

USING SAP ERP SOFTWARE IN ONLINE DISTANCE EDUCATION

John L. Wilson and Ed Lindoo
College for Professional Studies
Regis University
Denver, CO 80221-1099
920-869-3446
jwilson@regis.edu

ABSTRACT

This paper describes the design, delivery and outcomes at one university when using SAP enterprise resource planning (ERP) software in a management information systems (MIS) course. The course aims to provide students “hands on” experience using SAP software to enhance learning of how an ERP system could help a company streamline business processes, improve communication among departments, and facilitate sharing of information among global subsidiaries and corporate headquarters. Topics include the initial grant application, setup on SAP's University Competency Center (data center), instructors' education, preparation for students, administration during class, and learning outcomes. Successes and failures when incorporating ERP software in an online distance education class are discussed, as well as an alternative to using SAP's ERP software. Other universities and colleges considering, or having implemented, SAP's ERP software into their curricula may benefit from “lessons learned”.

INTRODUCTION

SAP is the world's largest and most well known vendor of ERP software. SAP created the University Alliances (UA) program to include their SAP R/3 software into university and college curricula. The UA program provides its members access to a full suite of SAP R/3 software, "hands on" application software exercises, data center support, training seminars and educational resource materials. SAP R/3 software appeared to be a great tool to assist teaching integrated process theory and concepts within the online MIS course.

At a U.S. university, School of Business faculty members realized their management information systems (MIS) course needed to be revamped in their online distance education MBA program. At the same time, business school faculty members became aware of an increasing global economy driving businesses to adopt enterprise resource planning (ERP) systems. They understood companies in their geographic area were requiring prospective employees to have a knowledge base of the various roles an ERP system could play in a company to increase communication and efficiency. With additional constructive feedback from students, business school faculty members encouraged revision of their online MIS course to include SAP ERP software, as many other business schools have done [1, 2, 3, 4, 6]. Recently, published guidelines for information systems curricula have also proposed an understanding of the theoretical and practical issues related to business process management and enterprise systems, with the inclusion of an ERP system [5].

SAP R/3 SOFTWARE & UA PROGRAM

To get start, the lead MIS faculty member completed the application for the School of Business to join SAP's University Alliances (UA) program. The UA program gives access to

SAP's R/3 full suite of ERP software and "hands on" application software training exercises – both hosted from university competency centers (UCCs). The School of Business petitioned SAP's UA program to become members. After acceptance and payment of membership fees (currently \$8,000 annually), the school arranged for lead MIS course instructors to receive SAP training. Three instructors received extensive introductory training on SAP R/3 software and an application software training exercise called "Fitter Snackers." Training programs and "hands on" business process-oriented exercises (like Fitter Snackers) are plentiful through the UA program. An annual UA Curriculum Congress distributes these materials to member universities. UA coordinators diligently work year-round to communicate materials to members through Websites, instructor-led seminars, etc. Faculty members from universities and colleges around the world attend the annual UA Curriculum Congress. Subsequently, seven MIS instructors, including the lead MIS faculty member, attended the annual event, creating a significant expense to the University.

The project team consisted of the three lead MIS instructors trained at the first UA Curriculum Congress, with the lead MIS faculty member as the overall project manager. Immediately after training, lead MIS faculty members anxiously started writing guidelines and procedures to incorporate SAP's R/3 system into the new MIS course. They included *Concepts in Enterprise Resource Planning (Third Edition)* by Monk and Wagner (2009) [8], a companion textbook to the "hands on" Fitter Snackers exercises. For the "hands on" exercises, students would perform them online after connecting with UA's UCC data center through a graphical user interface (GUI) on their PC and the Internet. The original author of the Fitter Snacker exercises [8] wrote step-by-step instructions for "how to" use SAP's R/3 software to execute business transactions. Using these instructions and screen snapshots, students would be expected to perform the business transactions on their own and take a final snapshot of their PC's screen to prove they successfully reached the end of an exercise.

