

A Roadmap to Transform Learning From Face-to-Face to Online

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Abstract

Online learning offers a flexible learning environment, allowing colleges to attain a global presence and provide a higher caliber of student learning experiences. The implementation of online learning, however at the educational institution can lead to various challenges across three main clusters: students, faculty, and management. An overview of these challenges, based on the review of the current literature, is provided in this paper along with appropriate mitigation strategies. A generalized roadmap is established in this article that illustrates how the transition from face-to-face to online courses can be managed using a series of key steps in three critical phases during online course development: prior to, during, and post course development. The roadmap is applicable to educational institutions interested in starting their online learning journey and can provide additional guidance to institutions with an already established online presence. It facilitates the creation of well-structured online courses for students, ensures faculty are enrolled in professional development activities that support delivery of online courses, and supports managers in developing effective plans to implement technology infrastructure and create policies to support successful online learning.

Keywords: Online Learning Challenge, Challenge Mitigation, College Teaching, Online Learning Design, Online Learning Implementation, Online Learning Evaluation, Curriculum Development, Educational Management, and Professional Development

1. Introduction

Online learning continues to grow worldwide with new technologies changing the global learning landscape; colleges and universities must therefore expand their educational role by exploiting such online learning delivery methods (Allen & Seaman, 2013; Blackmon & Major, 2012; Johnson & Berge, 2012). Failure to embrace online learning will cause educational institutions to forgo an immense business opportunity, since such learning methods constitute a predominant revenue source and recruitment tool. Inability to properly integrate and leverage technology would also prevent students from being exposed to online learning opportunities leading to an inability to master in-demand workplace skills. Student benefits of online learning include ease in information access, flexible learning, reduction in travel time, and the ability to incorporate a full working schedule during studies (Huggins, Morris, & Peterson, 2005; Jones, Fox, & Levin, 2011). Other tangible benefits include the ability to gain independent study skills, reflection abilities, increased critical thinking skills, and active engagement in learning (Abdulla, 2012; Barbour & Reeves, 2009; El Mansour & Mupinga, 2007). Despite such benefits, educational institutions still experience challenges on several fronts when embarking upon their online learning journey. These challenges are typically experienced across three main clusters: students, faculty, and managers. A comprehensive analysis of the online challenges, based on the review of current literature is then provided along with appropriate mitigation strategies. A generalized roadmap is finally constructed outlining the key activities that can be undertaken by educational institutions to ensure a smooth transition from face-to-face (F2F) to online learning.

2. Challenges of Online Learning

2.1 Student Online Learning Challenges

Online courses often require an active learning attitude, which is problematic for students who have been accustomed to passive forms of instruction (Appana, 2008; Freeman, Schrimsher, & Kendrach, 2006). Students tend to view online learning as intimidating, formidable, and challenging since this learning method requires self-directed learners who can identify their learning needs and seek faculty assistance when needed (Zsohar & Smith, 2008). A sufficient level of technical abilities is also required from students to enable success in the online course (Appana, 2008; Rabe-Hemp, Woollen, & Humiston, 2009). An online course that does not orient students towards important course structure will hinder student learning and will cause students to develop a general dislike towards this learning method, ultimately leading to anxiety and feelings of frustration (Boulton, 2008). Students also tend to find online learning time consuming due to the vast amounts of participation and reading/writing required; additionally, maintaining course communication dynamics may be difficult due to the different time zones of the students (Appana, 2008). Finally, some educational institutions provide course-based registration where the course is only offered online, and if the online course is a pre-requisite by other upper-semester courses, then the students who do not succeed in the online pre-requisite course must re-take the course a second time, causing additional levels of stress and anxiety (Abdulla, 2012).

