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INFORMATION SYSTEMS EDUCATION JOURNAL

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Ideas Tried, Lessons Learned, and Improvements to Make: A Journey in Moving a Spreadsheet-Intensive Course Online

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Abstract

Using information systems to solve business problems is increasingly required of everyone in an organization, not just technical specialists. In the operations management class, spreadsheet usage has intensified with the focus on building decision models to solve operations management concerns such as forecasting, process capability, and inventory management. This paper presents an experience in moving the course to full online delivery. Of particular concern was maintaining the impact that the in-class workshop approach to spreadsheet activities and exams had when converted to the online setting. The LMS used by the university proved inadequate to handle a fully online spreadsheet intensive course such as this one, so new capabilities had to be found or developed. This proved to be non-trivial as it required designing custom solutions. This paper covers what was tried, how it worked, and ideas for improvements. Links to resources developed and used are provided in the appendices for others to improve upon.

Keywords: distance education, spreadsheet-intensive, decision making

1. INTRODUCTION

Instructors in business programs have long been concerned with developing students to be solid problem solvers who can make good decisions using appropriate technology and techniques. This is especially important in today's world where technology is evolving rapidly and the problems are more complex than ever.

Organizations are looking for individuals who can thrive in the complex, fast-paced environment and thousands of jobs are going unfilled, despite stubbornly high and persistent unemployment rates. According to the sixth annual Manpower Talent Shortage Survey (Manpower, 2011), employers are reporting increased difficulty in filling positions because of a lack of available talent possessing the right combination of skills and abilities. The top ten jobs included not only technical positions but sales representatives, managers, and even assistants and support staff. All of these positions are becoming more technical in nature.

Developing Solutions Designers

It is incumbent upon instructors to prepare students to be successful throughout their decades-long careers by helping them to become the originators and implementers of solutions and technology, and not merely the consumers of someone else's idea. Spreadsheet programs, such as Microsoft Excel©, are a nice match for business courses, particularly operations management (OM). The OM course includes many quantitative decision models that can be used as drivers for teaching good

decision modeling practices with wide-spread applicability. It should be noted that while Microsoft Office programs will often be mentioned in this paper, other platforms such as Google Docs or Open Office could be alternatives.

The operations management course is particularly important to business students because it is one of only three upper-division core courses taken by all majors in the college. Over the years, the course has evolved from a traditional lecture course with pencil and paper exams to the current structure where students must develop spreadsheet models from scratch. In a very real sense, the course has evolved from the lower-level learning concerns of remembering and understanding to higher order concerns of analyzing, evaluating, and creating (Anderson & Krathwohl, 2001).

Students are now challenged to be general solution architects by learning how to build spreadsheet decision models of traditional OM topics. This includes material covering forecasting, productivity analysis, statistical process control (SPC), process capability, location analysis and inventory modeling. Appendix A has detail on the course topics.

Anonymous Comments from In-Class Students
This course is where VALUE is added to students.
Very intrigued to learn the information in this course. One of the best courses I have ever taken!
Exams motivated me to think. It wasn't like the same boring lecture/text exam as I had in every other class.
I have never used Excel for so many functions in my life. Having this increased knowledge has made me more competitive, even in my current job position.
The learning experience was beyond excellent. I look forward to taking more classes with you!
This course is designed to make you learn real world applications and (instructor) makes sure of it.
Exams were applications of the material, not just book work.
This class will be useful in the real world.

Table 1. A sample of in-class student comments offered voluntarily and anonymously via Student Survey of Instruction from spring 2011.

Students build upon the basics they learned in computer applications (a prerequisite course) to understand the power of modeling the logic of a problem rather than simply calculating an answer for a given set of conditions. This is integrated with tips and techniques on how to build models efficiently by, for example, using the row and column structure for advantage; structuring spreadsheets for sensitivity analysis; anticipating future enhancements and scaling concerns; building models for use by others; following sound practice in developing formulas using absolute and relative referencing, among others. Students have really responded and OM is a well-reviewed course, as student feedback in Tables 1 and 3 reveal.

From Traditional to Online Delivery

As the course was being considered for full online delivery, concern centered on finding a way to deliver the same significant learning experience online that was accomplished via the in-person format. An online version had to maintain the rigor and value that the spreadsheet-based approach brought. This had to be true for all aspects of the course but especially for the spreadsheet exercises used as learning tools in the regular classroom and for the spreadsheet-based exams. The exams are particularly important to the course pedagogy and not something to be compromised.