Difficulties within curriculum design and development began almost immediately. When faculty members received instructions from the UCC's data center, procedure writing for online students became more difficult. The UCC provided a zip file containing the SAP front-end GUI. The zip file was large at over 600MB and, therefore, all students did not easily download it. In addition, ID's and passwords were distributed to the MIS instructors. The Help Desk at the School of Business was allowed to negate supporting the SAP GUI, administration of ID's, and involvement with the Fitter Snacker exercises. The Help Desk only agreed to reset passwords. MIS instructors were expected to solely manage their online classrooms, and support and solve any problems students encountered during GUI installation and while performing Fitter Snacker exercises.

The lead MIS faculty member used the "big bang" approach to implement the new online MIS course using SAP R/3 software. That is, only the MIS course using SAP R/3 software was offered to students, which meant any design flaws, instruction errors, and unanticipated events would be encountered by students in all classes (approximately 300 students in eight classes). When the first classes started, students began installing the 600MB GUI on their PCs and connecting through the Internet with SAP R/3 software running in the UCC's data center. This process, however, was most arduous as many unforeseen problems occurred. Not anticipated were all the different versions of computer hardware and systems software students use. The

GUI was certified to run on Windows XP Professional; however, many students had Windows Vista, XP Home edition, or Windows 98, as well as a variety of service packs. After discovering a great deal of unnecessary information within the installation file, the 600 MB zip file was reduced to 164 MB – one-fourth the original size. Instructions were reworked to make the installations more reliable on the large variety of Windows operating systems. However, some students were still unable to get Windows GUI to work and were given a different Java version of the GUI. Java apparently was a good fit as few issues were encountered. Again, the step-by-step exercise snapshots created from the Windows GUI appeared differently when running the Java GUI, creating frustration and confusion for Java users. Some students had Macintosh (MAC) computers. A MAC version of the GUI was provided for MAC users, as they could not access the Windows GUI. Although this worked for MAC users, the step-by-step instructions didn't always look the same as those used with the Windows GUI, which generated additional confusion and questions from students using MACs.

Considering these factors, four different versions of the GUI were loaded onto a central server within the University, and links to these were provided through the online classroom. Detailed installation instructions with screen snapshots were developed and provided for each GUI version. As mentioned earlier, “hands on” application software exercises were based on the fictitious Fitter Snackers Company, as described in the accompanying textbook by Monk and Wagner (2009). All the data for this company resided in an Oracle database at the UCC's datacenter in Milwaukee, Wisconsin. Students simply accessed the data via the SAP GUI client they installed on their PC.

While access through the Internet was quite consistent, the UCC computers were not always available, which hindered students' attempts to complete their exercises before assignment deadlines (Sunday night due date, for example). Because the UA did not provide an SAP help desk, help to instructors was limited making supporting students a challenge for instructors. Creation of an “SAP Help” link on the classroom's discussion board was found to be most fruitful. Students were told to use the link to post questions. Fellow students would assist via responses. This worked because many students experienced the same problems and were able to help other students.

As previously mentioned, the School of Business' Help Desk did agree to only reset student passwords. This proved quite valuable. Not only did students forget their own passwords, but also it seemed that some students would try logging into the wrong account and, after three failed attempts, they locked another student's password. For example, a student was assigned to login as FSUSER-22 but accidentally typed FSUSER-23. After three failed attempts, they locked out user FSUSER-23.

Probably the single biggest issue with the SAP program was the inability to keep students from contaminating another user's dataset. For example, FSUSER-22 could login as the appropriate student and then use dataset 23, in addition to any other dataset from 00 to 99. There was no apparent way to prevent this from happening. Even though we advised students of the issue and the inappropriateness of using someone else's dataset, it did continue. Of course, this corrupted another student's dataset, leading only to more student frustration.

Following the step-by-step instructions for exercises, often some 60+ pages long for one exercise; it was quite easy to miss a step, or even key in the wrong data. Once a step is missed, or wrong data entered, it's akin to closing the books at month end. Once closed, the average user cannot go back and make changes. Because the students knew what results they were supposed to achieve (as provided in the step-by-step instructions), when they couldn't get these results, they became quite frustrated, and their emails became quite demanding. Students were willing to do the work, and to do it over and over, if necessary, to get it right; however, datasets could not be reset. There really was no way to "fix" a mistake. Resetting datasets was a frequent request by frustrated students. One way we accommodated this was by giving the student an unused logon, if we had one available, which was not always the case. This led to additional administrative work – keeping track of logons that had been switched.

