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Building Excel Expertise: A Guide in Best Practices

William Tastle
tastle@ithaca.edu
Dept of Management
Ithaca College
Ithaca, New York 14850, USA

Christopher Mead
cdmead@syr.edu
Coordinator of Student Technology Services
Martin J Whitman School of Management
Syracuse, New York 13244, USA

Carl Rebman
carlr@sandiego.edu
Dept of Information Systems
University of San Diego
San Diego, California

Suzanne Marks
Suzanne.marks@bellevuecollege.edu
Dept of BTS, Marketing and Business Management
Bellevue College
Bellevue, Washington 98007, USA

Kari Phillips
Kari.Phillips@datc.edu
Davis Applied Technology College
Kaysville, Utah 84037, USA

Abstract

Information Systems programs housed in business schools frequently offer students the opportunity to attain certain professional certifications as evidence of their demonstrated expertise in a product. This is a study involving the success rate of students from five universities handpicked by Certiport, the company responsible for managing the Microsoft Certification exams, because of the demonstrated success rate as compared to all other academic institutions in the US that offer certification opportunities to their students. There are similarities in the overall outcome of success with respect to only the Microsoft Excel core certification exam. The one item that is common to all five universities is the use of an additional level of preparation in the form of a third-party program. Given a rigorous classroom

environment, suitable demands on students, an appropriate textbook and access to an exam practice/preparation program, student success is high. While there are a number of third-party software preparation programs, each of these universities used GMetrix.

Keywords: Certification, Microsoft Excel, GMetrix, spreadsheets

1. INTRODUCTION

"Learn how to separate the majors and the minors. A lot of people don't do well simply because they major in minor things."
-- Jim Rohn

Back in November 2014, one of the authors had a discussion with Bob Imhoff, the then-territorial manager for Certiport, about various success rates in mastering the basic skills of Excel as exemplified by the pass rate of those who take the Microsoft Office Specialist (MOS) Excel Core Certification exam for the *first* time. The national average pass rate is 63 percent, but there are some institutions with pass rates in excess of 90 percent. We wanted to know why. What were these universities doing that could be utilized by other institutions to produce similar results? The purpose of this paper is to explore how the Excel instruction occurs on five campuses *selected* by Certiport, the instructional method used, and the overall success rate. A rubric is provided at the conclusion to assist instructors in adopting aspects they deem useful to their situation.

2. BACKGROUND

There is much written about so-called best practices (Balik 2009). Bates and Poole's book (2003) helps guide teachers in making critical decisions about the use of technology with the curriculum, other studies stress the importance of using technology in the classrooms (Beichner, 1993; Fulton, 1993), and we also read about how the absence of a clear vision can also, nonetheless, result in success (Roblyer, 1993). There are many papers written on spreadsheet design (Mazars 2016; Chadwick and Sue 2001; Caulkins, Morrison, Weidmann 2007), quite a number on best practices in financial models (breakingintowallstreet.com, 2016), portfolio management (Jeffrey and Leliveld, 2004), and many articles (at least 75 identified by Google Scholar) on how to avoid spreadsheet errors, error detection, and the like.

However, on the matter of identifying successful ways in which students become MS Excel Core certified, not a single article was found that specifically addressed this issue. It is to this fine point, the identification of best practices directed to the mastery of Excel, this paper addresses.

As instructors revise courses to be more relevant to today's business graduates, those who are more likely to be employed in positions that demand far more from new hires than in previous years, mastering the ubiquitous spreadsheet has become an expectation for employment. Unfortunately, it anecdotally appears that many institutions consider the instruction of the "simplistic" Microsoft Office Suite to be beneath the dignity of an instructor, the expectation being students have already been exposed to the Office Suite in high school or can master it themselves. To some degree this expectation is true: high schools do offer an introduction to Office in their curriculum but, unfortunately, at a very novice level of instruction. Some even go so far as to offer their students an opportunity to become certified. This information has come from informal discussions with students at the co-authors respective universities.

The co-authors were selected because, in the opinion of Certiport, their students are getting generally higher scores on the MOS than others and they (Certiport and, indirectly, Microsoft) want to know what are we doing in our classrooms to successfully prepare our students for the exam. To this end, an analysis has been conducted on data available from Certiport on all our students for the past three years. The three-year time frame is limited by the availability of data; that is as far back as Certiport will permit us to collect historical data, and 2013 was the first year that two of the universities began offering the certification exam. We examine the outcome of our students at a relatively high level of analysis (more detailed analyses are the subject of another paper).

