

Discovering Interdisciplinary Uses of Online Technologies in Higher Education

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ABSTRACT

Recent research shows both students and professors rushing to adapt learning and teaching activities accessing ever-upgrading digital and social media formats like Facebook, Twitter, YouTube, Pinterest and Prezi. Many institutions of higher education are embracing social media as viable, student-centered-classroom communication tools in a full range of subject disciplines, as well as in emerging interdisciplinary activities that prepare students for current trends in the job force. The new communication channels offer students a direct voice in discussion of topics of subject matter and current events, avenues for expedited exchange of information, and also introduction to skills needed to operate mobile computing devices, such as tablets and portable hand-held devices.

The advancing tools of online technology are also being used creatively in general communication across college campuses in higher education following standardized-use policies. The use of social media, for example, is effective in recruiting and interacting with prospective students and their parents or in expedited sharing of news or updated policies and procedures.

The current endorsement of new technologies in various higher-education settings aligns with historical enthusiasm in education for interactive classroom dialogue. Over the years, progressive and pragmatic educators, such as John Dewey, Paulo Freire, Elliot Eisner and Larry Cuban have promoted interactive, inclusive pedagogical communication and experiential education since the early 1900s to the present.

For the past year-and-a-half, three faculty members at Black Hills State University have been conducting qualitative and quantitative research on the use of digital and social media in higher education. Since the beginning, the central goal has been to create awareness of digital technologies and social media as inter-subjective tools. More recently, the focus has become measurement of the learning experience and the development of curricula and policies that result in improved learning and teacher-learner communication.

Keywords: social media, online technologies, interdisciplinary

INTRODUCTION

Institutions of higher education are recently encountering a new frontier and challenge of communicating effectively with

their audiences. In an increasingly competitive landscape, universities and colleges are continuously strategizing to identify ways to attract students to their campuses as well as retain them until graduation -- and then maintain the relationships as alumni [1] [2]. This communication frontier -- a complex conundrum involving interdisciplinary activity -- has urged on a process of discovery regarding how to sustain regular contact with constituents. Enter the use of advancing online technologies as tools to create constant connectivity with prospective students pursuing degrees in a variety of subject matter, and then creatively continue to apply their use once the students are on campus and later graduated into their prospective fields. Rather than bemoan an era of failing interpersonal communication, colleges and universities are encouraging staff, faculty and administration to engage in positive communication and learning exchanges with prospective employees and students of diverse interests using the tools of advancing social media and digital technologies [3] [4].

GROWTH OF ONLINE TECHNOLOGIES

Web 2.0 technologies like blogs and other social media that arose on the Internet in the early part of the millennium now offer interactive and often instantaneous communication platforms for universities to recruit and register students, and relate updates about campus policies and procedures, as well as use as teaching and learning tools in classrooms. The embrace of social media such as Facebook, Twitter, LinkedIn and Pinterest, for example, is now becoming common among administrative and academic communities, although not without controversy about how, when and why to use the tools [5]. Many faculty from subject matter across the spectrum, however, find social media are viable, student-centered learning tools, no matter the discipline [6]. Much like a traditional piece of paper, social media provide channels for delivery of information on any topic. Each medium serves as a tool allowing exchange of messages -- and usually much faster than the traditional piece of paper. Because the tools are also being embraced in occupations beyond the classroom, many faculty members regard their use as a logical antecedent to a range of careers in business, science, art, mathematics, military and communication, among others. Blogs have been created, for example, on all of these subjects and more [7] [8].

Additionally, because of this increased and encouraged use, many university communication departments have developed standardized-use policies regarding social media on campus and in the classroom [9] [10].

In a recent Research Bulletin released by Deloitte Consulting, Analyst S. Garr notes the growing view among companies to value a potential employee's reputation network and the entire digital footprint a new hire might bring to the workplace. [11] Fresh graduates on the employment market will increasingly need to have acquired their social media skills and connectivity while yet in college. This student need for competency and visibility through social platforms can best be achieved through sensible academic exposure and practice that focuses on effective professional use and practices.

