspects of delivery on behalf of multiple academic units

Decentralized Delivery: Individual academic units are responsible for all aspects of development and delivery

Coordinated: In multi-campus systems a coordinating council serves to help overcome internal policy, infrastructure and support issues.

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**4.
Teaching/Learning
Methodologies (role
of teacher/role of
learner)
(Robin Beavers)**

The second wave of distance learning brought a bold new approach to existing pedagogy and the roles of both teachers and students. The major catalysts were technology and the diversity of the student population now able to take advantage of distance learning.

In Great Britain, the development of Open University established in 1969 was a result of the shifting social needs and desires which caused a pedagogical shift in education. "Open to people, open to places and open to methods "(Haughey, 2010) can best describe the sentiment of the second wave of distance education.

Teacher Roles

The teachers are no longer the "sage on the stage, but the guide on the side" (Lockwood, 2004, p. 9; Peters, 2010, pg.52). Teacher as authority and as lecturer began to give way to more self directed learning. This was particularly true given the fact that the student demographic now consisted of employed adults who brought a lifetime of experience earned outside of the traditional educational institutions. Adults who may have never even considered post secondary education were now able to take advantage of (Haughey, 2010)

Andragogy began to assert itself as a way to instruct adult learners. These learners, older and with work and life experience had to be approached in a different way. Adult learners want to understand the relevance of what they are learning and how it can apply to their lives.

Additionally teachers became part of a team of specialists who designed and implemented course learning materials to suit the new technology (Shale, 2010)

Student roles- During the second wave the working adult as student began to take hold. This demographic was comprised of those who never before had access to institutions of higher learning. As teacher as lecturer changed so too did students have to more responsibility for their own learning. As teachers took on the role of facilitator, students had to motivate and plan for themselves.

Constructivism - a philosophy of learning based on the axiom that individuals construct meaning and understanding as they experience and engage the world. Learning is seen as a process of creating and adjusting mental models to accommodate new experiences (Swan, 2010, p. 127).

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5. Predominant Technologies (Jenna Campos)

While the postal system continued to be used for correspondence, new technologies emerged, such as radio, television (cable and public) and the use of video cassette.

Radio was used on a limited basis, but was not received well by professors and students, so it did not have much success in distance education (Moore and Kearsley, 2005).

Television was a popular method, but was limited to a specific geographic area. In the late 1970's, the public television network began using satellite delivery which allowed tele courses to be delivered nationally (Miller, 2010). In the 1980's, Walter Annenburg donated millions of dollars to PBS to develop high quality instructional telecourses (Miller, 2010).

Many education programs began using taped telecourses on video cassette to distribute to a larger student population, once again the postal system was used to disseminate course materials to students.

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6. Forces dominant in the larger context that drove development of DE (Jenna Campos)

Open Universities were established in order to provide a higher education experience for those that would not normally have this opportunity. The United Kingdom first developed these to train teachers and other professionals. The start of the university was influenced by the need for social change and the betterment of society. If education is available to more citizens than the country's economy will thrive. Providing education to adults that could attend school on a part-time basis was the new trend in education in an environment that would allow them to continue schooling while working.

According to Peters (2010), "Important is the goal of being open for the underprivileged and underserved of society"(p.62). This new open university is meant to meet a need for social change a betterment.

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Third Wave: Emergence of the Internet and Online Learning

**1. Key Scholars
(Jenna Campos)**

Terry Anderson

- Utilizing internet to offer asynchronous training opportunities through online coursework.
- Interacting through audio conferences
- Interaction equivalency theorem
- Utilization of Web 2.0 tools
- Identifying connectivist pedagogy

Randy Garrison

- Community of Inquiry framework: Social Presence, Teaching Presence, Cognitive Presence
- Using communications technology and the web to support group and individual communication

Karen Swan

- Utilizing digital multimedia tools to share ideas
- Utilizing Web 2.0 Tools and Applications
- Various Learning Environments: Learner-Centered, Knowledge-Centered, Assessment-Centered, Community-Centered

Otto Peters

- Utilizing virtual learning spaces

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2. Theories/Ways of Understanding DE (Eric Belt and Robin Beavers)

The third wave of distance education has brought about significant pedagogical changes in analyzing the way in which students learn and teachers teach. The below theories are defined:

Autonomous Learning-Peters (2010, pg.138) asserts that digitized learning, has caused a “breach” in traditional practice of teaching and learning. Virtual environments create independent, “self –controlled” learners. In order for students in the virtual environment to be successful they must learn to develop 5 skills; “self-determination and orientation, selection and decision-making, instrumental-qualificatory acquisition, construction-qualificatory acquisition and learning and organizing skills” (Peters, 2010, pg.135; cf. Lange & Hillebrand, 1996).

