

**Teaching an Online Accounting Information Systems Course:
Student Perceptions of SAP/ERP Active Learning**

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Introduction

Effectively teaching SAP/ERP systems in an online Accounting Information Systems class (AIS) can be especially challenging. Researchers note the importance of active learning, use of projects and hands-on activities, etc. can enhance students' understanding of how the SAP/ERP software works overall in a company. But will software simulations be enough or would students prefer to work in a live SAP environment and what other teaching aids would help make this learning experience more beneficial? This study asked students to give their perception on what would aid them to acquire a more effective understanding of the SAP/ERP process in online AIS classes.

Terms

Active Learning deals with students learning at a deeper level rather than just a surface-level of learning sometimes through the use of projects (Carter & Hogan, 2013; <http://www.education.com/definition/active-learning/>)

Blackboard Learn Collaboration is a tool that faculty can utilize to demonstrate software package/project illustrations, lead students through websites, use of whiteboard, etc. Essentially, the tool allows online students to be able to participate in/view projects that would normally be demonstrated in face-to-face courses or in a separate computer

lab. In essence, a virtual classroom is created at any point of the day or evening as Blackboard Learn Collaboration sessions can also be recorded

(<https://www.blackboard.com/platforms/collaborate/overview.aspx>).

SAP is a company founded in 1972 which provides SMEs – large businesses with Enterprise Resource Planning (ERP) software dealing with most areas of business management. (<http://www.saptraininghub.com/what-is-sap-definition-of-sap-erp-software>)

SAPGUI is the GUI client in SAP R/3's 3-tier architecture of database, application server and client. (<http://en.wikipedia.org/wiki/SAPgui>).

Enterprise Resource Planning (ERP) is an integrated information system that serves all departments within an enterprise. Evolving out of the manufacturing industry, ERP implies the use of packaged software rather than proprietary software written by or for one customer. ERP modules may be able to interface with an organization's own software with varying degrees of effort, and depending on the software, ERP modules may be alterable via the vendor's proprietary tools as well as proprietary or standard programming languages.

(http://www.pcmag.com/encyclopedia_term/0,1237,t=ERP&i=42727,00.asp)

Literature Review

Researchers indicate that online courses can be very effective for teaching many different courses (Kung 2002). Students choose to take online courses for different reasons including distance, time constraints, travel for work, and family responsibilities. Other motivators can include simple convenience as well as the quality of the instruction

and the material provided (Bressler, 2006; Bressler & Bressler, 2007; The changing, 1993; Kubala, 1998).

Students will often choose distance education courses because of the technology perks instead of the need for education and may enroll in distance learning courses (and particularly online accounting courses) for the wrong reason (Katz, 2002; Vamosi, Pierce & Slotkin, 2004). If the primary reason students enroll in online accounting courses would be for technological convenience rather than a more appropriate course delivery for their individual learning style, student success might be compromised or in the case of teaching SAP in Accounting courses, students could struggle and perhaps be unable to successfully complete projects requiring software usage (Haugen & Becker, 2005; Hogan, 1997; The changing, 1993; Bressler, 2006; Bressler & Bressler, 2007). Active learning techniques could aid Accounting students in all modes of course delivery, but especially in AIS courses (Carter & Hogan, 2013).

This paper presents findings of a research study on online students' perception of enhanced learning of SAP/ERP concepts in an online AIS course at the University of Houston-Downtown (UHD) campus. The faculty member teaching the online AIS course currently utilizes the Wiley Publishers' *Essentials of Business Processes and Information Systems* text by Magal & Word for which students log onto a WileyPLUS website to complete SAP Enterprise Resource Planning (ERP) simulations to learn key process and enterprise system concepts. Faculty members can set up quizzes/tests on the WileyPLUS site or they can create their own test material. However, students in prior semesters would ask the professor, "How does this help me in Accounting?" The researcher

looked to the literature to find an answer to this question and the literature noted many helpful teaching practices including active learning.