Early in the development it became clear that the university's LMS was simply not capable of meeting the requirements for this spreadsheet intensive course migration. Learning management systems such as Blackboard, WebCT, or Moodle had many of the capabilities needed but nothing fully satisfied the desired requirements. This significant realization meant external capabilities and systems had to be found or developed to accomplish course goals.

Other instructors (e.g., Palocsay & Stevens, 2008; Heizer, Render, & Watson, 2009) had reported success in using web-based tools for quantitative business courses but even these publisher-based tools were not aligned with regards to how students are evaluated on exams, where student spreadsheet models are checked for not only correctness but for decision model structure choices too.

Given the limitations of the LMS used by the university, it was apparent that alternative methods and tools had to be developed to accomplish the online implementation. Furthermore, it was important to develop these course capabilities from commonly used business resources, as possible, to demonstrate to students that the program and instructors

valued learning how to create solutions just like they were being challenged to do. As a result, the Microsoft Office suite was chosen for several practical reasons. MS Office is a standard in the college, is familiar to students and instructors alike, and it is ubiquitous in business.

A development goal to do a 100 percent asynchronous online course of essentially equivalent accomplishment and value was set. As such, functional online equivalents for traditional course capabilities had to be found or developed in-house. This meant that all facets of the course (quizzes, lectures, spreadsheet-based exercise workshops, exams, and helping students via office hours and other assistive means) had to be considered for conversion to online. Some factors were easier to address than others and the remainder of this paper will detail what was tried, why, and what was learned for each concern. Of particular focus was the prospect of cheating on exams, so a discussion of academic honesty is next.

Addressing Academic Dishonesty Concerns

Academic dishonesty in college classes is not a trivial matter. Indeed, up to 80 percent of college students admit to some form of cheating (McCabe & Trevino, 1993) where business students have been shown to have a higher rate than other majors (McCabe, Butterfield, & Trevino, 2006). More recently, business students were characterized as "liberal" in their views of online cheating behaviors such as consulting with others during an exam, obtaining information from others, using more time than allowed, and using prior exams from others (King, Guyette & Piotrowski, 2009). The profile of an online cheater is similar to general cheating surveys, which include being male, young, and single (Lanier, 2006). While the rate of cheating online appears higher than in-class sections, the overall rate is lower than earlier studies have shown (Lanier, 2006).

For the OM course, the possibility of cheating on the asynchronous, online exams was an especially important concern. In the end, the realization became that almost all traditional take home exams, papers, or programing assignments share some level of this concern. In subjects where multiple sections are taught, some exam communication is going to exist even though the exam itself is given in-class and despite using different exam versions. With the regular exams and out-of-class assignments, steps are taken to minimize cheating risks so it was decided to try to implement equivalents for the online approaches developed. Furthermore, it is true that printed-out papers and exams generally leave less forensics evidence than electronic submissions do, so making students aware that this information exists for electronic submissions could act as a deterrent because they realize the instructor probably knows more about this than they do.

This follows advice from Whitley and Keith-Spiegel (2002) and Lanier (2006) who recommend trying to convince students that what they needed to learn in the course is important to their future success, that cheating involved significant risk and punishment, and that there were systems in place to identify it should they decide to try. While there would undoubtedly still be a few problem students, it was decided that the initial concern would focus on indicators of a systemic problem that might require more aggressive actions during improvement efforts.

2. ISSUES OF CONCERN

This section contains some of the issues of concern in bringing the face-to-face version of the OM course online. Some of these issues come from course specific concerns, while others result from LMS inadequacies. Each issue is introduced, ideas discussed, and resources that others might find useful are presented.

Presentation of Traditional OM Concepts and Lecture Material

While spreadsheet-based assignments and exams are the focus of the course, students are still required to learn traditional OM concepts and theories. A textbook is assigned but students get traditional lectures delivered via videos created with Adobe Captivate. Video production was not an issue because many videos had already been created previously. Multiple choice content quizzes, accounting for about one-fourth of the final grade, were implemented via the university-specified LMS.

