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RE-ENGINEERING INTRODUCTORY INFORMATION SYSTEMS COURSE FOR THE 21ST CENTURY

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Abstract:

This paper reports on the author's low cost, innovative approach to an introductory Information Systems [IS] course, promoting twenty-first-century skills. By implementing several best instructional practices and through innovative use of technology to create community, the faculty member created a learning environment that students received with enthusiasm, and which helped them achieve at a higher level. The instructional practices included relevant AAC&U high-impact practices, ConnectedLearning.tv framework, and flipped classroom. This paper describes the details of the approach and the course outcomes, followed by a discussion.

Keywords: introduction to is, high-impact practices, connected learning, flipped classroom, active learning, twenty-first-century skills, student engagement, project-based learning

I. INTRODUCTION

"If you want to build a ship, don't drum up people to collect wood and don't assign them tasks and work, but rather teach them to long for the endless immensity of the sea." ~ Antoine de Saint-Exupery

As our economy is rapidly changing due to the forces of globalization and technological innovation, promising a future with unknown demands for skills and jobs, many researchers expressed opinions about higher education's need to adapt to a shifting world [e.g., Seeley Brown, 2011, Setser and Morris, 2015, The Leap Challenge Brochure, 2015]. Additionally, ailing American education received a significant exposure in the media during the last few years as not meeting the expectations of current employers [e.g., Arum, 2010], or engaging students to ignite passion for learning [e.g., Robinson, 2010]. While it is easy to have access to content and resources today, it is rather difficult to find quality "learning pathways" in higher education that lead to valued skills while one explores an authentic reason to learn - meaning making, or pursuit of one's own curiosity.

The author of this paper has set out to create learning pathways for her introductory information systems students that give them an authentic reason to learn while acquiring the typical core IS knowledge and relevant twenty-first-century skills. Sir Ken Robinson [2010] gave this faculty the sense of urgency to change the paradigm in her classroom, while Newmeier [2013], Kuh [2008], Bergmann and Sams [2012] and ConnectedLearning.tv[2015] gave her the tools and frameworks to redesign her course. This paper describes the use of three AAC&U high-impact practices, ConnectedLearning.tv framework, and flipped classroom instructional method in a sophomore-level, core business information systems honors course. The students received the class with enthusiasm and achieved at a high level.

21st Century Meta Skills

We live in the age of accelerating innovation and disruption. From bionics, through cognitive computing, to crowdsourcing, developments in information technology changed how we do business, work, live and learn. Neumeier [2013] elaborates on how today's workers are often baffled when presented with complex problem and offers educators a set of skills to implement in their classrooms. He promises that students who develop these skills, no matter the discipline,

will be able to produce value in our new economy. Neumeier framework advocates for the development of the following five metacognitive skills:

- a) **Feeling:** Feeling is a pre-requisite for the process of innovation, feeding empathy, intuition, and social intelligence.
- b) **Seeing:** Seeing is the ability to craft a holistic solution, also known as systems thinking, which helps solve complex, non-linear problems of the Robotic Age.
- c) **Dreaming:** Dreaming is the skill of applied imagination, which yields innovation.
- d) **Making:** Making, also known as design thinking, requires mastering the design process, including skills for devising prototypes.
- e) **Learning:** Learning is the ability to learn new skills at will, producing learners who know what and how to learn just in time for a new problem.

AAC&U High-Impact Practices

"High-Impact Practices [HIPs] are techniques and designs for teaching and learning that have proven to be beneficial for student engagement and successful learning among students from many backgrounds." [Leap Resource Toolkit, 2015]. Of the ten HIPS proposed, the three most relevant at the course design level are:

- a) **Collaborative Assignments and Projects** – "Collaborative learning combines two key goals: learning to work and solve problems in the company of others, and sharpening one's own understanding by listening seriously to the insights of others, especially those with different backgrounds and life experiences." [Kuh, 2008]. Collaborating with peers in solving problems prepares business students to deal with the complex problems they will encounter after graduation. While students often do not appreciate group work, such work can be enjoyable and leading to knowledge gains that last for an extended period of time [Buche, 2013]. Well-designed collaborations also improve teachers' and students' attitudes towards learning [Strobel and van Barneveld, 2009].
- b) **Learning Communities** – The key goal for learning communities is to integrate learning across disciplines and engage others beyond the classroom. For business professionals, just-in-time learning communities are part of their day-to-day life, as they often pursue answers to pressing questions through Google searches, online forums, social media, communications with peers, and conferences.
- c) **Writing-Intensive Courses** – "Students are encouraged to produce and revise various forms of writing" [Kuh, 2008]. Most business roles in organizations today require not only use of technical knowledge, but also the ability to communicate in writing and orally.

