INFORMATION SYSTEMS EDUCATION JOURNAL

Volume 17, No. 6
December 2019
ISSN: 1545-679X

In this issue:

iscap
Information Systems & Computing Academic Professionals

The **Information Systems Education Journal** (ISEDJ) is a double-blind peer-reviewed academic journal published by **ISCAP** (Information Systems and Computing Academic Professionals). Publishing frequency is six times per year. The first year of publication was 2003.

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Certifying Business Students in Microsoft Office Specialist Certification Excel Core Exam: Lessons Learned

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Abstract

Data analytical skills are essential to compete in today's competitive economy. The ability to understand, use, codify, and manipulate data to make business decisions is an essential factor of information competence. One way to ensure that students are well-prepared in terms of their technological literacy is through the use of certifications in course offerings. This paper details the process of providing the Microsoft Office Specialist Excel Core Certification Exam to students in our Computer Information Systems program. We discuss how we integrated the certificate program into our curriculum, the necessary pedagogical changes, and technologies used. We also review our successes, pitfalls, and results.

Keywords: Certification, Microsoft Excel, Analytical Skills, Pedagogy, GMetrix SMS

1. INTRODUCTION

Technological literacy is essential to compete in today's economy. The ability to understand, use, and manipulate data to make decisions is an essential factor of information competence (Mandinach & Gummer, 2013). One way to ensure that students are well-prepared in terms of their technological literacy is the implementation of certifications into course offerings. These types of technology skill-based courses are well-established at business schools across the nation. Additionally, certificate programs are becoming more popular in Computer Information Systems (CIS) curricula. Furthermore, the Association to Advance Collegiate Schools of Business (AACSB) has stated that technology in business curricula is a near necessity and graduates need to have the ability to "leverage technology in a scalable fashion to advance firms' strategies and operations" (AACSB, 2002, p. 11). Research has shown that business students benefit from earning IT-based skill certifications (Gomillion, 2017). AACSB has also indicated a shift towards relevant skills such as Microsoft Excel in hiring of business school graduates (Gomillion, 2017). Several research papers note that advanced analytical skills, Excel, in particular (such as those taught by MyEducator (MyEducator, 2018) and certificate programs) result in increased marketability and increased compensation for

graduates (Formby, Medlin, & Ellington, 2017). General knowledge of Excel that students may obtain outside of the classroom is no longer sufficient. Over 80% of business students claim their goal is to get a good paying job, and many businesses are requiring advanced Microsoft Excel skills (Formby et al., 2017).

Our college is a regional, AACSB accredited business school. To prepare students for successful careers with skills relevant to marketability and employability, we began offering the Microsoft Office Specialist (MOS) Excel Core Certification Exam during the Fall 2017 semester. The certificate was offered across two courses and three sections each semester during the 2017-2018 academic year as a pilot program. The goal of the pilot was to learn what it takes to implement the MOS certification smoothly regarding curricula, technology requirements, and cost with a longer-term goal to require all College of Business students to get certified.

MOS includes three levels of certification: Specialist, Expert, and Master. We chose to use the Specialist certification based on the needs of our students and to ensure that the students have the core skills with Microsoft Excel. The MOS certification measures and validates Excel core skills in five topics: (a) create and manage worksheets and workbooks; (b) manage data cells and ranges; (c) create tables; (d) perform operations with formulas and functions; and (e) create charts and objects. We decided to implement the certification program for three reasons: (a) provide students with industry-recognized certification, (b) improve students' current and future employment options, and (c) provide a competitive advantage to our college and department.

The purpose of this paper is to detail the process of providing the MOS Excel certificate to students in our Computer Information Systems program. We discuss how we integrated the certificate program into our curriculum, the necessary pedagogical changes made, and technologies used. We also review our successes, pitfalls, and results.