Spreadsheet Exercise Dynamics

The spreadsheet exercises are completed dynamically in class using a workshop-type of structure in a computer classroom. Students have a scenario to employ or directions to follow while the instructor circulates through the room

helping, asking questions, and relating what is being implemented on the computer back to theory and the course lecture material.

For online students, spreadsheet solutions are revealed via Captivate videos. The videos are interactive and challenge students to work on the problem and not just observe passively. A link to a sample video demonstrating the approach is in Appendix B for interested readers.

Enforcing Exam Timing and Time Limits

For in-class students or via a course management system where simple exam structures like multiple choice or essays are used, it is easy to enforce when a student may take an exam and for how long. Since the university provided LMS could not handle the spreadsheet-based exams as needed, an exam submission process was developed for students to complete using Gmail. Gmail provided an external control system, independent of the university systems, for backup verification, and corroboration.

The process requires students to send an email to a specific Gmail account to indicate they desire to begin the exam, then the system replies enabling them to obtain their password to open the exam. Then, when the student is finished, s/he emails the exam file to the Gmail account validating exam completion. A sample of the email sent to students detailing the process steps and rationale is available from Appendix C while details on how to set up the Gmail system is shown in Appendix D.

The process appears intimidating at first, which is why a trial is required before students are allowed to take the first exam. Once they complete the trial, they find it is not burdensome; yet the formality of the process signals to students the seriousness of cheating as recommended by Whitley & Keith-Spiegel (2002).

Identity Validation

In an unproctored environment, there is the possibility that someone other than the student is completing the work or there is collusion amongst students. Since this issue is pertinent to nearly any out-of-class assignment, such as take-home exams or papers, strategies similar to these familiar assignment types were tried that focused on minimizing the incidence rate.

For example, exams required more than just getting the right values and these extra requirements would only be understood by someone who actually completed the spreadsheet exercises. A certain structure for sensitivity analysis might be required, for example, where that structure was demonstrated in the video. Or, the use of specific built-in Excel function like =sumproduct() or =vlookup() might be required as in the exercises. Other times, students must use advanced Excel capabilities such as the solver to optimize a value or to perform multiple regression. Then, they build and use the equation with references to the output table in the spreadsheet in a manner similar to what was done for them on video. While nothing outside of proctoring can totally eliminate this risk, these nuisances increase the cost of involving someone else.

To monitor for systemic problems, a comparison in performance between the proctored in-class students and the online students is investigated per King et al (2009). In addition, trends in exam performance by submission order are considered to see if systemic collusion, similar to what might happen when multiple sections of a course are held, could be identified. In any case, this issue continues to be a concern and is expanded upon in section four.

Tracking of Exam Completion Activities

In addition, concern existed that students might be tempted to simply copy work from their previously completed spreadsheets or from someone else's, so tracking features in Excel designed for shared workbooks were tried. This adds a different perspective into monitoring the completion process that holds promise for significant capability gains in the near future. A video demonstrating how to set this up in Excel is found from Appendix E.

Excel change tracking history was used as a means to gauge completion effort and time. A typical exam submission may have between 120-180 change actions listed. If someone copied work from elsewhere, the change history can indicate this. In addition, timestamp inconsistencies may point to cheating when used in conjunction with Gmail logs.

The tracking abilities are improved in Excel 2010 but still are limited. The real interest is in near-

term gains from the new cloud and increasingly collaborative focus of Microsoft Office products going forward. These abilities should improve significantly, especially if deployed via the SharePoint platform.

Submission Acknowledgement and File Handling

Many students completing the online exams are anxious to know immediately that their submission was received properly, so an automated reply system using server-side rules in Outlook and Exchange was developed. Along with a few basic client-side file-handling rules, instructor course management efforts are greatly streamlined freeing time and effort for higher value accomplishments. This was a pleasant surprise and an area that worked well. A video demonstration on how to accomplish this is found in Appendix F.

Evaluation Consistency and Efficiency

Rubrics were developed and used in all sections of OM. Grading for higher-level concerns on exams was more efficient than expected. Standard Outlook and Word capabilities more than sufficed for grading as rubrics were developed in Word and then copied to a reply email for communicating results. Dual screens or a single large one facilitates this workflow. Emails require HTML and some student email clients have this turned off. It can be switched back on, so a note was put at the top of the grading email to alert students that the formatting will only appear correct if HTML layout is used. In addition, exam results emails were batch sent to students using the delay delivery capability in Outlook.