Connected-Learning

The Connected Learning framework (Figure 1) offers a learning approach designed for the demands and opportunities of the digital age, tying the research on how students learn best with the digital technologies available.

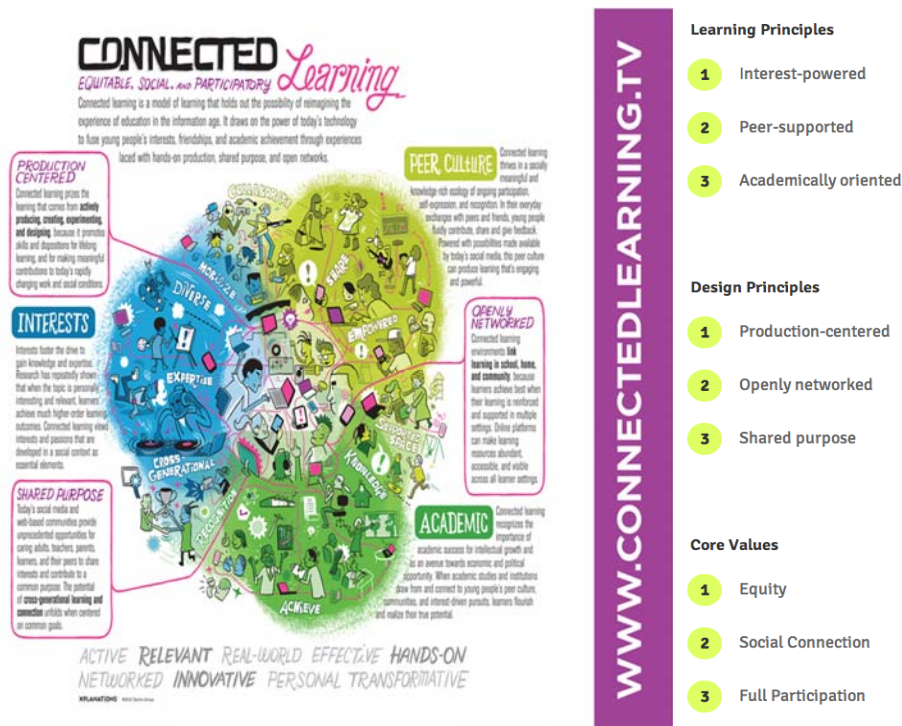


Figure 1. Connected Learning framework

Connected learning strives to integrate the education that students pursue based on the following three learning principles. Learning should be 1) interest-powered, 2) peer-supported, and 3) academically oriented. Research shows that learners who are interested in what they are learning achieve higher order outcomes, and when learning among peers, sharing, and giving feedback to one another, they produce deeper learning.

The design principles broaden the learning principles above through the power of technology, creating learning environments which are 1) production centered, 2) openly networked, and 3) share purpose. "Learning that comes from actively creating, making, producing, experimenting, remixing, decoding, and designing, fosters skills and dispositions for lifelong learning and productive contributions to today's rapidly changing work [...] Learning is most resilient when it is linked and reinforced across settings of home, school, peer culture, and community, where peers in diverse and specialized areas of interest engage in shared projects and inquiry" [ConnectedLearning.tv, 2015].

Flipped Classroom

As Educause [2012] suggests, "the flipped classroom is a pedagogical model in which the typical lecture and homework elements of a course are reversed." Various flipped classroom models exist involving watching pre-recorded lectures or reading assigned material prior to class, and then using class time for application of the material studied at home. This approach not only puts more of the responsibility for learning on students, but it gives them greater impetus to tinker with the ideas. The flipped classroom changes the role of faculty in the course from "sage-on-the-stage" to "guide-on-the-side" and the role of students from passive participants in the education process to engaged collaborators, leading to greater mastery of the material.

II. DESCRIPTION OF THE COURSE

The author offered the course described in the paper at a medium-sized, private university in the Southwest, with a *Business Week* top 30 AACSB-accredited undergraduate business program. Proceedings of the AIS SIG-ED IAIM 2015 Conference

The class met for three hours each week, over a 15-week period. The students in the class were sophomore business honors students.

On the first day of class, the instructor informed students of the nature of the course and that the course would be a lot of work, but that at the end they would have accomplished feats beyond their expectations, increasing employability. The faculty also told the students that the course objectives would be achieved through application of new instructional methods relevant to twenty-first-century learners, assuming that learning occurs both inside and outside the boundaries of the physical classroom. The author formed random teams during the first week of classes assuring the highest degree of heterogeneity by major. As soon as the class formed teams (three to four students each), the faculty member distributed the project document, which consisted of approximately 30 pages of project details: the scenario, description of various deliverables, assessment forms, and samples of previous work.