2. BACKGROUND

According to Randall and Zirkle (2005), entry-level certification is a "vehicle to provide students with viable skills needed by the workforce" (p. 287). Certifications are also confirmation of adequate knowledge and skills (Cantor, 2002) and provide students with credentials that are recognized by business and industry (Association of Career and Technical Education, 2015). Certifications have a significant effect on the employability of employees (Certiport, 2015; Chilton, Hardgrave, & Armstrong, 2010; Dubie, 2010; Hunsinger & Smith, 2009; Quan & Cha, 2010). These certifications also prepare students to compete in competitive job markets and showcase their marketability while they are still in school. According the Certiport (a Pearson VUE business to administer the certifications), the national average pass rate for the Microsoft Office Specialist Excel certificate is 63% on the first attempt (Tastle, Mead, Rebman, Marks, & Phillips, 2017). Based on the Pearson VUE Value of IT Certification survey (2016), findings showed employees benefitted from acquiring a certification. For example, 65% of the employees indicated a positive impact on their professional image, 20% received a salary increase, 19% found a job, and 14% received a promotion. The certificate sends a positive signal to potential employers (Gomillion, 2017). Research shows that 67% of all middle-skill job openings require at a minimum proficiency in productivity software such as Microsoft Excel and pay 13% more than those that don't (Burning Glass Technologies, 2015). However, a recent report conducted by the Manpower Group (2016-2017) revealed that 40% of the employees had difficulty filling these middle-skill jobs. Lastly another research paper (Formby et al., 2017) quotes Andrew Soergel (2015) as stating that "Jobs requiring advanced analytical tools skills offer the strongest opportunity for middle-skill job seekers in terms of salary and growth as well as career advancement. Effectively, entire segments of the U.S. economy are off-limits to people who don't have basic analytical skills."

Several higher education institutions have found success in the implementing Microsoft Office Specialist (MOS) certification program into their curriculum. The higher education success story case studies conducted by Certiport (2017) revealed highly positive outcomes. For example, the implementation of MOS Excel and PowerPoint at the Daniels College of Business at the University of Denver improved student performance, enriched recruiting power, improved student placement, and expanded the program. Incorporating the certification program allowed Richland College's School of Engineering, Business, and Technology program to provide students with recognized workforce credentials as well as establish and grow their program. The benefits of MOS at Tulane University's Freeman School of Business included improved student performance and enhanced institutional reputation and recruiting power.

3. IMPLEMENTATION

We began the certificate program in the Fall 2017 semester. The initial launch of the certification program required significant ground work: buying the campus licenses for GMetrix (GMetrix Skills Management System, 2018) and Console 8, the Certiport exam delivery software, working with the Information Technology (IT) office to install the required software, filling out paperwork for accessibility, reserving labs, training instructors and proctors, and modifying course content. Since our school was already a Certiport Authorized Testing Center, we were ready to offer the certification exam on campus. We piloted the certification in two different courses in the CIS department–Introduction to Information Systems and Management of Information Systems (MIS). This was to help determine which course would be the best long-term fit for the MOS certificate. We also chose these courses because both already included Microsoft Excel content. The Introduction to Information Science course is part of the university core and open to all students without prerequisites. Many of the students were underclassmen and had either no or limited Excel experience. The MIS course, on the other hand, is required for all business students and is mostly upperclassmen. Even though we did not survey students' Microsoft Excel skills, our experiences showed that students in the MIS courses usually have a wider variety of Microsoft Excel and general computer skills. Students take the MIS course later in their program and after completing a pre-requisite course in statistics where they are introduced to Microsoft Excel basics. The content of both courses was heavily modified to accommodate the certificate curriculum.

We used GMetrix SMS (GMetrix Skills Management System, 2018), a web-based system, to prepare students for the exam in addition to the instructor prepared materials. The GMetrix practice tests are performance-based and provide a simulation of the actual exams. As students practice their skills on these tests, they build confidence, enhance their learning, and become familiar with the testing environment prior to the actual exams. GMetrix practice tests offer both testing and training modes. The testing mode provides timed practice tests that simulate actual tests, while the training mode provides self-paced learning experiences that provide students with feedback and step-by-step instructions for each skill. The questions are the same for both modes. GMetrix contains six Microsoft Excel exam modules. Students were required to complete four modules with a score of 95% or better on each module in testing mode. Students received a detailed rubric upon completion which highlighted the skills requiring additional review. Students had only one attempt to take the certification exam. The MOS Certification Excel Core exam is 50 minutes. Students need a score of 700 out of 1000 to pass. In the introductory course, the GMetrix assignments and the certification exam counted for 25% percent of the final grade, in the MIS course, it was 10% for the assignments and 20% for the certificate exam.