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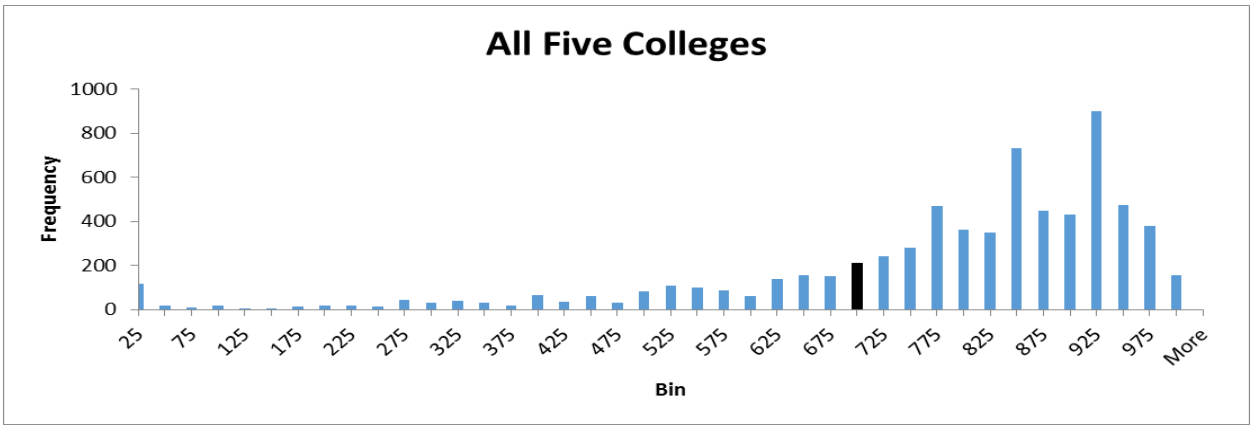

Figure 1 Histogram of Scores over a three-year period (2013-15) for all Universities in Study. A grade of 700 is required for passing.