The overall objective of this course was to prepare business students for informed participation in information technology-related management decisions at all levels of an organization. At the end of the course, the faculty member expected the students to be able to do the following:

1. Explain the importance of information as an organizational resource, and discuss the issues associated with managing data and information within an organization.
2. Identify ways to use business information systems in their areas of responsibility for managing daily operation, planning and control, and for gaining competitive advantage.
3. Discuss the impact of business information systems on managers and organizations.
4. Model and implement system components
5. Collaborate to develop ideas and plans with others as well as provide and receive critical feedback.
6. Solve business problems using varieties of information technologies: Access, SharePoint, mobile technology, etc.
7. Learn information technology tools by experimenting with new tools.

Table 1 below shows the various summative assessments used in the course.

Table 1. Summative assessments used in the course

REQUIREMENTS	%
Semester-Long Assignment - Team Project -Written Report [12%] -Access Prototype [12%] -SharePoint Collaboration Site [6%] -Project Presentation [6%]	36%
Exams – Individual Midterm Adventure @12% & Final Team Adventure @ 18%	30%
Individual Engagement: Individual Tech Talk [2 %] 5 Class Activities, including discussions & social media contributions [6+%] Out of Class Activities: -6 MyITLab Access Simulations [4%] & 5 MyITLab Access Assessments [5%] -10 MyMISLab Quizzes out of 12 [12%] -Technology-less Life Assignment & Reflection [1%] -CIO Panel Attendance & Reflection [1%] -LinkedIn Workshop [1%] -Outside Speaker[s] Attendance & Reflection [1+%] -2 Project Status Reports[1%]	34%
TOTAL	100%

AAC&U High-Impact Practices

Below is the explanation of how the faculty member implemented in the course the three AAC&U High-Impact Practices: collaborative assignments and projects, learning community, and writing-intensive course.

Collaborative Assignments and Projects

The faculty member employed project-based learning (PjBL) in the course. PjBL is an instructional model that involves “the construction of knowledge with multiple perspectives, within a social activity, that allows for self-awareness of learning and knowing while being context dependent” [Tamim and Grant, 2013]. PjBL emerged as one of the most effective active learning instructional practices [Drake, 20120]. In PjBL, students confront real-world challenges, collaborate to create solutions, and present their results in a public setting. In PjBL courses, the project is at the core of the curriculum, involving an in-depth inquiry, and requiring revisions and reflections of the artifacts developed. PjBL typically entails weeks or months to complete the work and stresses student voice as well as instructor scaffolding in the course implementation. Below is a detailed description of the PjBL environment constructed.

- a) **Scenario and Artifacts-** throughout the entire course the instructor treated students as business analysts working for a company on a project requiring tackling real problems facing companies, and producing tangible outcomes: a written report, an Access prototype, a SharePoint collaboration site, and a project presentation. To set the tone for the remainder of the semester, professor asked students on the first day of class to complete a new hire form instead of the usual information sheet and she continually referred to students as analysts.
- b) **Interests and Passions** – The project called for teams of students to pick real companies for which they wanted to conduct their inquiry as business analysts, taking into consideration the team common interests and passions.
- c) **Different Perspectives** – To enable students to construct knowledge with multiple perspectives in mind, the instructor not only diversified teams by major, but assigned “readings” that represented different genres of resources: primary research articles, TED talks, video lectures, e-book, popular press articles, and websites.
- d) **Scaffolding**
 - i. *Teambuilding* – With the heterogeneous teams in place, students participated in a teambuilding workshop in class and then had to complete a team contract and team résumé for the following class period. The teambuilding workshop facilitated a conversation within the group about communication styles present within the group and how best to work with each. The team contract set the group rules for the semester. The team résumé was a fun way for students to find common ground.
 - ii. *Collaboration* – Each team received a SharePoint site with an assignment to build it out during the course, supporting team collaboration throughout the project. Twice during the semester, students submitted an individual status report, reporting on what was going well and what was not going well in the team or the project. Periodically, during the first five-minutes of class, teams reflected on the group process and self-evaluated using the peer evaluation form.
 - iii. *Timeline* – The syllabus contained a detailed project timeline with intermediate due dates and students needed to implement SharePoint calendar with alerts for all the due dates. The entire course revolved around the student project, integrating traditional IS curriculum into it.
 - iv. *Tinkering Workshops/Labs* - Business Reference Librarian constructed an online resource for the project, available at <http://libguides.tcu.edu/BusinessInformationSystems>, and conducted an in-class workshop to help students become effective online researchers. Various technology tinkering labs throughout the semester allowed the students to explore and be creative without incurring any grade penalties.