2.2 Faculty Online Learning Challenges

Faculty resistance towards change tends to be the largest challenge educational institutions face during the implementation of online learning; this usually hinders educational institutions in their long-term pursuit of this learning method (Alexander, Perrault, Zhao, & Waldman, 2009). Faculty tend to view the development and delivery of online courses as time intensive, with difficulties ranging from resolving student conflicts online, engaging students, dealing with plagiarism, assessing students, and accommodating large student enrolments (Alexander et al., 2009; Appana, 2008; Jocoy & DiBiase, 2006; Zsohar & Smith, 2008). Many faculty members question the validity of an online course to address complex teaching and learning problems while others question the recognition of their contributions towards building an online course during tenure and promotion decisions (Alexander et al., 2009; Appana, 2008). Another limitation that discourages faculty from developing online courses relates to copyright and intellectual ownership of online materials (Magjuka, Shi, & Bonk, 2005; Orr, Williams, & Pennington, 2009). Faculty tend to depend on “digital naiveté” towards online learning, with such a tendency usually based on faculty anxiety and unfamiliarity with educational technology, such as blogs and wikis commonly used in Web 2.0 interactive online communication tools (Bleich, 2009; Diaz, 2010; T. Johnson, Wisniewski, Kuhlemeyer, Isaacs, & Krzykowski, 2012; Zsohar & Smith, 2008). Another challenge arises if educational institutions do not offer adequate faculty technology training or provide technical support to address the various issues faculty may face when teaching an online course (Herman, 2012; T. Johnson et al., 2012; Vaill & Testori, 2012). A final faculty challenge is the absence of a continuous support mechanism for professional development (PD) in online instructional design, and limited PD time allocation for faculty who teach between 12 to 18 hours a week in the College.

2.3 Management Online Learning Challenges

Managers at educational institution face a number of challenges with increased budget changes at the initial setup phases that typically relate to online course start-up, hardware and software systems upgrades, administrative tasks spent on online learning policy development and maintenance, and the selection of an appropriate Learning Management System (LMS) (Appana, 2008; Cavus, 2011; Magjuka et al., 2005; Young, 2012). Such changes can be alarming in light of funding cuts from provincial and federal governments towards education. In addition, determining the role of online learning within the educational institution is a challenge for management as they will need to define (and occasionally redefine) program designations, residential components, and potential partnerships (Magjuka et al., 2005). Online learning implementation will require management to share their plans and vision with their stakeholders to ensure awareness of this learning method by all involved parties (Nworie, 2012; Orr et al., 2009).

A lack of management support towards the faculty’s changing role during online course development and delivery is a challenge that can impact program success (Herman, 2012). Ensuring faculty satisfaction with online learning is also a challenge management will have to contend with (McLawhon & Cutright, 2012). Other challenges that face faculty and that

are related to management are based on compensation, intellectual property, time required to teach online, access to technical support, feelings of threat from implementing new technology in teaching, and a lack of appropriate online course evaluations (Alexander et al., 2009; Bolliger & Wasilik, 2009; McLawhon & Cutright, 2012; Orr et al., 2009). With regards to student services, management will observe challenges in ensuring services are available for students to guide them through the online program; additionally, management will need to ensure that students are appropriately trained and have the support to complete an online course (Magjuka et al., 2005). A lack of response towards student challenges will cause management to lose tuition revenues and waste expenditures on course development and delivery (Angelino, Williams, & Natvig, 2007). Finally, management also need to address the present scarcity in measurement metrics to evaluate the success of online programs (Abel, 2005).

3. Mitigation of Online Learning Challenge

3.1 Student Perspectives

Characteristics of the student aiming to succeed in online learning include independence, autonomy, self-regulation, motivation, aspiration to gain information, and the ability to effectively collaborate with faculty and peers (Boulton, 2008; Brown, 2011; Rabe-Hemp et al., 2009; West, 2010; Zhu, 2012). Offering a technology orientation session at the beginning of the online course and during the first week of class can minimize student feelings of isolation and allow them to meet their peers and form cohesive bonds during such a session (Shovein, Huston, Fox, & Damazo, 2005). In order to enhance the online learning experience, faculty should provide the course materials for the online course at least one week ahead of the class start, along with clear access to a syllabus, a calendar that specifies all relevant assignment due dates to ensure students do not miss deadlines, assignment descriptions, a welcome announcement, and clear and transparent rubrics. Utilizing a proper course design with a consistent template that is visually appealing, concise, easy to access, and clearly identifies learning activities and outcomes can reduce anxiety and allow students to attain maximum benefit from the online course (Bourne & Davison, 2006).

Faculty can increase student satisfaction by being accessible, providing sufficient opportunities for student interactions in the online course, and utilizing an organized course structure (Blackmon & Major, 2012; Boulton, 2008). To reduce feelings of isolation commonly expressed by students enrolled in online courses, faculty can ask the student to contribute to the course content by uploading videos or short PowerPoint presentations in a specific LMS section and require the participation of the student in ice-breaker activities to introduce their expected learning goals and plans for becoming independent and self-regulated learners (West, 2010; Zsohar & Smith, 2008). Such mitigation strategies will help students transition from being passive learners to becoming more active learners and therefore involved in the learning process.