Carter and Hogan (2013) mention the importance of active learning and quoted Saunders and Christopher (2003) list of five objectives to encourage students in the activity learning process:

- “1. The student should be an active participant of the learning process
2. The student should be taught to identify and solve unstructured problems that require use of multiple information sources.
3. Learning by doing should be emphasized
4. Working in groups should be encouraged
5. The creative use of technology is essential.” (Edmond & Tiggeman, 2009)

In addition, researchers mentioned the importance of hands-on exercises, creating a training video, letting students learn from their mistakes, and the importance of faculty providing particularly good customer support. These activities can help in all classes, but can be particularly helpful for AIS students utilizing SAP software because students working in a live SAP environment can be frustrated by the ERP software’s rigidity and complexity (Becerra-Fernandez, Murphy, and Simon, 2000; Bradford, Vijayaraman, & Chandra, 2003; Davis & Comeau, 2004; Peslak, 2005; Rosemann & Watson, 2002; Winkleman, 2010). Fedorowicz, Gelinas, Usoff & Hachey (2004) noted that accounting and finance students especially may not be pleased with required hands-on IT assignments.

Student cases for SAP are readily available as the UHD is a member of the SAP University Alliance. (<http://scn.sap.com/community/uac>). But not all cases may be

suitable for all university students and this would be especially important to note when offering online courses in the accounting discipline (Katz, 2002; Kung 2002).

Research exists on successfully integrating simulated and live SAP projects into university classes and additional research can be found on integrating ERP systems across the curriculum (Davis & Comeau, 2004; Fedorowicz, Gelinas, Usoff & Hachey 2004; Leyh, 2012) but little research can be found on specific discipline-focused SAP projects and virtually none on students' perception of the value of SAP live projects when combined with a currently utilized simulated SAP software project in Accounting and specifically in an AIS course. Therefore, the researcher included a live SAP project as a pilot in the fall, 2012 semester AIS online course. The live SAP project was created from various resources available to SAP University Alliance members (<http://scn.sap.com/community/uac>) and the faculty member enhanced the project with additional screenshots, explanations, check figures, and other learning tools for student convenience.

Researchers indicated that student success can depend upon a student's computer software experience and because the literature noted the importance of increased interaction and the need for increased student/faculty interaction (Becerra-Fernandez, Murphy, and Simon, 2000; Bradford, Vijayaraman, & Chandra, 2003), the faculty member also initiated weekly Blackboard Learn Collaboration meetings. Blackboard Learn Collaboration software allows faculty members to upload documents, demonstrate software logon activity (such as logging into a live SAP software environment), and can demonstrate to a full class any webpage, software process, and other course activity (<https://www.blackboard.com/platforms/collaborate/overview.aspx>).

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Methodology

Fifty students enrolled in the faculty member's fall, 2012 AIS online class were sent questionnaires at the end of the pilot study semester asking their perception of the helpfulness of including a live SAP project included in the course. The completed questionnaires were collected after both SAP/ERP environment software projects were graded. Survey questions included demographic questions (Appendix B) as well as specific yes/no questions regarding student perceptions on the helpfulness of the live SAP project, whether the live SAP project enhanced student learning of the basic ERP environment learned in the simulated ERP software project and whether the students believe both projects were necessary for an understanding of SAP and in particular, completing accounting functions in a SAP environment (Appendix C). Also, students reported whether they preferred a full case study document or a summary instruction sheet or both for the live SAP project.

Students were asked to give general comments on the SAP/ERP-related questions including their use of the SAP GUI portal software (software that enables students entering the live SAP environment) installed in the university student computer labs and the online students were asked if they completed their SAP live project on university computers or if they downloaded the SAP GUI interface software on their own computers/laptops. Students were also asked what would help them to be more successful completing the live SAP project, and the usefulness of including both a SAP/ERP simulation as well as a live SAP project in their AIS class (Appendix A).

In order to validate the questionnaire, the survey tool was sent to an initial 20 students. In total, 36 questionnaires were returned and only questionnaires completed in entirety were used in the study. One questionnaire was returned incomplete leaving a total of thirty-five, or 70% usable questionnaires.