As a part of their grade was riding on their SAP application exercise scores, students' complaints became the norm and were directed to the lead MIS faculty member, the Help Desk and others in the administrative section of the School of Business. Some very frustrated students directly approached the Office of the Dean of the School of Business to complain about SAP R/3 software and exercises in the MIS online course.

AN ALTERNATIVE – SAP ERP SIMULATOR

As described above, the implementation of SAP R/3 software failed miserably, because there was no buy-in from anyone within the School of Business, except from the lead and MIS faculty members teaching the course. It also failed because SAP R/3 software requires a major install on each student's PC. With a multitude of operating systems, patch levels, etc.; it just was not feasible to expect students to do this without a lot of handholding. With no support from the School of Business' Help-Desk, the start of every subsequent semester was hectic. Something had to be done to rectify all the frustrations and very verbal complaints from students. As a result, the School of Business opted to move away from using SAP R/3 software and the UA Program. Instead, they decided to use an SAP simulator created by Simha R. Magal and Jeffrey Word [7] in partnership with SAP.

The first step in getting started was to contact WileyPLUS and obtain instructor access, so we could setup a simulator for the MIS course. Once we had access, setup was straightforward and very intuitive. After setting up the simulator for a course, you automatically have a URL that you provide to students, so they can gain access to the course. If students purchase a new Magal & Word book [7], they are provided with an access code. If they purchase a used book, however, they have to purchase an access code at the WileyPLUS Website, with a current cost of \$8.00.

Once a student has access, they self-register to class, which means there is no involvement by the instructor. Throughout the course, students complete pre-defined exercises assigned on a week-by-week basis. The WileyPLUS SAP Website has five process simulators and five quizzes – one for each simulator. The simulations are automatically graded as a percentage of completion. That is, if a student starts a simulator exercise and completes 75% of it, then 75 is their grade. Most students complete the simulator exercises and end up with 100 on each of five exercises. The quizzes on the other hand can be a bit challenging. Some only have four questions, so if a student misses two, they drop their score to 50% for that quiz. We

encouraged students to run a simulator exercise over and over, and to take detail notes about the exercise until they became very familiar and comfortable with the process flow. That way, they were better prepared to answer quiz questions.

The simulator is a Java-based program running in a browser. It is extremely easy to use. On every screen from the start of the simulator to the end, the simulator leads the student from field to field, and screen to screen. The simulator instructs the student on what to do, and even prompts with a red highlight on what fields or instruction set they need to click to work their way through the process flow. For an instructor and students, the simulator Website is quite straightforward. The instructor creates a new course for each semester by assigning five simulation exercises and five quizzes to specific weeks of the course. Students self-register on the Website, and then perform the assigned exercises – once with the simulator performing all the steps, and then three times on their own with the simulator guiding them through the processes. A quiz measures students' comprehension of process flow. A student's progress is recorded in their grade book. All of this grading information can easily be downloaded to an Excel spreadsheet to perform calculations for determining students' overall weighted grades for the simulations and quizzes.

CONCLUSION

This study describes how different implementations of SAP's ERP system were incorporated into a business school's MIS course. In reviewing the objectives for the course, we asked: "Is an objective to learn how to use SAP R/3 software and reach the correct results found at the end of step-by-step exercises (as is done with the SAP R/3 exercises), or is it to learn how an ERP system can improve processing and communication within an organization (as in the SAP simulation exercises)?" We found students, who used SAP R/3 software, primarily concentrated on obtaining the correct results at the end of the step-by-step exercises, with no focus on the learning of ERP processes. On the other hand, we found students who used the SAP simulator understood how communication and processing could successfully flow through a business organization.

One important lesson learned is that trying to implement SAP R/3 into a single course and/or with no support from school resources (especially the help desk) is a plan for failure. SAP R/3 is a complicated program and to obtain a thorough understanding of the system, students need a series of courses on it. On the other hand, the simulation software takes away the need for a student to know all the details about how to perform a process transaction. Instead, the simulator takes students through processing steps with a concentration on explaining how ERP systems allow processing to flow across organizational functions, insuring communications between involved departments, and allowing processing to be completed efficiently, timely and with fewer errors, as compared to manual processing. Using an SAP simulator allows students the opportunity to understand the process flows, and appreciate the benefits that occur, when using ERP systems in businesses.

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