Online discussions can engage learners and elevate the student learning experience, encouraging equal participation even from normally quiet students. With regards to communication, faculty should be readily available and provide prompt email responses and

assignment receipt acknowledgements (Alexander et al., 2009). Creating a social online discussion forum will also offer students a venue to remind each other regarding upcoming deadlines and assignments (West, 2010). This will help create a positive learning community where students support each other and learn both independently and collaboratively through learner-learner, learner-content, learner-teacher, and learner-tool interactions (West, 2010). Creative and innovative “out-of-the box” applications should be incorporated in the course design; such applications include the use of assessments as contracts and implementing learning module checklists in the course and can allow the effective integration between teaching and technology (Leski, 2009).

Returning graded assignments within reasonable timeframes to students with ample clarification and comments will assure them that they have been read and graded by the faculty member teaching the course (Zsohar & Smith, 2008). Students should utilize RSS (Real Simple Syndication) feeds to search, sort, and aggregate course content to save time during their studying (West, 2010). This will allow students to overcome the time challenges associated with the active nature of the learning process in an online course. Such mitigation strategies will help create stronger student-faculty interactions and can allow faculty to accurately identify students who require help in the course and reach out to them (El Mansour & Mupinga, 2007). Typically, a discrepancy in student expectations and the reality of being in an online course can lead to student discomfort and a preference towards a hybrid course format (Abdulla, 2012; Rabe-Hemp et al., 2009); this can be mitigated by transitionally introducing online components in traditional F2F courses thereby allowing a gradual transformation from F2F to an online format.

3.2 Faculty Perspectives

Faculty resistance to change can be mitigated through delivery of training workshops that illustrate the ease with which certain online aspects and components can be integrated within traditional F2F courses; such workshops are typically offered by staff members within the central unit in the college that support faculty in teaching and learning strategies. By initiating online course development early, faculty can establish a comfort level with the online tools and re-examine the course content to determine appropriate components to be migrated into an online format (S. G. Johnson & Berge, 2012). Utilization of interactive educational technologies such as text, sound, television, videos, films, graphics, moving pictures that simulate phenomena, videos or simulations, and educational learning games will support student engagement during the learning process (Bonk, 2007; Clark & Mayer, 2011). Incorporating group work in the course design can support faculty in mitigating student anxiety since it would facilitate student-student interactions within the course (Alexander et al., 2009; Appana, 2008). Orientation sessions should be offered to full and part-time faculty and should address the various academic policies that they may encounter in an online course including plagiarism, grading, and late submission penalties. If available, material from the Library on plagiarism should also be incorporated in the online course and can be provided in the form of tutorials, lectures, seminars, modules, and quizzes.

In order to thwart negative perceptions faculty may harbour towards the validity and quality of online learning in teaching complex material, the course design and delivery should be based on seven main learning principles as illustrated in Table 1.

Table 1. The 7 learning principles that can be used to design online courses effectively and to facilitate student knowledge construction

Learning Principle	Impact on Student Knowledge Construction
1. Develop Constructively Designed Learning Outcomes	Biggs & Tang define the learning outcomes as statements that express what students have to do in order to achieve the <i>intended learning outcome</i> (ILO), and not what teachers have to do during the instruction (Biggs & Tang, 2011). Learning outcomes focus student attention on cognitive thinking processes, and present the strategies that need to be followed to develop their skills. According to Biggs & Tang, faculty need to implement constructively designed ILOs in teaching practices and ensure that student assessment is aligned with the given ILOs (Biggs & Tang, 2011).
2. Develop a Student-Centered Teaching and Learning Environment	Constructivism requires that the learners construct knowledge through their own activities and that they interpret concepts in terms of the “schemata” they already possess (Biggs & Tang, 2011). Faculty must therefore shape the teaching environment in such a way that instruction is tailored to the learning abilities of individual students and supports them in structuring their own learning goals.
3. Develop an Interactive and Collaborative Learning Environment	A core principle of constructivism is that cognitive thinking processes are situated in social contexts (Schunk, 2011). The cognitive activities that occur when the student interacts with sociocultural and instructional factors represent a pillar of the situated cognition perspective. The teaching method must therefore occur through the ongoing design of instructional materials that provide sufficient opportunities for students to interact and which motivates students to contribute effectively to online discussions, blogs, and wikis.
4. Develop a Supportive Environment that Motivates Students to Achieve Learning Goals	A unidimensional learning environment includes a few activities and addresses only a limited range of student abilities; a multi-dimensional environment provides more activities that support both the diversity of student abilities and motivate students (Schunk, 2011). To avoid a unidimensional learning environment, faculty must therefore design a variety of different assignments that support the diversity of student abilities and avoid public grading. Student autonomy increases when students have a choice of