Results

The sample included 74% males and 26% females with approximately one half reported being married. Sixty-one percent indicated they lived in a metropolitan area, as University of Houston-Downtown is commuter school located in the downtown Houston, Texas area. Over 50% of students' age was between 25-30 years old with 26% being under twenty-five years of age.

Seventy-one percent of the students noted the Magal WileyPlus simulations helped give them an overall understanding of the SAP functions, however, these simulations did not appear to benefit the students when completing the SAP live Accounting project. In fact, only one student said “..SAP simulations helped me understand SAP's major functions and it made it easier to navigate once working on the live project.” Several students indicated that they wished the Magal WileyPlus text expanded its topics to financial management as well.

One student stated that he/she believed a face-to-face class would be a better place to complete both the SAP projects especially to show students how to download the SAP GUI software, how to log in, errors that might occur and how to fix them. Yet other students indicated that the instructions were easy to follow so no additional [or face-to-face] class would be necessary. Ninety-seven percent of students indicated that the SAP

live project was more appropriate for accounting majors than the Wiley plus Magal simulation project. However, a fair amount of students wrote in the comments that the hands-on exercises in the Wiley plus Magal simulation project were very helpful to understand SAP's major function but the live SAP project gave students the overall experience.

It was interesting to note that most students indicated they would prefer the use of a summary instruction document rather than a full instruction document posted for their use. However, several students stated they would prefer both and would initially read through the full instruction document and then when they actually completed the project, they utilized the summary instruction document.

Conclusion

The trend in higher education had been toward increasing distance learning course offerings to students and research notes that online courses can be a very effective teaching media. However, the students in this study chose to take AIS in an online format, but found that high-impact learning projects can be difficult unless the course includes techniques to help the student complete sometimes technologically challenging projects especially in the AIS class that includes SAP software projects and/or other computer-based assignments. Based upon the good feedback from the students, the instructor created a training video for the SAP live class including numerous screenshots, helpful hints, check figures, suggestions for error correction, and function by function explanation of how to complete accounting transactions and how to run the financial statements. In the next semester's class, over 85% of the students viewed the training

video and the instructor received excellent evaluations that mentioned the training video tool as well as the use of Blackboard Learn weekly Collaboration settings. Sometimes it just takes accounting faculty a small amount of imagination and use of existing computer software technology to give students the edge so they may be successful when learning sometimes difficult technological processes such as SAP/ERP systems in accounting courses.

Future research

It would be interesting to know how many other universities include SAP in their AIS courses and in particular when taught in an online format. Also, details on the SAP projects assigned and how the professor teaches a live SAP project and what the faculty member perceives as successful techniques when teaching accounting students to work in a live SAP environment.

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Appendix A – Student Comments

Students completing the questionnaire survey were asked to comment on several questions.

When asked what would make them more successful completing the AIS live SAP, students offered the following comments:

- 1) A [training] video would have been great.
- 2) A narrated video would be helpful, but the written instructions given were sufficient.
- 3) Visual instruction [as well as the narrative instructions] could relieve or remove unneeded stress. It would be better than the option of a F2F meeting because they could revisit the video as needed.
- 4) It would be helpful to have a narrated video....some people might have a hard time understanding the instructions and prefer a video of how to do it.
- 5) ...Yes! Narrative video...should be provided to avoid mistakes or confusion, even though most of the time we learn from our own mistakes

When asked if students utilized the SAP GUI installed in the university labs, students offered the following comments:

- 1) I did not utilize the lab. It is reassuring however to know we could easily access the software if we needed to. I downloaded to a notebook that was quite old..because the software is not MAC compatible.
- 2) I did all of my work at home. It was easier for me to do this at home rather than travel to school
- 3) The option [using the SAP software on campus] was nice, but I just used my fancy laptop. I did find that while at the UHD Northwest campus and using their guest WIFI, I was unable to log into SAP.