Roughly the same amount of in-class time was spent on each topic, but students were able to spend more time on specific topics most challenging to them, if they chose to. Some students completed a GMetrix assignment just once, while other students practiced several times. This capability of GMetrix was helpful in handling the wide variety of student knowledge and skills with Microsoft Excel.

While Certiport's Console 8 software is required to administer the MOS exam, GMetrix is one of several options available to prepare for the exam. Other universities have used options such as Pearson MyITLab, Lynda.com, textbooks, or in-class instructions (Tastle, Mead, Rebman, Marks, & Phillips, 2017). We chose GMetrix after careful consideration. GMetrix closely mirrors the MOS exam format and curricular needs. GMetrix also allowed the instructors to create training materials specific to student needs.

Description of Introduction to Information Science Course

Our Introduction to Information Science course is an introductory three-credit hour course (1 hour and 15 minutes twice a week) that teaches Microsoft productivity tools, digital literacy, basic computer operations, and coding to enhance students' ability to retrieve, synthesize, evaluate, and communicate information. The Microsoft Word, Excel, and PowerPoint portion of the curriculum provides critical instruction to develop technological skills to assist students in communicating, evaluating, and presenting information throughout their academic and professional lives. Although the previous curriculum tested students' mastery of the Microsoft Office productivity tools, it did not provide certification that students were career ready. This class is conducted in a computer lab where each student has a PC computer.

During the Fall 2017 semester, students were given six class sessions for exam preparation and completed two GMetrix assignments per week. The exam preparation included instructor-led

demonstrations of Microsoft Excel skills where students followed along at their computers. Due to different student Microsoft Excel skills and knowledge, the instructor set-up various learning activities where students chose which skills they needed to focus more on and practice. This method allowed students to build on their skills and knowledge at their own pace. To minimize the cost for the students, the textbook requirement was eliminated. Instead, students purchased a required voucher from the university bookstore that allowed access to GMetrix and Console 8 software programs.

Students were given two weeks to complete four GMetrix assignments in the testing mode. They were encouraged to work on the training mode for each assignment. This option allowed them to work on their own pace and receive step-by-step instructions for each question when needed.

Description of Management of Information Systems Course

Management of Information Systems (MIS) is a three-credit hour course that is required for all business students in the College of Business. This course focuses on general management information systems including topics such as how I.S. impacts organizations, ethical considerations of I.S., challenges, emerging trends, and global nature of information systems. The course activities include case studies, lectures, videos, group project, and Microsoft Excel and Access assignments using MyEducator (MyEducator, 2018). MyEducator is an online textbook with interactive lessons and modules on Microsoft Excel and Microsoft Access. Ten Microsoft Excel modules and three Microsoft Access modules were taught. To accommodate the certificate the Microsoft Access modules and group project were removed. This freed up the final three weeks of the course. This class is conducted in a regular classroom where students are encouraged to bring their laptops. Students in this class purchased the MyEducator e-Book but did not pay for GMetrix or the exam voucher. These were provided by the College of Business.

Fall 2017 Results

A total of 132 students took the exam across the three courses (two sections of MIS). 61% percent of the students passed, 29% did not pass, and 10% did not take the certification exam. Table 1 summarizes the overall pass and fail rates across three classes.

Course	Enrolled	Passed	Failed	Not Taken
Intro IS	40	20 (50%)	14 (35%)	6 (15%)
MIS Section 1	61	41 (67%)	15 (25%)	5 (8%)
MIS Section 2	31	20 (65%)	9 (29%)	2 (6%)
Total	**132**	**81 (61%)**	**38 (29%)**	**13 (10%)**

Table 1: 2017 Certification Results

Our results are slightly below the national average of 63% who pass on their first attempt.

Spring 2018 Implementation Changes

Based on the previous results, we decided to make changes to our implementation approach and revised the curriculum for both courses. We added more class periods for Microsoft Excel examples and demonstrations to complement the GMetrix SMS modules. We also added custom GMetrix modules, custom-authored Microsoft Excel examples and demonstrations, and more in-class instruction. The following is a list of the instructional design changes we incorporated into the curriculum:

1. Students were given more time to complete the GMetrix assignments. Instead of six, we scheduled ten class sessions for GMetrix SMS practice. This allowed students to complete one GMetrix assignment per week instead of two.

2. The instructors used custom-authored examples to demonstrate ALL certificate exam learning objectives throughout the semester. This included four different Microsoft Excel workbooks and over 135 lecture slides of the certificate topics.