Learning Principle	Impact on Student Knowledge Construction
	what they do to learn and this autonomy results in improved self-regulation and motivates students to continue working.
5. Match Instruction to Student's Developmental Level	Instructional scaffolding refers to limiting the task elements that are beyond the student's capabilities and supporting students so that they can focus on those aspects of the task that they can easily manage (Bruning, Schraw, Norby, & Ronning, 2004; Schunk, 2011). According to this learning principle, faculty have to provide instruction that matches the student's developmental level and to breakdown instructions into steps through which the students have to proceed through to reach their learning goals (Schunk, 2011).
6. Support a Discovery Learning Environment	Bruner recommends a method of inquiry-based instruction known as discovery learning where faculty ask students to use their previous knowledge and experiences to discover new facts for themselves (Whitaker, 2014). Hunt argues that students who are involved in exploratory learning are intrinsically motivated since they try to reduce the incongruity between prior experience and the new knowledge required for discovery learning (Schunk, 2011). The teaching practice must therefore include learning environments that support student involvement in constructing and testing hypotheses rather than simple reading or listening to the teacher's presentation.
7. Provide Timely and Helpful Performance Feedback	Rosenshine and Stevens recommend that teachers provide constructive and positive feedback to maintain the learning momentum (Schunk, 2011). Constructive feedback establishes a positive climate in the learning environment and is typically associated with higher student achievement.

Faculty teaching online courses should conduct regular anonymous surveys to gauge student satisfaction in lieu of F2F course evaluations that are not necessarily applicable to online courses and students should be educated on the value of such surveys towards their education. Policies will need to be created that take into account faculty efforts spent on online course development and delivery; additionally, policies must be implemented that address faculty intellectual property, including material ownership, revenue dissemination, and work claims (Bolliger & Wasilik, 2009; Loggie et al., 2007). Copyright policies should show a commitment to academic freedom and protect authors of literary, artistic, dramatic and musical works, as well as sound recordings and performances. To mitigate feelings of online learning being a time-intensive activity, faculty workload reductions or monetary compensations should be offered to faculty developing the online course along with adequate

time to design and develop the online course material (Alexander et al., 2009; Bolliger & Wasilik, 2009). To reduce faculty anxiety when communicating and interacting online, training should be provided on appropriate online communication technologies and effective course design and software development (Appana, 2008; Diaz, 2010; Downes, 2007). The IT department should provide online technical training to faculty and staff and an independent Center of Teaching and Learning staff member should be available to support faculty in the implementation of online technology in their courses. Cochrane and Narayan recommend the formation of a Community of Practice (CoP) as a transformative type of PD; members of CoP consists of faculty who appreciate the implementation of technology in learning and become technology stewards within their own departments (Cochrane & Narayan, 2013). In addition, faculty should be provided with appropriate PD training in the initial and subsequent stages of course development, content design, technology, pedagogy, feedback provision, and LMS utilization (Alexander et al., 2009; Bolliger & Wasilik, 2009; Dietz-Uhler, Fisher, & Han, 2007; Herman, 2012; T. Johnson et al., 2012; Koehler, Mishra, & Yahya, 2007; McLawhon & Cutright, 2012; Vaill & Testori, 2012).

3.3 Management Perspectives

Successful implementation of online learning requires a long-term commitment from management, expenditure prioritization, increased financial investment, selection of appropriate programs to convert online courses, understanding of student demographics, personal utilization of online learning tools, and marketing of the online learning method (Abel, 2005; Nworie, 2012; Rosenberg, 2006). This will allow the creation of robust strategies that can enhance success of the online course and program and reduce the required start-up time to initiate such learning methods at the educational institution (Young, 2012). Sharing the “Vision Statement” with faculty can serve as a catalyst to increase engagement by all involved parties in the learning method (Abel, 2005; Nworie, 2012; Orr et al., 2009). Policies regarding intellectual property, academic honesty and plagiarism, and workload release during online course development should also be constructed by management along with administrative support, technical expertise, and a reliable infrastructure (Bolliger & Wasilik, 2009; Diaz, 2010; Orr et al., 2009). Such strategies can go a long way in mitigating both the student and faculty challenges typically incurred during online learning.