- v. *Formative Feedback* - Periodically, the instructor provided formative feedback via SharePoint on their weekly drafts, which allowed the students to better understand expectations and see how they can improve their work. Additionally, students received peer feedback at different points in the course. Toward the end of the semester, each team met out of class with the faculty for a thirty-minute consultation to go over their entire project, ask questions, and report status. The instructor required the students to receive formative feedback on the project's final written report from the university's writing center and on the project's presentation from the business school's professional development center that routinely provides student presentation coaching.
- e) **Summative Feedback** – Students received a set of clear expectations for each deliverable of the project. The professor provided detailed evaluation forms showing point allocations for each aspect of each deliverable. Additionally, faculty indicated that team peer evaluation would be used to adjust the grades at the end. Faculty used peer evaluations together with a project implementation review section of the written deliverable, which reported on each team member's contributions in the project, to adjust the final grades.

Learning Community/Connected Learning

Below is a depiction of the learning community/connected learning environment constructed in the course. The instructor intentionally made the course interdisciplinary, even though the course subject matter was within the Information Systems discipline, by including discipline-specific assignments involving a variety of twenty-first-century literacies- e.g., collaboration, critical consumption of information, and digital storytelling.

a) Learning Principles

- i. **Interest-Powered** – Not only did the teams pick a company for which they chose to “consult” based on their common interests and passions, but each student delivered an informal, five-minute Tech Talk at the beginning of class, based on their personal interest, connecting IS to current events and their major field of study.
- ii. **Peer-Supported** – For informal class communications, the instructor constructed a closed Facebook group, where students could instantaneously connect with classmates and faculty. Initially, the faculty asked students to upload their visual résumé to the platform for a digital icebreaker. The class then used the platform to upload Tech Talk PowerPoints, often resulting in continued conversations on the topic outside of class, as interest sparked or new developments occurred. The instructor also encouraged students to share project-related wisdom in class and encouraged students to teach each other.
- iii. **Academically Oriented** – All the work in the course incorporated content knowledge from a typical introductory information systems class.

b) Design Principles

- i. **Production Centered** – A good portion of the learning in the course, about 70%, was production focused: the project deliverables, midterm and final adventures, plus some of the student engagement deliverables, e.g., LinkedIn Profile, Tech Talk.
- ii. **Openly Networked** - To show relevance of the material studied in the course, the course was openly networked. Students attended a LinkedIn Workshop and then built their profile to connect with professionals, each other, and the faculty. Professionals spoke in class, but the course also expected students to attend a relevant speaker event outside of class through career services, AIS student organization, or they could suggest another relevant event. Through outside events, students made connection between classroom knowledge and relevant professional development opportunities.
- iii. **Share Purpose** – Through links to students' final adventures posted on a Business Information Systems Facebook page at

<https://www.facebook.com/INSC20263>, liked by students from around the world, course attendees could see the relevance of their work and their shared purpose with others.

The intention of the author was to design a course that promoted collaboration -- among individuals, teams and with professionals -- to make learning social and more rewarding.

Writing-Intensive Course

During the course of the semester, students constructed a 20-plus-page, 5000-plus-words long written report [see Appendix I]. The report consisted of 12 parts and each team completed a draft of a part during a different week of the course. Students received formative feedback on most individual drafts from the faculty or peers. Once the entire document was collated, before submitting the report for summative feedback, teams received formative feedback from the university writing center. Students had an opportunity to revise the entire document at least twice. The teams printed the project in color, spiral-bound it, and turned it in to *TurnItIn as well as* to the SharePoint collaboration site.

Flipped Classroom

Below is an account of the flipped classroom environment used in the course.

- a) **At Home:** For homework, students completed assignments involving e-book readings with quizzes (MyISLab), labs (MyITLab- simulations and assessments), research, attended speaker events, LinkedIn workshop, and did some of the project work.
- b) **In Class:** After an opening Tech Talk, students used class time for project management and to work in groups on weekly deliverables that assumed familiarity with the homework material. Speakers and tinkering workshops/labs changed the pace of the course occasionally.

The faculty was available outside of class to answer student questions via email, Facebook group, or Skype, creating more “class time” through social proximity.