In the classroom particularly, Web 2.0 tools are fluid pathways for students to add their direct voices in discussion of various subject matter and current events. Platforms such as Facebook and Instagram are avenues for expedited exchange of information at the flick of a finger. The use of social media is sometimes a gateway invitation to gaining the online and technical skills needed to effectively operate not only laptops, but also mobile computing devices, such as tablets and portable hand-held devices – now required on many college campuses [12].

In addition to the technical skills gained through education in the operation of devices for digital connectivity, students can grow from measured and intentional instruction that practices and refines the language of communication through these devices. Students adept at using Twitter in their social lives, for instance, are not necessarily skilled at using Twitter in their working lives.

CORE FOCUS

The writers of this paper wish to address the interdisciplinary nature of the use of online technologies that allow innovative communications within and across subject matter – and also reduce or eliminate a range of former communication and learning boundaries in higher education. The discussion and conclusion will be supported conceptually and historically via references to the work of progressive education scholars, as well as brief reviews of pedagogical examples and the results of a survey completed at Black Hills State University within the past two years.

A Collaborative Approach: Paradigm Shift That's Nothing New?

Why does interactivity – the Web 2.0 approach – seem to be suddenly revolutionizing communication in higher education? After all, offering students an interdisciplinary education – or perhaps more exactly, a multi-disciplinary education - has been a goal of progressive educators and a basic tenet of colleges and universities for years [13]. The requirement of general education credits, involving a course-mixture of science, mathematics, humanities and social sciences, for example, is a foundation of the higher education experience. An ultimate intention of gen-ed requirements for students is to create expanded awareness of the interconnected mutuality of the

forementioned subject matter, as well as encouraging specific exploration of each subject matter in and of itself [14]. Now with continuously new Web 2.0 tools, the communication among and between the subjects has become nearly fast-as-lightning and more conveniently bridged using social and digital media.

One of the foremost reasons for the paradigm shift in communications in the past ten years is advancing online technologies. Kuhn said that scientific advancement is not evolutionary, but rather a "series of peaceful interludes punctuated by intellectually violent revolutions," and in those revolutions "one conceptual world view is replaced by another" [15]. The seemingly drastic shift in one way of communicating to another -- from labor-intensive face-to-face and teletype delay to instantaneous online gratification -- has metamorphosed the former mimeo graphic processes of higher education. Progress has been driven by agents of change in administration, faculty and staff that have been scanning the horizon for radical improvements, possibilities and advancements in communication of information and knowledge – understanding when to strike when the iron is hot and morphing into a new frontier of discovery of interdisciplinary sharing that is bridging former territorial barriers, time zone concerns, and teaching methods. The collaborative process involves intergenerational, intersubjective, interspatial interactivity.

We're All in This Together, All of the Time

At times it seems that everyone on the college campus has been watching a version of "As Worlds Collide" per the philosophy of Kuhn – or potentially more appropriately termed, "As Worlds..." intersect or collaborate 24/7/365. The world of education - and the world overall - are interdisciplinary at the core, and thus as varietal needs arise and globalization takes its course, so does the need to collaborate in a multifaceted context. Real-world problem-solving is complex and involves consideration of an array of topic matter. Interdisciplinary teaching and subsequent learning and resolution of issues may involve the display of diverse perspectives, as well as the activities of joint-planning, decision-making and goal-setting. The prospects for interdisciplinary activities are growing in higher education "because of compelling, mutual gains for administration, faculty and students" [16] [17] [18]. Online technologies bring everyone together quickly, regularly, efficiently and creatively 24/7/365.

Logically, students feel as though they are more engaged or are enjoying their learning experience, they are more likely to stay at that university. From YouTube to Twitter to Skype, social media offers many benefits to both educators and students alike, such as encouraging real-time student engagement in courses to enhancing the connection between educator and student. Social media can serve as a cost-efficient tool for educators to use, as well as an effective tool to supplement and augment the delivery of course material and development of important intellectual skills [19].

Currently, researchers are interested in the opinions of students and what students desire in their classrooms. As an example of the engagement potential of social media, Cohen discovered a

significant positive link for students' perceived importance of the need to integrate Facebook into education [20]. Students have self-reported that social media in their classroom increased their engagement and helped them learn better [21] [22]. Although these reports are not yet strongly supported by empirical data, student happiness is a key aspect of retention [23].