Office Hours and Consultations

Office hours and consultations were conducted via Skype because of limitations in our university LMS. Audio and group video conferencing is possible in Skype and screen sharing is useful for troubleshooting spreadsheet design problems and reviewing exam performance. A Skype phone number has proven valuable as students can call from their cellphones and it automatically routes to a computer or forwards to phone numbers as desired. Subscriptions for premium Skype capabilities were required to achieve this functionality, which cost about $120 per year.

3. RESULTS

With the implementation plans in place, several issues relating to the success of the new online offering were monitored. First, performance differences between the online and in-class sections were examined as recommended by King et al (2009). In addition, trends in exam performance based upon submission order were tracked to look for systemic problems. Finally, it was hoped that students would be as satisfied with the value of the new online offering as they were for the traditional section as measured on student evaluations of instruction. Details on how these concerns were investigated and the results are discussed next.

Online vs. In-Class Performance

	In-class	Online
	Exam One	
Mean	77.1	80.4
Variance	210.9	150.6
Observations	34	37
p-value (two-tailed)	0.297	
	Exam Two	
Mean	84.2	83.5
Variance	117.2	247.0
Observations	34	37
p-value (two-tailed)	0.829	
	Exam Three	
Mean	87.3	88.3
Variance	51.6	139.4
Observations	34	37
p-value (two-tailed)	0.663	
	Exam Four	
Mean	82.8	79.8
Variance	167.4	299.5
Observations	34	37
p-value (two-tailed)	0.338	

Table 2. A comparison of exam performance between online and in-class sections.

To investigate differences in the online and in-class sections, two-tailed t-tests assuming unequal variances were performed. The null hypothesis is no difference in exam performance exists between the groups versus the alternative that there is a difference in student performance. The results for all four exams for

students during the spring 2011 semester are summarized in Table 2.

Table 2 indicates no patterns in performance of concern. Additionally, there are no statistically significant differences between the online students and the in-class students on exam performance in any of the four exams. This is a reassuring result given that different modes of instruction were used for the Excel activities in class, where online students watched the prepared videos and in-class students worked on computers in the classroom in a workshop format.

Systemic Problems

While the results in Table 2 are encouraging, given the possibility of systemic cheating that could occur because of the asynchronous nature of completing exams online, systematic patterns of performance improvement were investigated by looking at exam scores versus submission order.

In class, student files are personally collected by the instructor at essentially the same time. In addition, students complete exams with the instructor directly monitoring their activities as they complete them. Online, though, students have a window of time, usually three to four days that include a weekend to complete the exams without direct supervision.

And even though many precautions were taken and approaches developed to mitigate the likelihood of cheating, it was important to know, at the very least, if these ideas were obviously *not* being successful. Of particular concern was that the exam scores for online students might trend upwards based upon the ordering of their submission because there was organized sharing of information from the earlier students to those who waited to take the exam later.

Regression trend analyses on exam scores using submission order as the predictor variable for all four exams is illustrated in Figure 1. The visual information in Figure 1 does not indicate systematic patterns. The regression analysis mostly finds insignificant relationship except perhaps a negative one on the first exam. While the initial evidence is encouraging, it is recognized that this issue must still be improved. Increased investigation of these issues may find they lend themselves to standard computer forensics approaches instead of customized development as discussed in section four.