Technology purchase costs represent a substantial component of online learning implementation, necessitating the use of a quality-oriented assessment of the currently utilized LMS (Cavus, 2011; Simonson, 2007; Wright, Dhanarajan, & Reju, 2009). LMS selection should be made through a committee with campus-wide membership from all departments, faculties, and administrative levels; this committee will need to determine potential LMS features, short-list the available tools, and evaluate the short-list based on specific characteristics developed through stakeholder consultation. Program success should be measured using a performance measurement plan utilizing both formative and summative indicator metrics to determine course cost-effectiveness, structure, and efficient technology utilization. Metrics in such a performance measurement plan can include measuring student and faculty satisfaction, enrolment numbers, number of courses offered online, and the overall return on investment (Abel, 2005). Incorporating stakeholders in the evaluation

process is the basis of the “Participant-Oriented Model” and allows testing new approaches as part of the continuous program enhancement process (Krauss & Ally, 2005).

To attain faculty satisfaction, management should show commitment towards faculty ideas, develop more robust course evaluations, test online courses using properly selected “early- and second-wave adopters” with stakeholder involvement, and provide continuous training services (Abel, 2005; Orr et al., 2009; Rosenberg, 2006; Waters, 2012). Faculty should be encouraged to participate in online learning planning and design as this will facilitate their ability to design a truly interactive course as opposed to simply posting teaching materials to the students online (Abel, 2005). Such an interactive online course design can utilize the features in the current LMS and will lead to the mitigation of student anxiety commonly associated with online learning. Management will also need to utilize reward and incentive programs, appropriately allocate time and resources to faculty, and illustrate methods to faculty that would allow them to engage students in the learning process (Alexander et al., 2009; Herman, 2012; Jones, 2007; McLawhon & Cutright, 2012; Orr et al., 2009). Resistance to change should not be mistaken with inability to change; faculty should therefore be provided with ample training and support to optimize online course delivery and help build confidence in implementing LMS tools, ultimately enabling the use of the available learning objects. This will facilitate the use of the tool by faculty who are eager to use the tool but lack the ability to utilize it effectively and accurately (Rosenberg, 2006). Further examples of such tools include videos, audio, simulations, and lecture notes from the MIT Open Course Ware (<http://ocw.mit.edu/courses/>). Faculty PD can be constructed based on faculty feedback and in collaboration with the IT department and should be based on technology, pedagogy, and course content (McQuiggan, 2007). Depending on budget, the educational institution can support faculty either by creating a single central teaching support unit with instructional designers and technology support staff or through the appointment of online learning facilitators and ambassadors within each program.

Management should ensure that the IT department provides aid to students who may be experiencing potential technology challenges and to help them solve such technical difficulties. Student anxiety can be further reduced through provision of detailed training documents on the LMS, a Frequently Asked Questions (FAQ) section, and scheduled IT training sessions made available to students. A portion of the budget must also be allocated towards student support and training and provision of student services such as a call-in number for help and other miscellaneous services online learners require (Alexander et al., 2009; West, 2010). Utilizing standardized course templates and communication channels can optimize student use of time and therefore management must invest in training faculty to aid them in achieving such methods (Magjuka et al., 2005). By ensuring faculty are knowledgeable in student engagement methods and can design a learner-centered course with collaborative work opportunities, management can mitigate the feelings of social isolation students typically experience in online courses (Angelino et al., 2007). Finally, management can show their commitment towards online learning by offering bursary and scholarship programs specific to online learners.

4. Roadmap: F2F to Online Transition

The roadmap constructed in this section contains mitigation strategies based on the common challenges experienced by students, faculty, and management towards online learning (Table 2). It identifies the actions that must be undertaken by the educational institution during the three critical stages of successful online course development: prior to, during, and post course/program development.