Finally, we must not underestimate the post-graduation value to students of being capable social media navigators when they leave the classroom and apply their skills in employment settings across the disciplines.

The Study at Black Hills State University

Research on the use of online technologies in the classroom and pedagogical exchange about best practices involving a full range of subject matter has taken place at BHSU since May 2012. This section will address results of a series of monthly, one-hour roundtable discussions with ten faculty members, as well as parts of a survey conducted in spring 2013.

The agendas and materials for the roundtable discussions were prepared by two authors of this paper, and were distributed to participants by email three days before the meetings. The research surveys were distributed in paper-copy among the participating professors at the beginning of spring semester 2013. The professors administered the surveys with their students at the end of the semester.

Results / Roundtable Findings: The findings about use of online technologies and the variety of subject matter being taught included the following:

Youtube and Google Drive/Doc –English/Remedial Writing
 Twitter, LinkedIn and Facebook – Outdoor Education
 My Virtual Child – Adolescent Development
 Youtube – Art/Crafts
 Facebook – Art History and Art/Sculpture
 theArtStack – Art Appreciation
 Prezi – Non-profit Accounting
 Youtube – Composition 101
 Pinterest – Managerial Communications/Business
 Blog – Humanities 100
 Desire2Learn online course site – Mass Comm/Media Law
 Facebook –Mass Comm/Basic and Intermediate Desktop
 Publishing and Design

Results / Survey Findings: Participants in the survey about digital and social media use in the classroom included three professors and 45 Black Hills State University students (24 male, 19 female, and two unidentified). Eleven students came from a 100-level political science class, 13 students from a 400-level history class, and 21 students were from a 300-level mass communication class. The following select results highlight those questions displaying interdisciplinary activity.

Four demographic questions were asked in order to get a better idea of what populations the participant pool included. Two participants preferred not to reveal their gender, but 24 students were male (53.3%) and 19 students were female (41.3%). There were no freshman participants included in this sample,

but there were 10 sophomores (22.7%), 19 juniors (43.2%), and 15 seniors (34.1%), with one unidentified. Age groups were broken into two sections: under 25 and over 25. Thirty-one participants fell into the under 25 group (68.9%) and 14 were over 25 (31.1%). Students were asked to classify their majors. The frequency of each answer given is listed below, with the reference to the subject matter indicating the interdisciplinary commonality of the use of the online technologies.

Photography - **13**
 Mass. Comm. - **12**
 Pol. Sci. - **7**
 Secondary Ed. Soc. Sci. - **3**
 Soc. Science - **3**
 History - **3**
 History Ed. - **2**
 Eng. Ed. - **2**
 Environmental Physical Science - **1**
 Psych. - **1**
 Education - **1**
 Theater - **1**
 Electrical Engineer - **1**
 Criminal Justice - **1**
 Soc. - **1**
 Sp. Ed. - **1**
 Journalism – **1**

The results of the surveys were tallied from a Likert scale 1-10 format, and answers were rated with 1 being least and 10 being most. Question 7, out of eight total questions, asked students “which ways do you like to learn?” They were requested to rank the following digital-social media tools according to their preference for using them in class as most favorite to least favorite (#1 being the most favorable). Results are represented by an average and are listed in order of most favorite to least favorite.

Posting to Facebook - **3.51**
 Google Documents - **4.82**
 Creating videos for Youtube - **6.22**
 Blogging - **6.44**
 Using Pinterest - **6.83**
 Wikis - **7.78**
 Creating Prezis - **8.17**
 Tweeting - **8.2**
 Flickr - **8.22**
 Tumblr - **8.26**

DISCUSSION

The results of both the pedagogical work and the survey show that faculty and students from a variety of subject matter are working with various online technologies and digital and social media platforms. In some instances, members of faculty based in different disciplines have begun to blog together to share best practices, engage in research projects and present their work together at conferences and via the media. The authors of this paper hail from different disciplines, but are working on an e-book that will display various lessons and the online technologies curricula of more than two dozen faculty that have been drawn into the project via a series of recent

workshops on the Black Hills State University campus. Often faculty does not readily buy into the prospect of professional development because of various factors of time commitment, varying teaching philosophies, and diverging research interests [24] [25], but it appears that a legitimate number of instructors and professors here find the interdisciplinary discovery to be interesting, worthwhile, something to embrace, and something often even collegial and “fun.” The carry-over benefit to instruction, as well as the heightened interest of students, feeds the engagement once the instructors set a plan to incorporate social media.