Cognitive-Behaviorism - focuses on the way in which learning was predominantly defined, practiced, and researched in the latter half of the 20th century. Behavioral learning theory begins with notions of learning which are generally defined as new behaviors or changes in behaviors that are acquired as the result of an individual’s response to stimuli (Anderson & Dron, 2011, p. 82).

Constructivism - a philosophy of learning based on the axiom that individuals construct meaning and understanding as they experience and engage the world. Learning is seen as a process of creating and adjusting mental models to accommodate new experiences (Swan, 2010, p. 127).

Connectivism - learning is the process of building networks of information, contacts, and resources that are applied to real problems. Connectivism was developed in the information age of a networked era (Castells, 1996, Anderson & Dron, 2011, p. 87) and assumes ubiquitous access to networked technologies. Connectivist learning focuses on building and maintaining networked connections that are current and flexible enough to be applied to existing and emergent problems (Anderson & Dron, 2011, p. 87).

Community of Inquiry- deals with three distinct types of presence within the classroom. Virtual learning and the interaction that takes place will involve one or more of the three:

Social presence- Open communication that promotes reciprocal and respectful exchanges and recognition of one another’s contributions.

Cognitive presence-Interaction and activities that promote critical thinking or inquiry:

Teacher presence- Includes curriculum, design, and assessment that balances the cognitive and social issues to reach desirable educational outcomes. (Garrison, Anderson & Archer, 2000)

Interaction Equivalency Theorem -Espoused by Anderson asserts that there are 3 components of the theorem; Student-content, student-student, and student-instructor. The Theorem essentially states that there does not need to be a balance of the three; for some learners one predominant component is sufficient for a successful learning experience (Anderson, 2003). None of the three components (Student-content, student-student, and student-instructor) is any more important than the other and there is no requirement for them to play an equal role in the education of the learner.

Flipped Learning- A blended form of learning that allows students to watch short videos and podcasts of lessons at their own pace then class time work in instructor guided collaborative groups.

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<p>3. Institutional and Organizational Development (systems; ways of operating) (Keisha Byam)</p>	<p>The third wave of distance education challenged higher education to take on new strategies and “pushed” the envelope in regards to teaching masses.</p> <ul style="list-style-type: none"> · Online learning · Blended Learning <p>Due to the advances of the Internet and communications technologies, online learning research has begun to focus on conventional higher educational contexts (Garrison, 2009). The higher contexts required institutions to think of various methods for students to interact and engage collaboratively. As noted by Peters (2010) behind all this is the network with a tremendous depth of penetration, because it links the digital learning environment with many virtual databases, institutions, libraries and individuals.</p> <p>References/Citations</p> <p>Garrison, R. (2009). Implications of online learning for the conceptual development and practice of distance education. <i>Journal of Distance Education</i>, 23(2), 93-104. Retrieved from http://www.jofde.ca/index.php/jde/article/view/471/889</p> <p>Peters, O. (2010). Digitized learning environments: New chances and opportunities. In O. Peters, <i>Distance education in transition: Developments and issues</i> (5th edition) (pp. 141-153). Oldenburg, Germany: BIS-Verlag der Carl von Ossietzky Universität Oldenburg. Available from http://www.box.com/shared/ktx7ipccetotqrr11mct</p>

4. Teaching/Learning Methodologies (role of teacher/role of learner) (Eric Belt)

The third wave of distance education has brought about significant pedagogical changes in analyzing the way in which students learn and teachers teach.

Teacher Role

Cognitive-Behaviorism – teaching presence in was reduced or at least radically reconstructed in many forms of cognitive-behaviorism distance education. In its earliest instantiation as correspondence education, the teacher had only their words on printed text to convey their presence (Anderson & Dron, 2011, p. 83). Later technologies allowed voice (audio) and body language of the teacher (video) to be transmitted through television, film and multimedia based educational productions (Anderson & Dron, 2011, p. 83-84). The teacher is ideally in direct, explicit contact with the student.