3. We still conducted instructor-led demonstrations and made sure that the instructors demonstrated each skill that could be on the exam. The instructors also reviewed the weekly GMetrix assignment in class with the students in the training mode first. Then, students completed the assignment in the testing mode on their own. Students responded positively to this instructional method and customized GMetrix exercises.

4. GMetrix SMS allows instructors to create custom modules. We created eighteen modules on specific certification exam learning objectives such as conditional formatting, sparklines, tables, and functions.

These modules were not graded, but students were encouraged to take them as many times as necessary for practice. This helped with students' different levels of Microsoft Excel skills as each student was able to spend more time on topics of their choice at their own pace and build their confidence.

Spring 2018 Results

A total of 129 students took the exam in Spring 2018. Seventy-one percent of the students passed, 25% did not pass, and 4% did not take the certification exam. Table 2 summarizes the overall pass and fail rates across three classes.

Course	Enrolled	Passed	Failed	Not Taken
Intro IS	37	30 (81%)	7 (19%)	0 (0%)
MIS Section 1	59	35 (59%)	18 (31%)	6 (10%)
MIS Section 2	33	26 (79%)	7 (21%)	0 (0%)
Total	**129**	**91 (71%)**	**32 (25%)**	**6 (4%)**

Table 2: 2018 Certification Results

Compared to the previous semester, we saw a 10% improvement. Introduction to Science course saw a 31% improvement in passing. MIS Section 2 saw a 14% increase, while section 1 saw a decrease of 8%. We credit the improvements to the changes made. MIS Section 1 had the most students and was not taught in a computer lab and had some students who did not take the exam. Those challenges may have contributed to the noted performance despite the implementation changes. Table 3 shows a summary of the results students received both semesters.

Course	Enrolled	Passed	Failed	Not Taken
Intro IS	77	50 (65%)	21 (27%)	6 (8%)
MIS Both Sections	184	122 (66%)	49 (27%)	13 (7%)
Total	**261**	**172 (66%)**	**70 (27%)**	**19 (7%)**

Table 3: Summary of Results Both Semesters

4. LESSONS LEARNED/IMPLICATIONS

The pilot study was a success. We learned many lessons detailed below that will enhance our college wide expansion of the certificate program. Based on the lessons learned from our approach during the Fall 2017 semester, we were able to incorporate many changes into the curriculum which allowed us to gain better results in our implementation efforts. We categorized the lessons in four areas: course, technology, IT, and cost related.

Course Related

Scheduling more class time, custom GMetrix modules, custom-authored Microsoft Excel examples and demonstrations, and more in-class instruction allowed students to better absorb the material. We found that having the class taught in a computer lab was beneficial because this allowed students to follow along with the instructor. Introduction to Information Systems was taught in a computer lab and saw the biggest improvement in scores, whereas our MIS course was not. Also, MIS Section 1 had 61 and 59 students each semester respectively. According to the instructor, that large number of students proved to be a challenge in such a hands-on skills-based course in a regular classroom. We plan to add more sections of the course in a computer lab to mitigate this problem.

Because GMetrix is a Windows-based program, Mac users could not use their personal laptops to work on the assignments or complete the hands-on assignments outside of class. This required students to come to campus and work on these assignments. This created some challenges for students who had to juggle a family and professional lives. For students who worked on their own laptop to complete the GMetrix assignments, some ran into technical problems, bugs, and crashes caused by their computer system or the GMetrix software.

Despite these minor pitfalls, we believe GMetrix is a useful tool to prepare the students for the certificate exam and plan to continue using it. Overall, it prepares the students well for the exam. Coupling GMetrix with our own custom modules and instruction helped increase our students' pass rate. However, we did find that GMetrix scores alone may not predict success on the certificate exam. Some students who did very well on GMetrix, did not pass the exam. The GMetrix training mode provides step-by-step answers that some students may have memorized and then repeated in testing mode without proper understanding of the concepts. It may be more helpful to students if GMetrix training questions and testing questions have some differences. We also found that some students experienced exam anxiety.