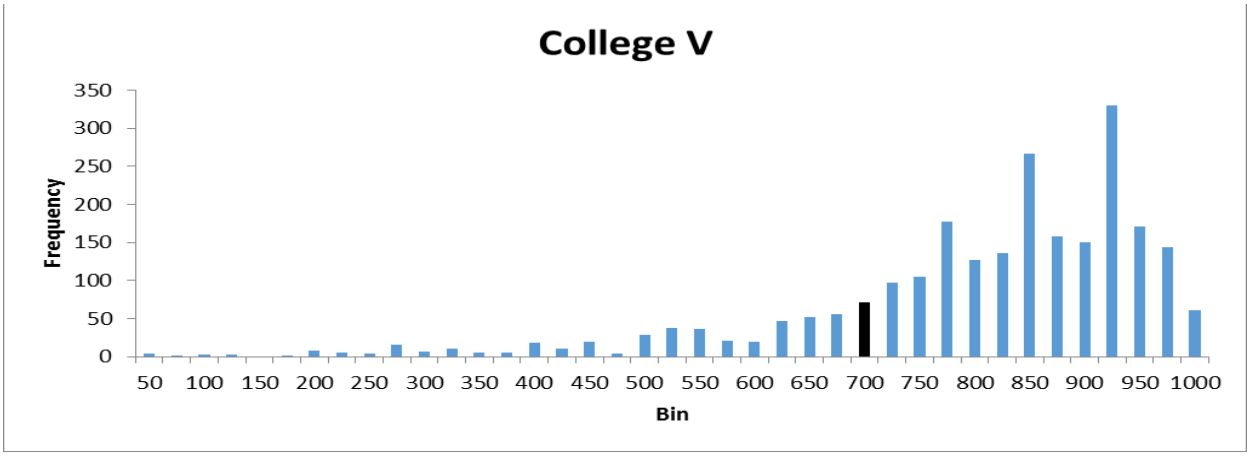

Figure 2 Histogram for Scores associated with College V

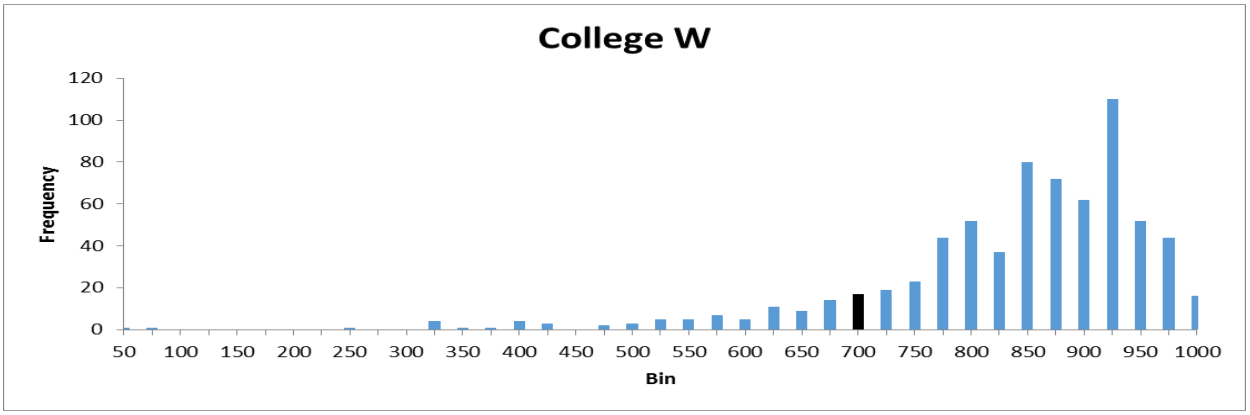

Figure 3 Histogram for Scores associated with College W

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3. METHOD

Among our institutions we have collected a total of 3,345 records from the Excel 2010 and Excel 2013 certification reports provided by Certiport. As organizational administrators to the testing program, we have access to some report data, though detail data like how individual students performed on individual questions is not available, since the exams differ in that a collection of certification exams exist in the pool of exams and when a student begins an exam a random question bank is selected. While the knowledge areas are consistent from exam to exam, the individual questions do differ, so it would not be useful even if we had access to that level of detail.

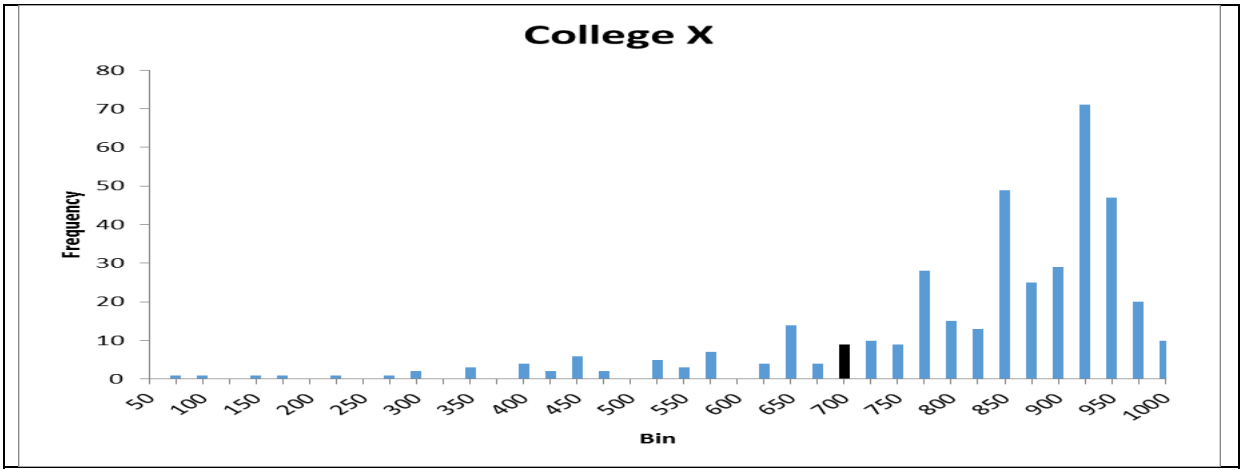

Figure 4 Histogram of all Scores associated with College X.