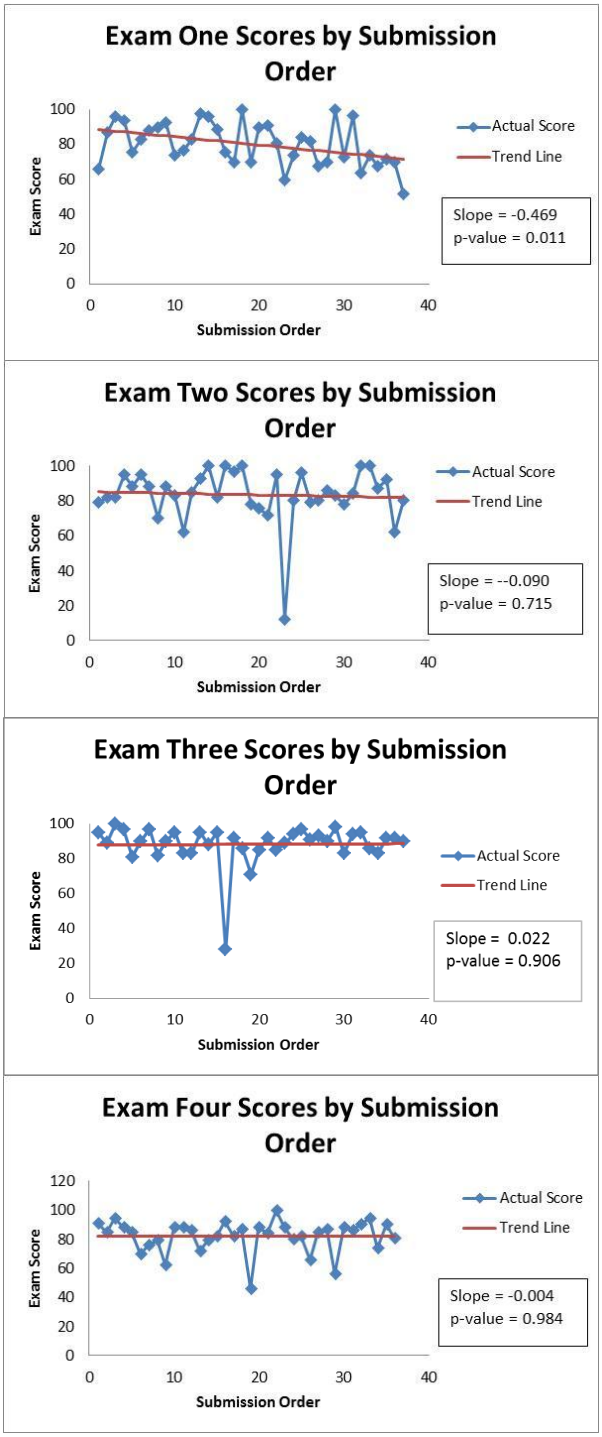

Figure 1. Trend analysis of exam score by submission order.

Student Survey of Instruction

Another important aspect of performance was student survey of instruction (SSI) results. Table 3 contains SSI results from spring 2011 in-class and online sections. Our university SSI instrument has 20 items and written comment sections. Table 3 presents six of the most pertinent questions on the survey, though the remainder of questions are similar in results. It is reassuring to see online respondents appear satisfied with the value proposition of the course and structure.

Student Survey of Instruction Statements	In-Class	Online
I learned valuable information/skills from this course	4.56	4.82
	p-value =0.632	
The structure/ organization of the course helped me learn.	4.53	4.82
	p-value =0.840	
The course materials/activities helped me learn.	4.50	4.73
	p-value =0.683	
The assignments and tests allowed me to demonstrate what I learned.	4.37	4.73
	p-value =0.589	
The instructor motivated me to think about the subject.	4.72	4.91
	p-value =0.654	
Overall, how would you rate your learning experience?	4.47	4.82
	p-value =0.534	

Table 3. Student survey of instruction (SSI) results. Scale runs from 1 (strongly disagree/poor) to 5 (strongly agree/excellent).

Online students rated the course highly on an absolute scale and in comparison to in-class students. From a statistical perspective, there is no significant difference between the evaluations of online and in-class students. It was far from clear that this kind of result could be accomplished using online videos and exams but it appears to be appreciated and endorsed by students.

Our university has an issue with feedback rates for online sections versus in-class sections, so these results should be continuously monitored and validated. Fortunately, feedback received from alumni and former OM students is overwhelmingly supportive of the approach and direction of the course, and indeed the entire business program, as other courses are being coordinated with this one for enhanced impact.

4. ISSUES FOR THE FUTURE

The online implementation of the course appears to have gone well with positive results and without unpleasant surprises or effects. It was also reassuring to see that the data does not indicate systemic academic dishonesty present, but improvement efforts on course integrity should always be a concern if not a priority. The ideas discussed below will focus on this issue but will include others as well, such as improved support services, and efficiency in the recording and producing videos.

Improved Audit Design and Forensics Data

Randomized and targeted auditing of student work is another level of security that could be added with relatively little overhead. A few students for each exam could be selected to review their work with the instructor where questions are posed to verify student understanding and performance. Skype seems well-suited for carrying out this process. Students must have a picture ID to verify their identity and the sessions can be recorded for documentation and review purposes.