Table 2. Roadmap illustrating the key-points educational institutions must account for when embarking on their online learning journey

Timeframe	Activity	Outcome
1. Prior to Course/Program Delivery	<ul style="list-style-type: none"> • Mangers need to be of the mind-set that the new direction of online learning will support knowledge delivery to students throughout the world and improve education through the implementation of educational technology. • Mangers need to ensure that infrastructure, personal requirements, and required financial resources are appropriately allocated to develop the online programs. • Faculty should be encouraged to be involved in planning, designing and developing the online learning courses and have to be provided with the appropriate PD at least one academic semester prior to start of online leaning at the institute. • Mangers need to introduce new policies at the educational institution to ease the integration of online learning at the institutional level. 	The outcome of such activities will allow the establishment of the educational institution's organizational culture to cultivate buy-in and support of the change toward online/hybrid learning as well as identify and constructively remove negative consequences that may arise from the change.
2. During Course/Program Delivery	<ul style="list-style-type: none"> • Mangers must practice strategies to enable the faculty to overcome the challenges faced during the implementation of online courses and programs; this includes providing sufficient time to develop and implement such courses. • Faculty PD should include training on course content design, technology, and 	The outcome of such activities will allow institutions to offer online/hybrid programs that appropriately implement educational technologies to provide continuous access to high-quality student

Timeframe	Activity	Outcome
	<p>pedagogy.</p> <ul style="list-style-type: none"> • Faculty should collaborate with instructional and web designers to provide well organized online course materials, effective student assessments, and enough opportunities for all types of interactions: student-student, student-faculty and student-course materials. • A multi-year enterprise evaluation and performance measurement plan must be developed to measure the effectiveness of the online/hybrid programs in providing a high quality learning experience. • A formative evaluation must be implemented to measure course materials quality, instructional techniques used by faculty, and the student assessment quality. 	<p>learning experience.</p>
<p>Post Course/Program Delivery</p>	<ul style="list-style-type: none"> • Institutions should implement a summative evaluation plan to measure the success of the online learning courses and programs. • Institutions should perform summative evaluation and take actions, if necessary, to change the curriculum and delivery modes and evaluate the existing used technology and new technologies that can be added to enrich the students learning experience. • The institution should monitor student enrolment in online courses and strategies should be developed to deal with low and/or poor enrolment. • Faculty should continuously review their course material to determine appropriate components to transition from a F2F to online format and management should provide faculty with continuous access to PD activities to support them through this process. 	<p>The outcome of such activities will allow the continuous improvement of the quality of education delivered online to the students; this can lead to a growing number of students enrolled in online programs and enhance the educational institution's financial situation.</p>

Timeframe	Activity	Outcome
	<ul style="list-style-type: none"> Management will need to update the educational institution's policies on a periodic basis and commit to the conversion a certain quota of F2F courses into an online format to solidify the importance of this learning method at the educational institution. 	

5. Conclusion

By employing a well-structured course and maintaining adequate interaction channels for students, online courses have the potential to provide a high student enjoyment factor and efficient learning experience at the student's own pace. The effectiveness of online courses to provide support to students to achieve their learning goals are dependent on the ability of management and faculty at the educational institution to mitigate the challenges normally experienced in the prior to, during, and post phases of the development and delivery of online learning. The roadmap provided in Table 2 illustrates key points that educational institutions must take into account during the transition period from F2F to online learning. This dynamic roadmap is applicable to educational institutions embarking on their journey towards online learning, either within a single course or a full program, and can serve as a starting point for such a conversion. It can also be easily adapted to incorporate evolving online teaching requirements for educational institutions that have already established online learning yet need more guidance to replicate their successful online learning experience.

References

- Abdulla, D. (2012). Attitudes of college students enrolled in 2-year health care programs towards online learning. *Computers & Education*, 59(4), 1215-1223. <http://dx.doi.org/10.1016/j.compedu.2012.06.006>
- Abel, R. (2005). Implementing best practices in online learning. *Educause Quarterly*, 28(3), 75.
- Alexander, M. W., Perrault, H., Zhao, J. J., & Waldman, L. (2009). Comparing AACSB faculty and student online learning experiences: Changes between 2000 and 2006. *Journal of Educators Online*, 6(1), n1.
- Allen, I. E., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*: Babson Survey Research Group, Pearson.
- Angelino, L. M., Williams, F. K., & Natvig, D. (2007). Strategies to engage online students and reduce attrition rates. *The Journal of Educators Online*, 4(2), 1-14.