21st Century Meta Skills Development in the Course

Below is an explanation of how the course fueled the development of twenty-first-century metacognitive skills:

- a) **Feeling:** The course provided opportunity to build **empathy** during Access prototype development, envisioning users’ perspectives, and during written report construction, through consideration of audience perspective. Students improved **social intelligence** through semester-long collaboration while overcoming typical group work challenges.
- b) **Seeing:** The course provided opportunity to improve **systems thinking** during prototype development. Students constructed an MS-Access application prototype for a process model they developed earlier in the course, and then they designed a mobile app for the company. Both of these prototypes required students to think about inputs, outputs, and processing that would be required. The MS-Access prototype explicitly required students to document in the written deliverable inputs, processing, and outputs for different decision scenarios (see Appendix I).
- c) **Dreaming:** The course gave students a chance to develop **creativity** during mobile app design in the cloud, presentation development, and written report design. The ultimate test of their creativity was the Final Adventure in lieu of the final exam, requiring students to reflect on their learning. Their final adventure project had to use a new technology platform, tell a story, and relate the story to course outcomes.
- d) **Making:** The students had opportunities to advance **design thinking** during i) the development of a basic process model of a transaction at their selected company, ii) during the building of an MS-Access application prototype for the process model, and iii) during their mobile app design.
- e) **Learning:** The course enabled students to **learn how to learn** by requiring them to use technology tools not taught in class: SharePoint for collaboration site development, Wix (wix.com) for mobile app development, and Gliffy (gliffy.com)/ Lucidchart

(Lucidchart.com) for process model development. Video resources and a short book were available for SharePoint, and in class tinkering labs helped learn other applications. Tech Talks required students to learn how to learn about current news from the online media, discerning between reliable, relevant and less reliable/relevant information.

III. EFFECTIVENESS OF THE APPROACH

Student Satisfaction

Students received the course with enthusiasm. While they were challenged with the amount of work required in the class, they all were surprised by the quality and caliber of their team deliverables, as well as the learning they took away from class. Figure 2 below shows student perceptions of teaching (SPOT) scores for the course, compared to the averages in the department, division, and school.

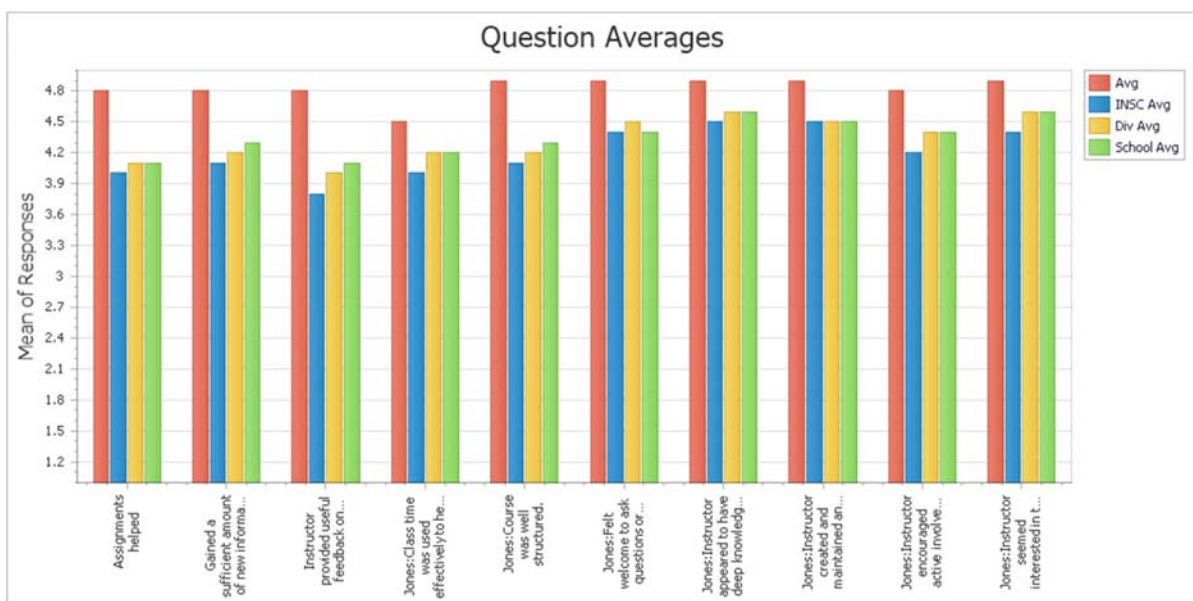


Figure 2. Student perceptions of teaching scores for the course, compared to the averages in the department, division and school – Fall 2014

Almost 100% of the students either agreed or strongly agreed with the statements provided on the anonymous SPOT survey. One student was neutral and one disagreed with the statement that the instructor used class time effectively to help them learn. Overall, faculty scores on the SPOT survey greatly exceeded the average scores earned by the department, division, and school. Quotes from students' anonymous comments section:

1. *By far the best class I've taken at XXX thus far!*
2. *Current setup is very conducive to learning.*
3. *The flipped classroom philosophy was interesting. It required a lot of the students, but it was manageable because the professor was easily accessible.*
4. *The class was very well structured so there was never any confusion on what needed to be done but at the same time there was lots of opportunities for us to make it what we wanted. I feel that I learned the most in this class as far as real-life applications.*
5. *Outside of class readings, quizzes, and assignments were great. I learned a lot about the subject.*
6. *Well-thought-out syllabus. Clear rubrics for every graded assignment. No confusion on due dates.*

7. *The big semester project was interesting; I gained a lot of soft skills in working in a group. The textbook/as well as the project forced me to learn the more technical aspects.*
8. *The consulting project was the bulk of the work, which was a bit intimidating but worked well. I learned a lot about team dynamics as well as information systems by integrating class lessons with the project.*

Achievement of Learning Outcomes

The average GPA in the course was 3.77, indicating high level of faculty satisfaction with the student performance in the course. A typical, traditional section of this course yields an average GPA of about 3.0. These results are consistent with the finding of Strobel and van Barneveld [2009], who reported that when implemented well, PjBL can increase long-term retention of material and replicable skill, as well as improve teachers' and students' attitudes towards learning.

While the course assignments intentionally provided opportunities to students to improve the relevant twenty-first-century skills, the faculty never assessed these skills explicitly pre- and post-course, to be able to state whether any actual gains could be observed.

Industry Relevance

The instructor sought input from two local consulting recruiters before initiating the project. Both consulting firms received the project with enthusiasm and provided minor feedback for improvement, which the faculty member incorporated into the assignment instructions. Some of the students interning with these consulting companies reported having received a similar type of a project as a part of their summer internship. Some students shared their results with the companies on which the projects focused and received positive feedbacks. In several instances, companies adopted parts of the student projects into their day-to-day operations. This feedback demonstrates that even introductory business core courses can make an impact in the business community.

IV. DISCUSSION

Defined simply, innovation is an introduction of something new with a goal of creating useful, positive results. The author presented in this paper a new approach to teaching a core information systems course, which created positive results. The approach is new because it incorporated a select set of best instructional frameworks in an original way. The approach described in this paper required integrated course design, taking into consideration course learning goals and then using high-impact practices to produce a set of teaching and learning activities. The faculty member carefully scaffolded learning activities and socially-networked them through technology to improve students' motivation to learn. The learning pathways created in the course resulted in replicable skills and high-level of stakeholder satisfaction. Based on the course feedback and assessments administered, the students achieved the learning outcomes in the course and had an improved classroom experience, as compared to traditional course offerings.

This course required commitment of more resources than a traditional course. The approach was time consuming for the instructor as well as the students. For the instructor, this approach to teaching requires a considerable amount of time upfront, designing and planning the various course elements, and during the course, providing formative feedback to the students. For the students, the approach requires time to prepare for each class, which may not be needed with the traditional lecture approach. While the approach might work well with one honors section of the course, it might not scale easily for a faculty carrying a full load of non-honors sections. Fall 2014 was the third time this instructor taught an honors section of this course and accomplished the

across-the-board favorable response. Previous implementations, while also received well, required further tweaking.

A faculty member interested in shifting a classroom often does not know where to begin. He or she might feel overwhelmed or discouraged to try a different course approach, especially if the current reward system at their institution does not take into consideration pedagogical innovation. Active learning is becoming popular in higher education. Using collaborative project-based learning, learning community, and writing-intensive courses, together with a flipped classroom approach might be a good place to start. It can yield not only expected course outcomes, but also development of relevant twenty-first-century skills and engaged, satisfied students.

V. SUMMARY

Effectively teaching in the twenty-first-century requires orchestrating a class that takes into account the changed profile of students, as well as the research on learning and motivation. Teaching today means more than selecting content areas, pedagogy, and technology. One approach to teaching effectively requires carefully designing scaffolded, integrative learning, socially-networked class experiences, which engage and challenge. By facilitating student learning, coaching toward professionalism, building boundary-crossing community, evaluating outcomes and redesigning as needed, we can produce better prepared graduates, and more motivated students.

In the future, it would be helpful to analyze two sections of the same course, where the instructor conducted one section with an approach discussed in this paper and the other section in a traditional manner. By comparing attitudinal and outcome variable, such as the five metacognitive skill gains of the students and gains in knowledge of information systems, we could draw better conclusions about the value of this approach.