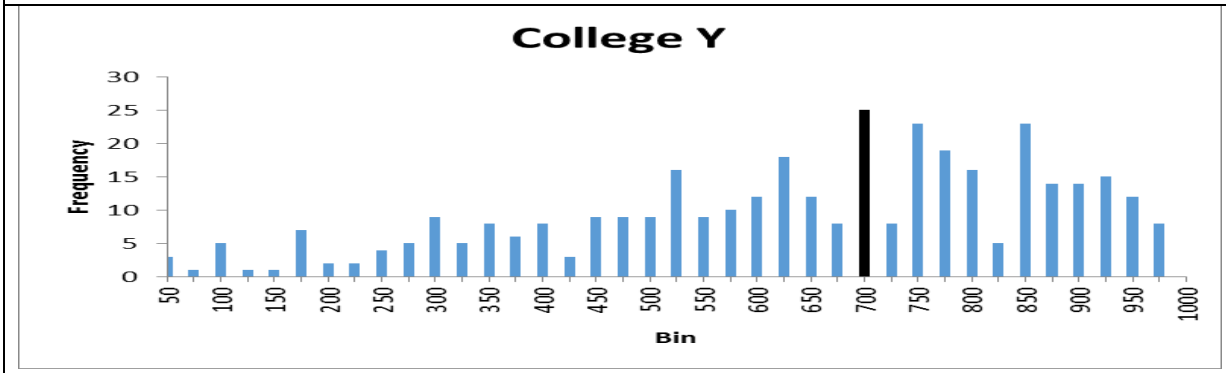

Figure 5 Histogram of all Scores associated with College Y.

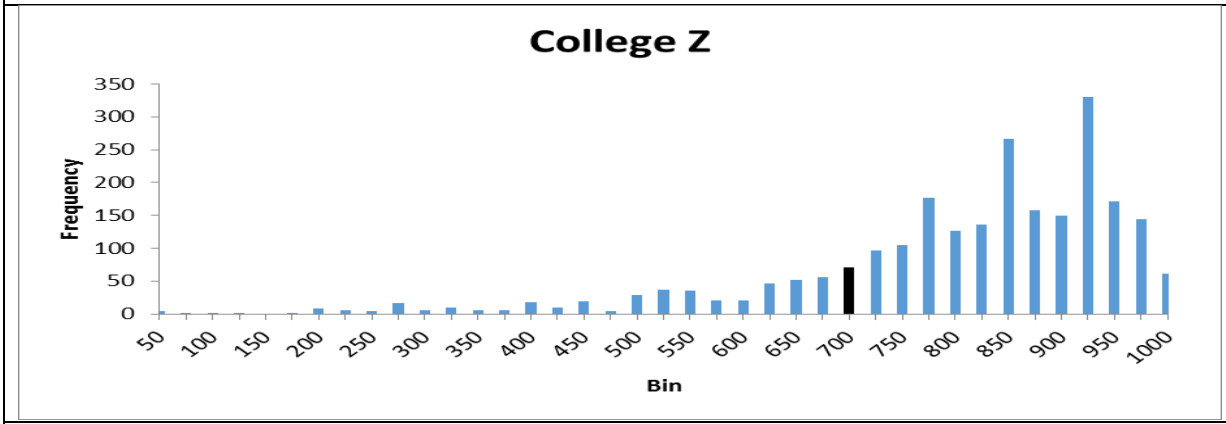

Figure 6 Histogram of all Scores associated with College Z.

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	V		W		X		Y		Z	
	FAIL	**PASS**	**FAIL**	**PASS**	**FAIL**	**PASS**	**FAIL**	**PASS**	**FAIL**	**PASS**
2013	20%	80%	5%	95%					20%	80%
2014	20%	80%	14%	86%	8%	92%	48%	52%	20%	80%
2015	12%	88%	8%	92%	14%	86%	32%	68%	12%	88%
2016	19%	81%	8%	92%	3%	97%	30%	70%	19%	81%
Overall Rate	**17%**	**83%**	**9%**	**91%**	**12%**	**88%**	**39%**	**61%**	**17%**	**83%**

Table 1 Table showing the actual pass and failure rates for each college by year.

Data are analyzed in its entirety but also by individual institution. To preserve anonymity, the individual universities are referred to as V, W, X, Y, and Z.

The passing grade for the Excel certification exam is 700 out of a possible 1000. At first blush one might consider that number relatively easy to attain until one examines the number of scores **below** 700 (**Error! Reference source not found.**).

Within the data were some grades noted as "0" and/or exams listed as "incomplete" That simply means that there was some problem with the computer, and the student was unable to complete the exam. The zero and incomplete grades are, therefore, discounted from the analysis. It is not uncommon for a student to get partially through the exam only to have the computer lock up, or the Internet connection to foul or, most commonly, a problem occurs at the exam site (Certiport) then the student must retake the exam. To at least partially account for those instances over which a student has no control, we arbitrarily eliminated from analysis all scores *prior to the first passing grade of any student from any college*. In this case a student in College W attained a grade of 961 in only 16.4 minutes. Thus, using 16.4 minutes as a benchmark, all scores below this time threshold were removed as they were considered a result of technologically-related problems, and thus it was the remaining data that underwent analysis.