Constructivism – teaching presence extends beyond facilitation of learning to choosing and constructing educational interventions and to providing direct instruction when required (Anderson & Dron, 2011, p. 86). Teaching presence in constructivist pedagogical models focuses on guiding and evaluating authentic tasks performed in realistic contexts (Anderson & Dron, 2011, p. 86).

Connectivism – teaching by example. The teacher is not solely responsible for defining, generating, or assigning content. Rather, learners and teacher collaborate to create the content of study, and in the process re-create that content for future use by others. Assessment in connectivist pedagogy combines self-reflection with teacher assessment of the contributions to the current and future courses (Anderson & Dron, 2011, p. 88).

Student Role

Cognitive-Behaviorism – students' interest is stimulated, informed by both general and specific cases of overriding principles and then tested and reinforced for the acquisition of this knowledge (Anderson & Dron, 2011, p.83).

Constructivism – students are actively engaged, and interaction with peers is perhaps the most cost-effective way to support cognitive presence (Anderson & Dron, 2011, p.85).

Connectivism – assumes that information is plentiful and that the learner's role is not to memorize or even understand everything, but to have the capacity to find and apply knowledge when and where it is needed

(Anderson & Dron, 2011, p.87).

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5. Predominant Technologies (Robin Beavers)

Predominant technologies during the 3rd wave are defined by the advent of the Internet and its successive emergent technologies. The Internet brought the development of digitized learning. Digitized learning has the ability to readily combine synchronous and asynchronous methods of disseminating content for learning (Anderson, 2011).

Digitized learning is composed of special technologies (software, apps) that allow the computer to be used for, “communication, transmission, display, search, access, analysis, storage, virtual reality and management “(Peters, 2012, pg 121) .In combination they afford:

- Presentation of information
- Storing
- Retrieval
- Communication
- Collaboration
- Browsing
- Multimedia
- Hypertext and hypermedia
- Simulation
- Virtual reality

All of these special technologies can be accessed via a well designed Learning Management System (LMS) such as Moodle, Blackboard, WebTycho, etc.

Emerging technologies in higher and distance education include mobile technology, cloud computing, gaming, open content and personal learning environments (Horizon Report, 2012). Additionally, current and emerging mobile devices; Smartphones, tablets, laptops, etc. are the hardware used in the third wave of distance education. Applications associated with social media; blogging, micro-blogging (Twitter) bookmarking (Diigo), Facebook, etc. are used in distance education.

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6. Forces dominant in the larger context that drove development of DE (Keisha Byam)

Forces dominant in the second wave include a social change to increase learning environments for underserved populations. This statement is supported by Miller (2010) stating new, innovative institutional models evolved in response to new workforce needs and changing social dynamics. With this prelude in the second wave it was evident the third wave would continue this momentum and focus on social learning techniques beneficial for all learning types. During the third wave Swan (2010) indicates an important cultural influence is the relatively recent rediscovery and enthusiastic embrace of social constructivism by the education community. With the significant increase of learners attending distance education courses the four characteristic of constructivist learning (learner, knowledge, assessment and community centered) lead to an advantage of creating learning activities suited for evolving learning styles. The four characteristics of constructivist learning is ideal for the continuous adaptation and adjustment of learning necessary due to students differences in socioeconomic status, occupation and previous learning.

The usage of multimedia tools and the world-wide-web is another dominant force in the third wave. This is evident with the increase of video, graphical and interactive formats. Swan (2010) states the growth of digital multimedia challenges educators not only to expand their pedagogical repertoires to include multimedia.

The dominant forces of social learning techniques, multimedia tools and the world-wide-web shows the elasticity required for the educator and student to develop and embrace learning during this wave of distance education.

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Fourth Wave: Current Trends

1. Key Scholars (Robin Beavers)

As with other post 2nd wave theorists and theories, the learner not the instructor takes more responsibility and control for learning. The self-directed | autonomous learner is moving to the forefront of distance education in theory and in practice. This shift is seen as a direct result of the available and emerging technologies and how learners acquire knowledge in this volatile environment.

Four men are the authors of two the most respected and discussed emerging theories in distance education, Stewart Hase and Chris Kenyon and George Siemens and Stephen Downes (Anderson, 2010).