ACKNOWLEDGEMENTS

The author developed the learning environment described in this paper based on a non-honors variant of the course. The non-honors version of the class, also developed by the author, with the feedback and contributions from TCU's Dr. Jane Mackay and Layne Bradley, uses some but not all instructional approaches and some but not all of the technologies.

REFERENCES

Editor's Note: The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the paper on the Web can gain direct access to these linked references. Readers are warned, however, that

1. these links existed as of the date of publication but are not guaranteed to be working thereafter.
2. the contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions referenced.
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Arum, R. (2011) *Academically Adrift: Limited Learning on College Campuses*. Chicago, IL:University of Chicago Press.

- Bergmann, J., and Sams, A. (2012) "How the Flipped Classroom Is Radically Transforming Learning" *The Daily Riff*. <http://www.thedailyriff.com/articles/how-the-flipped-classroom-is-radically-transforming-learning-536.php> (current August 10, 2015)
- Buche, M. (2013) "A Memory Game to Demonstrate the Power of Collaborative Efforts to Improve Team Performance", *Journal of Information Systems Education*, (24)3, pp. 167- 173.
- Connected Learning Framework (2015) <http://connectedlearning.tv/infographic> (current August 10, 2015)
- Drake, J. (2012) "A Critical Analysis of Active Learning and an Alternative Pedagogical Framework for Introductory Information Systems", *Journal of Information Technology Education: Innovations in Practice* (11), pp. 39-52.
- Educause (2012) "7 Things You Should Know About ...Flipped Classroom" <https://net.educause.edu/ir/library/pdf/eli7081.pdf> (current August 10, 2015)
- Kuh, G. (2008) "High –Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter", Association of American Colleges and Universities, http://www.aacu.org/sites/default/files/files/LEAP/HIP_tables.pdf (current August 10, 2015)
- Leap Resource ToolKit (2015) <http://leap.aacu.org/toolkit/high-impact-practices> (current August 10, 2015)
- Newmeier, M. (2013) *Meta Skills: The Five Skills for the Robotic Age*. San Francisco, CA: New Riders.
- Robinson, K.(2010) Changing Educational Paradigms, http://www.ted.com/talks/ken_robinson_changing_education_paradigms (current August 10, 2015)
- Seeley Brown, J. (2011) *A New Culture of Learning: Cultivating the Imagination for a World of Constant Change*. Charleston, SC: CreateSpace Independent Publishing Platform.
- Setser, B. and Morris. H. (2015) "Building a Culture of innovation in Higher Education: Design and Practice for Leaders" Educause. http://www.2revolutions.net/CultureofInnovation_HigherEd_4.15.15_FINAL.pdf (current August 10, 2015)
- Strobel, J., and van Barneveld, A. (2009) "When is PBL More Effective? A Meta-synthesis of Meta-analyses Comparing PBL to Conventional Classrooms", *Interdisciplinary Journal of Problem-Based Learning* (3)1, pp. 44-58. <http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1046andcontext=ijpbl> (current August 10, 2015)
- Tamim, S. and Grant, M. (2013) "Definitions and Uses: Case Study of Teachers Implementing Project-based Learning", *Interdisciplinary Journal of Problem-based Learning* (7)2, pp. 72-101 <http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1323andcontext=ijpbl> (current August 10, 2015)
- The Leap Challenge Brochure. Association of American Colleges and Universities, <http://www.aacu.org/sites/default/files/files/LEAP/LEAPChallengeBrochure.pdf> (current August 10, 2015)

APPENDIX I.

PROJECT SCENARIO: *Your New Career Assignment: Business Analyst*

For a little over five years, as a recent graduate of XXX YYY School of Business, you have been working for big corporations in the industry in the U.S. You have recently been hired by ____ to help deliver innovative solutions, transforming the company, helping find efficiencies utilizing Information Technology. As a part of your first assignment, you are tasked to complete an assessment project for _____. (NOTE: For this project your team will FIND an actual company to be the subject of your analysis). You will work as a part of an interdisciplinary **team of three to four students** completing the following:

Deliverables:

- 1) A written report with recommendations for your company regarding technology implementations, including a design of a mobile app. (100 points)
- 2) An MS-Access prototype of a transactional system for the company, based on your process model from the written report. (100 points)
- 3) An MS-SharePoint site showcasing effective collaboration on deliverables. (50 points)
- 4) A presentation of your recommendations, your MS-Access prototype, and your mobile app, delivered at your company's annual meeting. (50 points)

21st Century Skills Involved:

- 1) *Critical Thinking* – industry research, assessment of company mobile strategy, enterprise system and social media strategy recommendations, database design, process model.
- 2) *Creativity* – design of a mobile app for the company, using cloud-based platform.
- 3) *Collaboration* – collaborating on multiple deliverables over the course of the semester.
- 4) *Communications - Written* – written management report.
- 5) *Communication - Presentation* – formal in-class team presentations to your company's Board of Directors.
- 6) *Computer Technology* – collaboration & knowledge management- MS-SharePoint, database - MS-Access, mobile app development- cloud-based, word processing software - Word, presentation software- PowerPoint, Online Databases, process model design – gliffy.com or lucichart.com

Evaluation Criteria:

- 1) Professional evaluation of the project by the senior executive at your company – Dr. XYZ
- 2) Confidential Peer Evaluations. This form is strictly confidential and it must be completed in detail to receive a grade. **All group members may not receive the same grade, since the team grade will be adjusted based upon each individual's contribution.**

WRITTEN ANALYSIS PROJECT

Create a 20 +-page single-spaced management report of your recommendations that includes a one-page executive summary. Submit a hardcopy to the professor and post a soft copy in SharePoint site and in eCollege Dropbox.

- 1) Research *the company's* industry locally and globally, using most up-to-date available information and appropriate research databases. Report your findings and analyze where the industry is positioned from an industry life cycle perspective (e.g. growing, mature, declining) Include statistics on your industry to substantiate your claims.
 - a. Locally, in the U.S.
 - i. key performance indicators (revenues, growth, etc.)
 - ii. key competitors
 - iii. trends
 - iv. stage in industry life cycle
 - b. Globally
 - i. key performance indicators (revenues, growth, etc.)
 - ii. key competitors
 - iii. major markets
 - iv. trends
- 2) Analyze the industry using Porter's Five Forces Model.
- 3) Describe your selected company –
 - a. Background Information
 - i. Product/Service Description
 - ii. Mission Statement (one to two sentences)
 - iii. Location(s) in the U.S. and internationally
 - b. Current Strategy (cost leadership vs. differentiation; niche vs. broad market)
- 4) Develop a process model for a basic transaction at your selected company and suggest improvements to it, based on feedback you receive and your best assessment. Be sure to include a legend and a detailed paragraph description of the transaction process.
- 5) Design a database that would support the basic transaction in the proposed process model
 - a. Construct an E-R Diagram (include 6 entities, show all the attributes, primary keys and relationships). Be sure to have at least one date attribute, one website/email attribute and two numeric attributes.
 - b. Describe who will use the database information
 - c. Describe four tangible and intangible benefits of the actual system to the company.
 - d. Specify at least 8 different business decision making scenarios/questions that your company could use the help from a database to answer. Describe what data will be available (INPUT), what information must be generated from the data available (OUTPUT) and what calculations/manipulations must be performed (PROCESSING).
- 6) Describe appropriateness of using Business Intelligence (BI) Systems by your company by providing four examples of decision making support the BI systems could offer.
- 7) Propose an enterprise systems strategy for the company:
 - a. Type of enterprise solution(s) – Consider ERP vs. CRM - with justification for appropriateness of implementation of each
 - b. Find two vendor(s) for the recommended enterprise system, state their advantages and disadvantages and a recommendation for the system to select with a justification
 - c. Describe four challenges you anticipate when implementing your enterprise system within your selected company
- 8) Propose a social media strategy for your company
 - a. Determine how your company could be more effective in its social media strategy – suggest content and functionality improvements for the company's Facebook, Twitter, YouTube, and blogosphere/other

- Social Media presence after analyzing your company key competitor's social media sites.
- 9) Discuss appropriateness of using mobile apps by the company:
 - a. Usage appropriateness
 - B. Three ideas for mobile app usage
 - C. Best usage idea (from the three above)
 - D. Detailed functionality description for the idea above
 - E. Benefits of the mobile app
 - D. Mobile app design (with screenshots & url to e.g., wix.com)
 - 10) Propose an international location where your company could expand next and discuss challenges of this expansion for the information systems division. How should the information system be implemented in the new location?
 - a. Proposed location with a justification based on the industry and country research
 - b. Four challenges of international expansion for it
 - c. Four international is/it implementation recommendation to assure success
 - 11) Bibliography (at least 15 sources), using APA style
 - 12) Project Implementation Review – description of what each person did on each part of the project (half-a-page paragraph per person)

ABOUT THE AUTHOR

Dr. Beata Jones is a Professor of Professional Practice in Business Information Systems at the Neeley School of Business and an Honors Faculty Fellow at the John V. Roach Honors College, Texas Christian University. Her work in the classroom focuses on infusing innovative technologies and high-impact practices into curricula and immersive/transformational experiences.