All of the faculty members, involved in both the Roundtables and the Surveys, plan to continue utilizing social media applications for classroom adaptation. The small challenges they faced and any adjustments needed in process proved to be diminutive issues when compared to the content value and instructional energy gained by engaging Web 2.0 tools.

Because of the 24/7/365 access, interactivity and enthusiastic sharing of the plans, process and outcomes, boundaries have been dropped between disciplines, and discoveries have been made regarding the merge of subject matter among and between students and faculty in terms of understanding and undertaking of activity and projects. The outcomes often lead to phenomenal learning experiences on the par of the posits of progressive educators. Scholars of the early to late 20th century theorized about the benefits of The Great Community [26], the deeply contextual problem-posing approach [27], identifying common purpose in education through inquiry-driven discussion and critical thinking [28], and project-based, interactive teaching and learning methods integrating subjects such as art with math and science with dance [29]. The model of interactivity at Black Hills State University regarding the integration of online technologies into various aspects of the higher education experience aligns with these posits and more.

When the study discussed in this paper, about using online technologies in the classroom, was undertaken at Black Hills State University, one of the anticipated outcomes was the development of a best practices document to share with faculty and help guide wider implementation. While such a document remains an eventual outcome, the pathway to this outcome has become wider than predicted. The potential for social media applications is broad, and with faculty from so many disciplines now involved, the gathered knowledge continually morphs and redefines itself. This plasticity makes engagement pleasurable. Both faculty and students continually test the perimeters and revise in process. The social media platforms themselves are regularly adapted by the media providers, based on user analysis and feedback. At the heart of any best practice guidance is acknowledged pleasure in the fluidity of the media involved and the dynamic infusion this brings to both instruction and learning.

CONCLUSION

A version of Kuhn’s paradigm shift seems to be currently in process with the use of online technologies that create interdisciplinary, collaborative connections in various ways in higher education. While the shift seems recent, progressives have been advocating the activity for nearly a century in

various venues of the overall educational experience, although never has there been a period of time when the tools allowing this interactive communication and pedagogy were so rapid, easily accessible and enthusiastically shared among such a broad array of demographics, psychographics and subject matter. The on-going study and experimentation at Black Hills State University since May 2012 contributes to evidence that online technologies are leading to interdisciplinary activity and discoveries.