- Appana, S. (2008). A review of benefits and limitations of online learning in the context of the student, the instructor and the tenured faculty. *International Journal on E-Learning*, 7(1), 5-22.
- Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education*, 52(2), 402-416. <http://dx.doi.org/10.1016/j.compedu.2008.09.009>
- Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university* (4 ed.). Berkshire, UK: McGraw-Hill.
- Blackmon, S. J., & Major, C. (2012). Student experiences in online courses: A qualitative research synthesis. *Quarterly Review of Distance Education*, 13(2), 77-85.
- Bleich, M. R. (2009). Technology: An imperative for teaching in the age of digital natives. *The Journal of nursing education*, 48(2), 63. <http://dx.doi.org/10.3928/01484834-20090201-04>
- Bolliger, D. U., & Wasilik, O. (2009). Factors influencing faculty satisfaction with online teaching and learning in higher education. *Distance Education*, 30(1), 103-116. <http://dx.doi.org/10.1080/01587910902845949>
- Bonk, C. (Producer). (2007). Feedback providing. [Video/DVD] Retrieved from http://www.indiana.edu/~icy/media/de_series/providing_feedback.html
- Boulton, H. (2008). Managing e-learning: What are the real implications for schools. *Electronic Journal e-Learning*, 6(1), 11-18.
- Bourne, D. W., & Davison, A. M. (2006). A self-paced course in pharmaceutical mathematics using Web-based databases. *The American Journal of Pharmaceutical Education* 70(5), 116. <http://dx.doi.org/10.5688/aj7005116>
- Brown, V. (2011). Changing demographics of online courses. *US-China Education Review*, 8(4), 460-467.
- Bruning, R., Schraw, G., Norby, M., & Ronning, R. (2004). *Cognitive psychology and instruction*. Columbus: OH: Merrill.
- Cavus, N. (2011). The application of a multi - attribute decision - making algorithm to learning management systems evaluation. *British Journal of Educational Technology*, 42(1), 19-30. <http://dx.doi.org/10.1111/j.1467-8535.2009.01033.x>
- Clark, C. C., & Mayer, R. E. (2011). *e-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning* (3 ed.). San Francisco: Wiley.
- Cochrane, T., & Narayan, V. (2013). Redesigning professional development: reconceptualising teaching using social learning technologies. *Research in Learning Technology*, 21. <http://dx.doi.org/10.3402/rlt.v21i0.19226>

- Diaz, V. (2010). Web 2.0 and emerging technologies in online learning. *New Directions for Community Colleges, 2010(150)*, 57-66. <http://dx.doi.org/10.1002/cc.405>
- Dietz-Uhler, B., Fisher, A., & Han, A. (2007). Designing online courses to promote student retention. *Journal of Educational Technology Systems, 36(1)*, 105-112. <http://dx.doi.org/10.2190/ET.36.1.g>
- Downes, S. (2007). What connectivism is. Retrieved from <http://halfanhour.blogspot.com/2007/02/what-connectivism-is.html>
- El Mansour, B., & Mupinga, D. M. (2007). Students' positive and negative experiences in hybrid and online classes. *College Student Journal, 41(1)*, 242-248.
- Freeman, M. K., Schrimsher, R. H., & Kendrach, M. G. (2006). Student perceptions of online lectures and WebCT in an introductory drug information course. *The American Journal of Pharmaceutical Education, 70(6)*, 126. <http://dx.doi.org/10.5688/aj7006126>
- Herman, J. H. (2012). Faculty development programs: The frequency and variety of professional development programs available to online instructors. *Journal of Asynchronous Learning Networks, 16(5)*, 87-106.
- Huggins, J., Morris, J., & Peterson, C. E. (2005). Distance learning and toxicology: New horizons for Paracelsus. *Toxicology and Applied Pharmacology, 207(2 Suppl)*, 735-737. <http://dx.doi.org/10.1016/j.taap.2005.01.029>
- Jocoy, C. L., & DiBiase, D. (2006). Plagiarism by adult learners online: A case study in detection and remediation. *The International Review of Research in Open and Distance Learning, 7(1)*.
- Johnson, S. G., & Berge, Z. (2012). Online education in the community college. *Community College Journal of Research and Practice, 36(11)*, 897-902. <http://dx.doi.org/10.1080/10668920903323948>
- Johnson, T., Wisniewski, M. A., Kuhlemeyer, G., Isaacs, G., & Krzykowski, J. (2012). Technology adoption in higher education: Overcoming anxiety through faculty bootcamp. *Journal of Asynchronous Learning Networks, 16(2)*, 63-72.
- Jones, E. (2007). Integrating technology to maximize learning. *Education Digest: Essential Readings Condensed for Quick Review, 73(1)*, 23-26.
- Jones, R., Fox, C., & Levin, D. (2011). National educational technology trends: 2011. Transforming education to ensure all students are successful in the 21st century: State Technology Leadership Essential for 21st Century Learning, Annual report SETDA.
- Koehler, M. J., Mishra, P., & Yahya, K. (2007). Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy and technology. *Computers & Education, 49(3)*, 740-762. <http://dx.doi.org/10.1016/j.compedu.2005.11.012>