In addition, increased forensics data could be collected and analyzed. IP addresses, browser characteristics, etc. could be merged into a course profile and analyzed via data mining or other approaches to look for relationships that might signal collusion.

Students will be notified of these policies in the syllabus when implemented.

Randomized Passwords, Problem Values and Structures

Collusion and other dishonesty concerns could be reduced through the use of randomized exam values. Randomized homework values have demonstrated a positive impact on OM student learning (Berardi, 2011) and it seems appropriate for the online sections. The tools developed for randomized homework values can be applied to spreadsheet-based exams and assignments. Indeed, several problem structures and examples could be created for each exam with randomization of values and passwords too. This could be implemented within an Excel file

but should be enhanced when paired with a collaborative platform like SharePoint.

Improved File Access Control

Excel workbook files have additional access controls that were not used for initial online implementation. Controls are available for when a file may be opened, how many times, and by whom. Microsoft Information Rights Management is a basic option that is free but does require Windows Live IDs. Students can use their university email addresses for Windows Live, so one benefit is instructors can use roster lists to setup access permissions. Office SharePoint services should enhance these abilities. In addition, a commercial product, LockXLS (www.lockxls.com) is another option being experimented with that shows promise.

Improved Identity Validation

Proctored exams are the gold-standard for identity validation. Outside of this, risk will always exist but currently the focus is still on working to minimize it and to identify it when it happens. Requiring proctored exams, though, is always a possibility and may be employed as a control group in a semester soon (Wellman & Marcinkiewicz, 2004).

Office Hours and Support Services

Office hours and support services through LMS offerings or via independent platforms like Skype are possible. At this point it is planned to continue with Skype, where the integration with Office programs should become deep given Skype's acquisition by Microsoft. The university specified LMS will still be used and it is hoped that the ability to develop mashup modules between the two systems is possible. Also, video conference meetings with students are being considered early in the semester in order to build more rapport and connection.

Alternative Video Content Development Platform

Video recording and production have been significant components in this initial implementation. Adobe Captivate, now available as part of the Adobe Learning Suite, is powerful with commensurate complexity and learning curve. It is excellent for spreadsheet demonstrations but competing products such as TechSmith Studio should work well too. In addition, lecture capture software (e.g., Tegrity, Panopto, Relay) should be considered for the more dynamic, changing material, such as the spreadsheet workshops.

5. CONCLUSION

The migration of a spreadsheet-intensive OM course to fully online appears to have gone well based upon student survey of instruction feedback and performance data. To accomplish this, many issues related to this migration were identified, planned for, resources developed, and then implemented. Because no LMS available met the requirements of the course, many capabilities had to be developed. Tools and techniques that have proven useful are presented in the appendices for interested instructors. Finally, several issues for the future have been identified so improvements can be realized.

6. REFERENCES

Anderson, L.W., & Krathwohl, D.R. (eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of educational objectives*, New York: Longman.

Berardi, V.L. (2011). The Impact of Using Randomized Homework Values on Student Learning. *Journal of Effective Teaching (JET),* forthcoming.

Heizer, J., Render, B., & Watson, K. (2009). Web-based instruction improves teaching. *Decision Line*, January, 2009, 4-6.

King, C.G., Guyette, R.W., & Piotrowski, C. (2009). Online Exams and Cheating: An Empirical Analysis of Business Students' Views. *The Journal of Educators Online*, 6(1), 1 – 11.

Lanier, M.M. (2006). Academic Integrity and Distance Learning. *Journal of Criminal Justice Education*, 17(2), 244-261.

Manpower Group, Inc. (2011). *2011 Talent Shortage Survey Results*. May, 2011. Retrieved July 21, 2011 from www.manpower.com.

McCabe, D.L., Butterfield, K.D., & Trevino, L.K. (2006). Academic dishonesty in graduate business programs: prevalence, causes, and

proposed action. *Academy of Management Learning and Education*, 5(3), 294 – 305.

McCabe, D.L. & Trevino, L.K. (1993). Academic dishonesty: Honor codes and other contextual influences. *Journal of Higher Education*, 64, 522 – 538.

Palocsay, S.W. & Stevens, S.P. (2008). A study of the effectiveness of web-based homework in teaching undergraduate business students. *Decision Sciences Journal of Innovative Education*, 6(2), 213-232.