REFERENCES

- [1] Alicia Brazington, “Three Keys to Better Recruiting”, **Campus Technology**, Vol. 26, No. 2, Oct 2012, pp. 26-28.
- [2] Robert L. Hodum, “A Normative Code of Conduct for Admissions Officers”, **New Directions for Higher Education**, No. 160, Winter 2012, pp. 29-39.
- [3] John Ikenberry, Andrew Hibel, and Robert Freeman, “How Technology Has Changed (and Will Change) Higher Education Employee Recruitment”, **Metropolitan Universities**, Vol. 21, No. 2, Dec 2010, pp. 44-52.
- [4] Robin Lindbeck and Brian Fodrey, “Using Technology in Undergraduate Admission: A Student Perspective”, **Journal of College Admission**, No. 208, Sum 2010, pp. 10-17.
- [5] Michael Flavin, “Disruptive Technologies in Higher Education”, **Research in Learning Technology**, Vol. 20, suppl 2012, pp. 102-111.
- [6] Reneta D. Lansiquot, “Cases on Interdisciplinary Research Trends in Science, Technology, Engineering, and Mathematics: Studies on Urban Classrooms,” **Advances in Educational Technologies and Instructional Design**, IGI Global, 2013.
- [7] Liping Deng and Allan H. K. Yuen, “Blogs in Higher Education: Implementation and Issues,” **Tech Trends: Linking Research and Practice to Improve Learning**, Vol. 53, No. 3, May 2009, pp. 95-98.
- [8] Jeffrey Wee Sing Sim and Khe Foon Hew, “The Use of Weblogs in Higher Education Settings: A Review of Empirical Research,” **Educational Research Review**, Vol. 5, No. 2, 2010, pp 151-163.
- [9] Reynol Junco and Arthur W. Chickering, “Civil Discourse in the Age of Social Media,” **About Campus**, Vol. 15, No. 4, Sept-Oct 2010, pp. 12-18.
- [10] Tony McNeill, “‘Don’t Affect the Share Price’: Social Media Policy in Higher Education as Reputation Management,” **Research in Learning Technology**, Vol. 20 suppl 2012, pp. 152-162.
- [11] Stacia Sherman Garr, “Why Reputations and Networks Matter in the Open Talent Economy,” **Research Bulletin**, Sept. Bersin by Deloitte, Oakland, CA: Deloitte Development, 2013.
- [12] Aaron Alzola Romero, “One Laptop per College Student? Exploring the Links between Access to IT Hardware and Academic Performance in Higher Education e-Learning Programs,” **Journal of Distance Education**, Vol. 26, No. 1 2012.
- [13] Catherine M. Wehlburg, “Integrated General Education: A Brief Look Back,” **New Directions for Teaching and Learning**, No. 121, Spr 2010, pp. 3-11.

- [14] Kenneth Boning, "Coherence in General Education: A Historical Look," **Journal of General Education**, Vol. 56, No. 1, 2007, pp. 1-16.
- [15] Thomas Kuhn, **The Structure of Scientific Revolutions**, 1st. ed., Chicago: Univ. of Chicago Pr., 1962.
- [16] A. Edwards, A., **Interdisciplinary undergraduate programs: A directory** (2nd ed.), Acton, MA: Copley, 1996.
- [17] I. G. Gaff and J. L. Ratcliff, Eds, **Handbook of the undergraduate curriculum**, San Francisco: JosseyBass, 1997.
- [18] J. T. Klein, **Crossing boundaries: Knowledge, disciplinarity, and interdisciplinarity**. Charlottesville and London: U of Virginia Press, 1996.
- [19] Paige Abe and Nicolas A. Jordan, "Integrating Social Media into the Classroom Curriculum," **About Campus**, Wiley Periodicals, Vol. 18, No. 1, 2013, pp. 16-20.
- [20] A. Cohen, "Higher education students' perspectives of the relevance of the online social networking site Facebook to education." **ProQuest Dissertations and Theses**, 2011, 137.
- [21] O. S. Hirsh, "The relationship of twitter use to students' engagement and academic performance in online classes at an urban community college." **ProQuest Dissertations and Theses**, 2012, 277.
- [22] R. Junco, "The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement," **Computers & Education**, Vol. 58, 2012, pp. 162-171.
- [23] E. L. Langevin, "Undergraduate student happiness and academic performance: A correlation study." University of Phoenix. **ProQuest Dissertations and Theses**, 2013, 109.
- [24] Adrianna Kezar, "What Is the Best Way to Achieve Broader Reach of Improved Practices in Higher Education?" **Innovative Higher Education**, Vol. 36, No. 4, 2011, pp. 235-247.
- [25] Stephanie L. Potter and Amanda J. Rockinson-Szapkiw, "Technology Integration for Instructional Improvement: The Impact of Professional Development," **Performance Improvement**, Vol. 51, No. 2, Feb 2012, pp. 22-27.
- [26] John Dewey, **The Public and Its Problems**. Hoit Publishers, 1927.
- [27] Paulo Freire, **Pedagogy of the Oppressed**. New York: Seabury, 1974.
- [28] Jane L. David and Larry Cuban, **Cutting through the Hype: The Essential Guide to School Reform**. Revised, Expanded, and Updated Edition. Boston: Harvard Education Press, 2010.
- [29] Elliot Eisner, **The Educational Imagination: on the design and evaluation of school programs**. MacMillan, 1994.