When asked if both a live project and an ERP simulation project like the Magal Wiley Plus SAP project would aid in learning SAP more effectively, students offered the following comments:

- 1) Both projects are needed to understand the overall functions of SAP...you cannot have one without the other.
- 2) This has been the best class in showing Accounting Students what the real world will be when they get out in the real world.
- 3) I do believe Accounting students could also benefit from understanding an ERP system, our future jobs will be expecting us to have this knowledge...a training video would help students to 'fill in the gap

Appendix A – Student Comments (continued)

Based upon initial feedback from several students in the Fall, 2012 semester class, the faculty member created an additional “summary” instruction document in order to help students focus on the necessary tasks for the project. Students were given both the full instruction document and the summary instructions and asked what format would the students prefer and students offered the following comments:

- 1) [I prefer] a document which provides the details of the case for me because it focuses on what I need to do for the case.
- 2) I like to have both the summary and detailed documents. The summary holds the main idea and the details that follow, help to organize and outline what I need to do in a certain order. It helped me to prioritize the many projects we had to do this semester in AIS.
- 3) I prefer to [have] a document that provided a detailed case for me. It would make it much easier to simulate the complete process and create less confusion.
- 4) I think both were helpful. I remember reading the instructions briefly at the beginning of the course, but when I finally sat down to start, I just needed summary instructions and I was able to complete the assigned project.
- 5) Detailed documents can be overwhelming, especially to people who do not yet grasp the big picture related to the assignment. Giving more specific focus through summary instruction can alleviate that feeling of being overloaded with information. That being said, a detailed document that further explains what is being done can be helpful.
- 6) I'd prefer a document provided with details because SAP LIVE is a totally new subject and program to a student. Once the student logs in the program, he/she will need [a] detailed explanation on how to get to a specific page or on what to do next.

Appendix B – Descriptive Tables

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	9	25.7	25.7	25.7
	Male	26	74.3	74.3	100.0
	Total	35	100.0	100.0	

Marital Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Married	18	51.4	51.4	51.4
	Married	17	48.6	48.6	100.0
	Total	35	100.0	100.0	

Resides in Rural Vs. Metropolitan Area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Metro	25	71.4	71.4	71.4
	Rural	10	28.6	28.6	100.0
	Total	35	100.0	100.0	

Age

Note: none > 60 years of age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 25	9	25.7	25.7	25.7
	25 – 30	18	51.4	51.4	77.1
	31 – 40	7	20.0	20.0	97.1
	51 - 60	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

Appendix B Descriptive Tables (Continued)

Employed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Employed	4	11.4	11.4	11.4
	FT in Accounting Field	6	17.1	17.1	28.6
	PT in Accounting Field	7	20.0	20.0	48.6
	FT in non-Accounting Field	7	20.0	20.0	68.6
	FT in non-Accounting Field	7	20.0	20.0	88.6
	PT in non-Accounting Field	4	11.4	11.4	100.0
	Total	35	100.0	100.0	

Online Classes Taken

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	2.9	2.9	2.9
	2	1	2.9	2.9	5.7
	3	12	34.3	34.3	40.0
	≥4	4	11.4	11.4	51.4
	First Time Taking Online Course	17	48.6	48.6	100.0
	Total	35	100.0	100.0	

Appendix C – Specific SAP Project Questions

Did You Find it Helpful Having the SAPGUI Software Installed in the UHD Labs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	25	71.4	71.4	71.4
	Yes	10	28.6	28.6	100.0
	Total	35	100.0	100.0	

Did the WileyPlus SAP Magal activity Help You Gain an Overall Understanding of SAP major Functions?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	10	28.6	28.6	28.6
	Yes	25	71.4	71.4	100.0
	Total	35	100.0	100.0	

Was the SAP Live Project More Appropriate for Accounting Students than the WileyPlus Magal sap Project Activity?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	1	2.9	2.9	2.9
	Yes	34	97.1	97.1	100.0
	Total	35	100.0	100.0	