Stewart Hase and Chris Kenyon- The architects of Heutagogy

The concept of Heutagogy was first introduced in an essay by Stewart Hase and Chris Kenyon (2000) entitled "From Andragogy to Heutagogy". Hase and Kenyon describe Heutagogy as self-determined learning, which is an extension of traditional pedagogy and Matthew Knowles' theory of Andragogy.

Heutagogy asserts that rather than "just finding a solution to a problem, students study the process of how they came to their conclusions, how this process can lead to other solutions, and how their own assumptions changed through the process" (Eberle,2009, pg. 82) .

Table 2: Comparison of traditional heutagogical learning

	Traditional Classroom	Heutagogical Learning Environment
Student Role	Store information	Self-determined learning
Teacher Role	Present information Manage classroom	Empowers student learning and provides resources
Content	Basic literacy with higher-level skills building on lower-level skills	Meaningful, purposeful learning experiences which are relevant to learners' needs
Curriculum Characteristics	Breadth Fact retention Fragmented knowledge and disciplinary separation	Flexible curriculum with double-looped learning opportunities
Social Characteristics	Independent learning	Independent and collaborative learning
Role for Technology	Drill and practice Direct instruction	Facilitate exploration, collaboration, and self-actualization
Assessment	Fact retention Traditional tests	Self-diagnosis, knowledge application

(Eberle,2009, pg 182)

George Siemens and Stephen Downes the architects of the Connectivist Theory.

According to Siemens (Schwier, 2011), connectivism is learning and knowledge based on connections that learners make. Knowledge grows and develops based on how much learners connect other things that they know to what is being taught. 2008, Downes and George Siemens designed and taught an online, open course and they are proponents of Massive Open Online Courses (MOOCs).

Both Heutagogy and Connectivism are theories for our digital age. Though written in the Hase and Kenyon (2000) essay the following applies to both "...information is readily and easily accessible; where change is so rapid that traditional methods of training and education are totally inadequate; discipline based knowledge is inappropriate to prepare for living in modern communities and workplaces;

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2. Theories/Ways of Understanding DE (Keisha Byam)

Theories identified in the fourth wave align with the continuous changes and vast learning methods in current society. In today's society information is more accessible therefore leading to a change in traditional methods of learning.

- **Connectivism:** Connectivism is the integration of principles explored by chaos, network, and complexity and self-organization theories. Connectivism is driven by the understanding that decisions are based on rapidly altering foundations (Siemens, 2004).
- Siemens (2004) identifies the principles of connectivism:
 - Learning and knowledge rests in diversity of opinions.
 - Learning is a process of connecting specialized nodes or information sources.
 - Learning may reside in non-human appliances.
 - Capacity to know more is more critical than what is currently known
 - Nurturing and maintaining connections is needed to facilitate continual learning.
 - Ability to see connections between fields, ideas, and concepts is a core skill.
 - Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
 - Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.
- **Heutagogy:** Heutagogy transitions from the teacher taking control of what is learned and how to the student self-determining learning. Heutagogy places learning primarily in the students hands.
- Hase and Kenyon (2000) infers It may be argued that the rapid rate of change in society, and the so-called information explosion, suggest that we should now be looking at an educational approach where it is the learner himself who determines what and how learning should take place.
- A heutagogical approach recognizes the need to be flexible in the learning where the teacher provides resources but the learner designs the actual course he or she might take by negotiating the learning. Hase and Kenyon (2000)

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<p>3. Institutional and Organizational Development (systems; ways of operating) (Jenna Campos)</p>	<p>Evans and Pauling (2010) indicate that in the future, distance education will be a “possibilities rather than predictions” (p. 198). The ever-changing technologies and social media tools are going to alter the traditional institutional format. Students now have access to the same information as teachers all the time. They can access and share information instantly through high-speed internet and mobile connections.</p> <p>The purpose of educational institutions in the future will be to teach students how to learn by accessing, processing and sharing information. Students will be able to attend courses anytime, anywhere and the organizational structure that we now know will not exist.</p> <p>Teachers will need to utilize social media and virtual classrooms, such as Second Life, to access classroom materials. The virtual, mobile classroom will be the organizational structure in the future of distance education.</p> <p>References</p> <p>Anderson, T. (2010). Theories for learning with emerging technologies. In G. Veletsianos (Ed.), <i>Emerging technologies in distance education</i> (pp. 23-40). Canada: Athabasca University Press. Retrieved from http://www.aupress.ca/books/120177/ebook/99Z_Veletsianos_2010-Emerging_Technologies_in_Distance_Education.pdf</p> <p>Evans, T., & Pauling, B. (2010). The future of distance education. In M. Cleveland-Innes & D. Garrison (Eds.), <i>An introduction to distance education: Understanding teaching and learning in a new era</i> (pp. 198-223). New York, NY: Routledge.</p>

**4.
Teaching/Learning
Methodologies (role
of teacher/role of
learner)
(Keisha Byam)**

The new era of distance education brings new theories and new roles for the learner and teacher.