4. OVERALL ANALYSIS

About 1/3 of all Excel certification exams occurred with Excel 2010, the remaining with Excel 2013. For all the Excel certification exams in our population, the overall pass rate was 83 percent, substantially higher than the 63 percent national average for students passing the exam on their **first** attempt.

Examining the individual rates of success is measured by the percentage of students who pass the certification exam on their first try (see **Error! Reference source not found.** and Table 1), we note the overall differences in the failure rates from a low of 3% (College X in 2016) and a high of 48% (College Y in 2014). At first blush one might wonder about the numbers for college Y. In fact, the failure rates continue to drop at College Y as their program matured and underwent continuing modification. Some universities, like W and X began with very low failure rates and, generally, have managed to keep those rates down.

It can arguably be said that Universities W and X appear to have the greatest degree of success, with V and Z in close pursuit, but there is an aspect of commonality in all these programs: the use of supplementary assistance in preparing students to take the certification exam.

5. PREPARATION FOR THE MICROSOFT EXCEL CERTIFICATION EXAM BY COLLEGE

The Microsoft Certification Exam is timed (50 minutes), but there is a process in place for students who have diagnosed learning disabilities confirmed by a student disability officer of a college to petition Certiport for extended time. Also, one can pass the certification exam with a score of 700 out of 1000. While this sounds simple, the national success rate for successfully passing the exam on the *first try* is 63 percent. The success rate on additional attempts (nationally) is very high, but for this study we are only concerned with the initial attempt.

It should be noted that the Microsoft Certification exam is composed of questions randomly selected from a pool of several topically-relevant

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question banks, so it is unlikely for any two students to have the same exam.

A list of the skillsets measured by the Microsoft Office Specialist: Excel Certification exam can be found at https://www.microsoft.com/en-us/learning/exam-77-420.aspx.

Each university in this study uses a set of tools to provide their students a combination of instructional material and practice examination material for the purpose of exam preparation.

The tools, which will be referenced subsequently, are the following:

College V:

- Textbook
- Specialized exams
- One-on-one in-classroom instruction
- GMetrix SMS[1]

College W:

- Textbook
- A custom-authored set of quizzes and exams
- In-classroom instruction
- GMetrix SMS

College X:

- Blackboard/Sakai
- Lynda.com[2]
- GMetrix SMS

College Y:

- Pearson MyITLab[3]
- GMetrix SMS

College Z:

- GMetrix SMS

1 **GMetrix SMS** (Skills Management System) is a practice exam engine, which is authored by GMetrix LLC, "a provider of educational tools designed to prepare individuals for the effective use of technology in the business environment" (GMetrix 2016).

With specific regard to Microsoft Excel, GMetrix SMS contains six exam "modules" that help prepare students for the certification exam. The first three are referred to as "Core Test" modules and the remaining three are referred to as "Core Project" modules. Each set of three increases in complexity. Additionally, each exam module may be taken in "training mode," which allows students to complete the module in their own time and which provides direction for the students to correctly answer the question, and "testing mode," which is timed similarly to the actual certification exam and no help or direction is available.

"Core Test" exams are delivered in question-answer format, while "Core Project" exams are a set of cumulative instructions intended to produce a finished product, which is then graded. The "Core Project" modules very closely mirror the actual exam (which is also delivered in project format) so that students are comfortable with the Microsoft exam interface and know how to work the keyboard.

2 **Lynda.com** is a "leading online learning platform that helps anyone learn business, software, technology and creative skills to achieve personal and professional goals." (Lynda.com 2016) Lynda.com is a subscription-based service.

3 **Pearson's MyITLab** is a technology-focused extension of Pearson's MyLab and Mastering service, which is "the world's leading collection of online homework, tutorial, and assessment products designed with a single purpose in mind: to improve the results of all higher education students, one student at a time." (Pearson 2016)

5.1 College V

College V does teach to the certification exam through textbook assignments, one-on-one instruction, specialized exams that cover chapter assignments and certification exam skills, and finally GMetrix where students can select any one project but must pass with a score of at least 850. This college is competency based, and students are required to complete all assignments and exams throughout the course with a passing rate

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of 85 percent. Students are not allowed to progress to the next chapter until a minimum of 85 percent is achieved.

The Microsoft certification exam is not a requirement for students to complete the course; however, all students are encouraged to take the exam. In order to facilitate this, the school purchases a small school license from Certiport and bundles an exam voucher with the e-book. Because there is no additional cost to take the exam, most students choose to sit for the exam which is administered in the college testing center.