- Krauss, F., & Ally, M. (2005). A study of the design and evaluation of a learning object and implications for content development. *Interdisciplinary Journal of E-Learning and Learning Objects*, 1(1), 1-22.
- Leski, J. (2009). Nursing student and faculty perceptions of computer-based instruction at a 2-year college. *Journal of Nursing Education*, 48(2), 91-95. <http://dx.doi.org/10.3928/01484834-20090201-09>
- Loggie, K. A., Barron, A. E., Gulitz, E., Hohlfeld, T. N., Kromrey, J. D., & Sweeney, P. (2007). Intellectual property and online courses: Policies at major research universities. *Quarterly Review of Distance Education*, 8(2), 109-125.
- Magjuka, R. J., Shi, M., & Bonk, C. J. (2005). Critical design and administrative issues in online education. *Online Journal of Distance Learning Administration*, 8(4).
- McLawhon, R., & Cutright, M. (2012). Instructor learning styles as indicators of online faculty satisfaction. *Educational Technology & Society*, 15(2), 341-353.
- McQuiggan, C. A. (2007). The role of faculty development in online teaching's potential to question teaching beliefs and assumptions. *Online Journal of Distance Learning Administration*, 10(3).
- Nworie, J. (2012). Applying leadership theories to distance education leadership. *Online Journal of Distance Learning Administration*, 15(4), 2012.
- Orr, R., Williams, M. R., & Pennington, K. (2009). Institutional efforts to support faculty in online teaching. *Innovative Higher Education*, 34(4), 257-268. <http://dx.doi.org/10.1007/s10755-009-9111-6>
- Rabe-Hemp, C., Woollen, S., & Humiston, G. S. (2009). A comparative analysis of student engagement, learning, and satisfaction in lecture hall and online learning settings. *Quarterly Review of Distance Education*, 10(2), 207-218.
- Rosenberg, M. J. (2006). *Beyond e-learning: Approaches and technologies to enhance organizational knowledge, learning, and performance*. San Francisco: Pfeiffer.
- Schunk, D. H. (2011). *Learning theories: An educational perspective* (6 ed.). Upper Saddle Hill, NJ: Pearson Education Inc.
- Shovein, J., Huston, C., Fox, S., & Damazo, B. (2005). Challenging traditional teaching and learning paradigms: Online learning and emancipatory teaching. *Nursing Education Perspectives* 26(6), 340-343. [http://dx.doi.org/10.1043/1536-5026\(2005\)026\[0340:CTTALP\]2.0.CO;2](http://dx.doi.org/10.1043/1536-5026(2005)026[0340:CTTALP]2.0.CO;2)
- Simonson, M. (2007). Evaluation and distance education: Five steps. *The Quarterly Review of Distance Education*, 8(3), vii-ix.
- Vaill, A. L., & Testori, P. A. (2012). Orientation, mentoring and ongoing support: A three-tiered approach to online faculty development. *Journal of Asynchronous Learning Networks*, 16(2), 111-119.

- Waters, J. (2012). Thought-leaders in asynchronous online learning environments. *Journal of Asynchronous Learning Networks, 16*(1), 19-34.
- West, R. E. (2010). A student's guide to strengthening an online community. *TechTrends, 54*(5), 69. <http://dx.doi.org/10.1007/s11528-010-0439-7>
- Whitaker, B. D. (2014). Using Guided Discovery as an Active Learning Strategy. *NACTA Journal*.
- Wright, C. R., Dhanarajan, G., & Reju, S. A. (2009). Recurring issues encountered by distance educators in developing and emerging nations. *International Review of Research in Open and Distance Learning, 10*(1).
- Young, J. R. (2012). Leaders look to technology for savings and change. *Chronicle of Higher Education*.
- Zhu, C. (2012). Student satisfaction, performance, and knowledge construction in online collaborative learning. *Journal of Educational Technology & Society, 15*(1), 127–136.
- Zsohar, H., & Smith, J. A. (2008). Transition from the classroom to the Web: Successful strategies for teaching online. *Nursing Education Perspectives, 29*(1), 23-28.

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