Heutagogy

- Teacher: The teacher's role becomes one of facilitator and guide as students use a very wide set of resources (both online and traditional) to resolve problems and to gain personal understanding and capacity (Anderson, 2010).
- Learner: Heutagogy extends control to the learner and sees the learner as the major development and control agent in his or her own learning (Hase & Kenyon, 2007).

Connectivism

- Teacher: Lack of a substantive role for a teacher in connectivist theory (Anderson, 2010).
- Learner: Learning occurs as individuals discover and build connections between nodes. In the process of learning, they expand their own learning networks by creating useful and personalized knowledge and connecting it to the ideas and artifacts of others in their networks (Anderson, 2010).

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5. Predominant Technologies (Eric Belt)

The predominant technologies of this wave are unique because they are considered emerging. The technologies discussed are more predictive, noting popular trends. Michael Lambert, Executive Director of the DETC discussed the growing excitement of mobile phone technology in the YouTube video “Emerging Technologies in Distance Education” (2011, July). Some authors have also noted an emergence in virtual reality technology and 3D simulations such as Second Life. Further developments of Learning Management Systems (LMS) such as Blackboard and are trying to incorporate a variety of technologies to provide an all-encompassing experience in Blackboard Collaborate. Emerging technologies are opening up new opportunities in Distance Education in a variety of ways.

The *NMC Horizon Project Short List* (2012) sectionalizes emerging technologies by time-to-adoption:

One Year or Less

Cloud Computing – include a wide range of increasingly powerful tools for almost any platform a user might choose, or any task a user might need to do.

Mobile Apps – facilitate content creation, through the use of cameras, microphones, and other sensors and tools that are inherent in many smartphones.

Social Reading – could be used to allow study groups to easily exchange notes on electronic books they are reading in their classes, and spur meaningful virtual discussions.

Tablet Computing – conducive to engaging in learning outside the classroom, with a suite of tools for capturing data in real-time and collaborating on projects.

Two to Three Years

Adaptive Learning Environments – Ongoing online courses can be changed in real-time with little manual, time-consuming intervention.

Augmented Reality – Games that are based in the real world and augmented with networked data can give educators powerful new ways to show relationships and connections.

Game-Based Learning – Educational games can be used to teach cross-curricular concepts that touch on many subjects in an engaging way.

Learning Analytics – If used effectively, learning analytics can help surface early signals that indicate a student is struggling, allowing teachers and schools to address issues quickly.

Four to Five Years

Digital Identity – focuses on enabling users to create a single digital identity that can be used in any place where a login is required to access a website or service.

Gesture-Based Computing – allows users to engage in virtual activities with motion and movement similar to what they would use in the real world, manipulating content intuitively.

Haptic Interfaces – potential for aiding the visually impaired, allowing users to touch a surface to hear a specific audio explanation.

Internet of Things – network-aware smart objects that connect the physical world with the world of information.

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NMC Horizon Project Short List (2012). Retrieved January 1, 2012, from <http://horizon.wiki.nmc.org/file/view/2012-Horizon.HE-Shortlist.pdf>.

6. Forces dominant in the larger context that drove development of DE (Eric Belt)

The larger forces in the fourth and current wave of distance education are driven by the aforementioned technologies. Consistent with the former three waves, new technology brings significant change to the distance education field and subsequently new pedagogical developments begin to form. The current study of distance education includes emerging technologies. Emerging technologies carry the potential to have significant impact to the field, as well as the potential to fall by the wayside (Anderson, 2010). These technologies can have significant impact, much like the printing press, radio and the internet. In addition, distance education in this wave is affected by the worldwide social, economic, and political standard of today. The practical application of technology and education is growing worldwide. New technologies may open open educational access points never conceived before. The current wave of distance education is an exciting time to enter the field because of emerging technologies and the worldview of education.

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