Management of Information Systems used MyEducator while Introduction to Information

Science did not. MyEducator is helpful in teaching Microsoft Excel; however, many of the MyEducator topics are not directly relevant to the certificate exam. After making course improvements in the Spring 2018 semester, we found that MyEducator did not lead to better certificate test scores. MyEducator does not claim to prepare students for the certificate exam and instead teaches more advanced skills such as pivot tables, optimization analysis, and others. While these skills are not on the certificate exam, they remain useful for business students. We plan to continue using MyEducator and will re-evaluate where it fits in within the context of the certificate exam in the coming semesters.

Student feedback was generally positive based on course evaluations. Across the three courses, most feedback noted that the students found the Microsoft Excel skills and certificate helpful. The following are some of the comments students shared:

- "Content was excellent, resources were more than adequate to fill students' needs…The subject is not only relevant, but directly beneficial to students taking the course,"

While some students found the technologies used useful, some comments revealed students were not happy with GMetrix. Below are some of the student comments:

- "Online practices have shown me many aspects of excel I had not used before and didn't know how to use until now,"
- "G-metrix good system for preparing for excel,"
- "Gmetrix was hard to deal with at times," and
- "Gmetrix part of course is outdated and incompatible with most computers and makes homework extremely difficult."

Further feedback included a desire for even more in-class time to prepare for the exam– "I felt very limited on time." and "Just felt limited and crammed." This feedback is helpful to evaluate the success of the pilot and will guide us to make the necessary changes in the future.

Technology Related Problems During Exam

During Fall 2017, three students encountered technical problems where they had to restart the exam. Through the help of the Certiport technical support, the issues were resolved, and the students were able to complete the exam. During Spring 2018, only minor problems were reported during the exam that were able to be resolved without losing any exam progress. We are aware that some technical problems are not predictable and recommend that any university considering implementing the certificate program have a technical support plan. For us, this consisted of having Certiport technical support on speed dial and having our IT department on hand to fix any computer crashes or freezes during the exam. We also made sure that the day before the exam, one of the instructors took the exam to ensure that the technology was working properly.

IT Related

Implementing the certificate program required close coordination with the University's IT department. We requested that our IT department install, maintain, and update the GMetrix SMS and Console 8 software on the lab and instructor computers. We also worked with IT to be on hand during the certificate exam days to provide immediate technical support in case of a problem during the exam itself. Being a pilot program, this was new to both IT and the instructors. Constant communication with IT staff and testing helped make this aspect successful. We encourage other universities to have an assigned IT personnel for this and not to overlook the importance of working closely with IT to implement a certificate program.

Cost Related

One often overlooked aspect of implementing the certificate exam is the financial cost to the students and the university. As of June 2018, the list price for a single Microsoft Office Specialist Exam Voucher is $96.00. GMetrix practice tests cost $40.00 (Certiport, 2015). We chose to purchase a GMetrix campus license and Certiport MOS exam campus license at a discounted rate of $6,930.00 (GMetrix license $3,150.00 and MOS campus license $3,780.00). The MOS campus license came with 500 vouchers and expires a year from the purchase date. There are many different approaches that universities can take regarding this financial aspect. In fact, we took a different approach with our two courses. Students in the MIS course purchased the MyEducator eBook but did not have to purchase anything else. They were provided with an exam voucher and a GMetrix code through our campus license for no additional cost. Introduction to IS students did not have to purchase a textbook but in exchange purchased an exam voucher for $70.00. This voucher covered both access to a GMetrix code and an exam voucher. We partnered with the bookstore where students bought the voucher, and the funds were transferred to a College of Business account at the end of each semester. Students did appreciate that the cost of the

certificate was subsidized, and this approach worked for our university.

6. CONCLUSIONS

The purpose of this paper is to provide insights to other educators who might be interested in the implementation of the MOS certification in their program. Our attempt showed us that students benefit from having more time to master the skills, apply their knowledge, and become comfortable with the materials and exam. Students also benefited from the increased in-class instruction and teacher demonstrations. As we continue to incorporate the certification, we are certain that we will continue to modify the curriculum based on student and college needs. Another area we will focus on is to understand how students' Microsoft Excel knowledge and skills change throughout the semester. We will survey students about their skills before and after they go through the training. This will allow us to track student knowledge and skills. We hope that the lessons we learned from this pilot program will be useful to assist others who are interested in adopting the certification exam. In the future, we plan to follow up with our graduates to see if the certification has helped them get a job or a promotion. We also plan to roll out the certificate program to all our College of Business students in the coming years.

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