5.2 College W

College W does not teach to the exam; in fact, preparation for the exam is left entirely up to the student but with some serious caveats. A textbook is provided, and students are assigned chapters to read. A "textbook" quiz is given every week or so that covers the content. Other quizzes are given based on material discussed in class, and if any of it overlaps the textbook, it is entirely accidental! These quizzes are referred to as "blackboard" quizzes. All quizzes (10 minutes) and exams (entire class period) are open notebook (not open book), and students are thus forced to take notes not only from the textbook but also from the classroom lectures. The time limitation on the quizzes requires students to be familiar with the material and to use the notebook only to help with esoteric details. Obviously the open notebook quizzes and exams are *far* more challenging than closed book quizzes and exams.

It is required that students complete all six modules in GMetrix SMS. Students must receive a grade of at least 910 out of 1000 on each GMetrix module in order to be permitted to sit for the certification exam.

5.3 College X

College X requires students to complete a specific set of instructional material obtained from Lynda.com which is accessed through Blackboard or Sakai. College X also requires students to pass at least five different GMetrix practice exam modules with a score of 800 or better in testing mode. College X has augmented the GMetrix exam set by adding three custom-made exams, so students have nine different possible exam modules to choose from.

5.4 College Y

College Y requires that students use MyITlab for training and also get at least 800 on any one GMetrix SMS module.

5.5 College Z

College Z also requires students to achieve at least 800 on all GMetrix SMS modules.

6. OVERALL

It appears irrelevant if one teaches to the exam or not, at least by the universities in this study. The answer seems to be one of expectation and demand. By applying a non-minimal standard (recall that while only 700 out of 1000 is required to pass the certification exam as well as the GMetrix practice exams) students are forced to practice the lessons until a higher degree of mastery is attained. Further, the presence of peer pressure does play a role although the degree to which it applies is anecdotal at best and not addressed here.

The one consistent aspect of preparation is the use of GMetrix SMS as a preparation tool. The overall grade seems not to be that relevant (V requires 850+, W requires 910, and X and Z get by with 800+). Y permits the taking of the exam with only one GMetrix module but their overall passing rate is some 30 percent lower than the others. This is an instance in which the greater the demand made on students the higher the certification pass rate (clearly no surprise), though the effort will take its toll on the classroom instructors. It is apparent that the one commonality is the use of GMetrix in the preparation of students and the demands made of the students.

Performance on the Microsoft certification exam is correlated to the GMetrix scores that must be successfully attained. It appears the higher the scores on ALL the practice tests, the higher the success rate.

7. REFERENCES

Balik, Robert J., 2009, "Excel best practices." Managerial Finance, 36(5), pp. 410-426.

Bates, A and Gary Poole, 2003, "Effective Teaching with Technology in Higher Education: Foundations for Success. Jossey-Bass, Indianapolis, IN, pp. 336.

ISSN: 2473-3857
v3 n4326

Breaking Into Wallstreet, "Excel Formatting: Best Practices in Financial Models." Downloaded 2016.

Caulkins, Jonathan P., Erica Layne Morrison and Timothy Weidemann, 2007, "Spreadsheet Erros and Decision Making: Evidence from Field Interviews. Journal of Organizational and End User Computing, 19(3), pp. 1-23, IGI Publishing.

Chadwick, D. and R. Sue, 2001, "Teaching Spreadsheet Development using Peer Audit and Self-Audit Methods for Reducing Errors." In: Controlling the Subversive Spreadsheet – Risks, Audit and Development Methods, Proceedings of EuSpRIG 2001, ISBN: 1 86166 179 7.

GMetrix, accessed June 2016, http://www.GMetrix.com.

Jeffrey, Mark and Ingmar Leliveld, 2004, "Best Practices in IT Portfolio Management." MIT Sloan Management Review, 45(3), pp. 41-49.

Mazars.Co, 2015, "Twenty principles for good spreadsheet practice." http://www.mazars.co.uk/Home/News/Latest-news/20-principles-for-good-spreadsheet-practice. Downloaded April 2016.

Lynda.com, accessed June 2016, http://www.lynda.com

Pearson MyLab and Mastering, accessed June 2016, http://www.pearsonmylabandmastering.com/northamerica/myitlab/

Roblyer, M. D. (1993), "Why use technology in teaching? Making a case beyond research results."
Florida Technology in Education Quarterly, 5(4), p. 7-13.