Wellman, G.S. & Marcinkiewicz (2004). Online Learning and Time-On-Task: Impact of Proctored vs. Un-Proctored Testing. JALN, 8(4), 93 – 104.

Whitley, B.E. & Keith-Spiegel, P. (2002). Academic dishonesty: an educator's guide. Mahwah, NJ: Lawrence Erlbaum.

Appendix A

Course Outline

Section One--Foundations
- Ch. 1: Operations and Productivity (spreadsheet intensive)
- Ch. 2: Operations Strategy in a Global Environment
- Ch. 8: Location Strategies (spreadsheet intensive)

Section Two—Initiating and Designing
- Ch. 4: Forecasting (spreadsheet intensive)
- Ch. 5: Design of Goods and Services
- Ch. 7: Process Strategy
- Ch. 11: Supply Chain Management

Section Three—Measuring and Improving
- Ch. 6: Managing Quality
- Ch. 6s: Statistical Process Control (spreadsheet intensive)
- Ch. 16: Just-in-Time and Lean Production Systems

Section Four—Managing and Coordinating
- Ch. 12: Inventory Management (spreadsheet intensive)
- Ch. 13: Aggregate Planning
- Ch. 14: Material Requirements Planning (MRP) and ERP
- Ch. 03: Project Management (computer intensive)

Appendix B

Example Video Showing Spreadsheet Exercises

Appendix B contains is a sample video of one part of a spreadsheet exercise for online students. This video is intended to show the primary means upon which students complete the course online in a manner that mimics the workshop approach to spreadsheet implementations in-class. The file is approximately 45mb and has a password…mis34060 The link to the video is found at

https://docs.google.com/leaf?id=0BwVdy8xGa6AcNWFkZmUxM2YtNWE2OS00ZDRhLTllMTUtMGM5YzYwN2Y5ZDA3&hl=en_US

Appendix C

Exam Submission Process Trial

Appendix C contains a sample email sent to students concerning the online exam process trial that students must complete before being allowed to take the first exam. This novel exam submission process was developed because the LMS used at the university was not capable of meeting course exam needs. The process description is intended to explain the process and to set the tone concerning academic dishonesty as recommended by (Whitley and Keith-Spiegel, 2002). The link to the exam process trial email to students is found at

https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0BwVdy8xGa6AcNjRlMmU3MGEtNzI3ZC00ZTI5LThhMGItYTg2MWI4YWRhYjYx&hl=en_US

Appendix D

Using Gmail to Manage Exam Administration

Appendix D addresses the use of Gmail to manage exam administration including timing of exam completion and password distribution. This external system was developed because the LMS used at the university was not capable of meeting exam administration needs. Gmail provides robust, external backups and infrastructure at the right price. All emails are automatically forwarded directly to the instructor's university account providing a seamless connection. The file is approximately 10mb. The link to the video is found at

https://docs.google.com/leaf?id=0BwVdy8xGa6AcOWFjZWYyNzgtMjVhOC00YTY2LTgzM2EtYWY1N2QyNmRjYTk1&hl=en_US

Appendix E

Configuring Spreadsheet Tracking

Appendix E contains is a video demonstration of how to configure spreadsheet tracking in Excel and why you would want to do so. Excel tracking capabilities allow visibility into how the exam file was completed so signs of academic dishonesty, such as copying and pasting from another worksheet might be detected. The file is approximately 12mb. The link to the video is found at

https://docs.google.com/leaf?id=0BwVdy8xGa6AcM2E4N2IwNjAtYTIzNi00ZjRjLTllMGMtYzU5NDAwNmJlOGQ4&hl=en_US

Appendix F

Using Rules in Outlook for Submission Acknowledgement and Handling

Appendix F contains is a video demonstration of how to configure rules in Outlook to accomplish submission acknowledgement and file handling. Students are typically anxious to know that their submission has been received and this system does so automatically. Both client-side and server-side rules, which work with the Exchange email server even when the instructor's email client is not activated allowing acknowledgment at any time, are presented. The file is approximately 10mb. The link to the video is found at

https://docs.google.com/leaf?id=0BwVdy8xGa6AcMmJlZWExOWUtZDJiMy00Y2MzLTk5YjktMjAwZTAwYjA5NGI3&hl=en_US