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Journal Profile

The *Journal of Research in Business Information Systems* (JRBIS) is a national blind-reviewed, refereed publication published annually by the Association of Business Information Systems. This refereed journal includes articles from fields associated with business information systems focusing on theory, problems associated with information systems and information resources in education, business and industry, government, and the professions.

Manuscripts are selected using a blind review process. The first issue of the Journal was available Spring 2008. The Journal is listed in the ERIC Database and Cabell's Directory of Publishing Opportunities in Accounting, Computer Information Systems, Education, Instructional Technology, and Management.

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The readership is comprised of college and university faculty, administrators, staff, practitioners, and students engaged in business information systems or preparing for careers in fields related to information resources. The journal is distributed electronically annually to all Association of Business Information Systems members as part of conference registration or membership. The journal is also available online at http://www.abis-fbd.org.

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2020 Journal of Research in Business Information Systems (JRBIS)

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You are invited to submit manuscripts for publication consideration in the 2020 issue of the *Journal of Research in Business Information Systems (JRBIS)*, a national blind-reviewed, refereed journal published annually by the Association of Business Information Systems (ABIS). According to the Constitution and Bylaws of ABIS, the published articles of *JRBIS* are limited to the papers presented at the previous ABIS Annual Conference and/or published in the *ABIS Proceedings*.

This refereed journal includes articles from fields associated with business information systems focusing on theory; issues associated with information systems; and information resources in education, business and industry, government, and the professions. Manuscripts should address topics of interest to the wide-ranging interdisciplinary and practitioners who read *JRBIS*. The readership is comprised of college and university faculty, administrators, staff, practitioners, and students engaged in business information systems or preparing for careers in fields related to information resources. The journal is distributed electronically annually to all Association of Business Information Systems members as part of conference registration or membership. The journal is also available on the ABIS website for public scrutiny.

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All manuscripts must be submitted electronically in Microsoft Word format. Manuscripts, citations, and references must use the style format of the *2010 Publication Manual of the American Psychological Association* (6th edition).

Submissions should include a separate file attachment for the title page that contains the following information in this exact order:

- Title of the manuscript
- Each author's full name; position/title; institutional affiliation, including address, city, state, zip code; home, office, and cell phone numbers; and e-mail addresses (identify the main author who should receive all correspondence).
- Number of words in the article (including all parts–everything)
- Biographical paragraph (50-60 words) for each author
- Any acknowledgments or information about manuscript history (e.g., based on a conference presentation)

The second separate file attachment should be the manuscript file that begins with the title of the article, a 50-100 word abstract, 3-5 keywords or phrases describing the focus of the article, and the body of the manuscript. Do not include any identifying information in this file. **Do not include any personal identification or institutional affiliation in this file.**

The manuscript body must adhere to the following guidelines:

- 10-25 double-spaced pages (3,000-6,000 words)
- 1" margins all around
- Times New Roman, 12 pt. font-size text within article
- Bold and center primary headings, with major words capitalized
- Bold and left-align secondary headings, with major words capitalized
- No footnotes or endnotes
- No page numbers or headers or footers

Tables and figures may have varying font sizes (but must adhere to APA Style). Include tables or figures formatted and placed correctly within the manuscript.

Include the References page at the end of the manuscript, followed by any appendix information, if necessary.

All submissions will be reviewed by the editor and at least two reviewers, using a blind-review process. Authors will receive feedback 6-8 weeks after the initial peer review. Manuscripts will be "accepted," "accepted with minor revisions," "possibly accepted after major revision and resubmission for further peer review," or "rejected."

The editor reserves the right to edit selected/accepted manuscripts for publication as deemed appropriate and necessary for the optimization of journal publication and format. The author of the manuscript retains responsibility for the accuracy of a manuscript published in the *Journal of Research in Business Information Systems*.

To ensure your manuscript is considered for publication in the *2020 Journal of Research in Business Information Systems*, submit the manuscript by November 1, 2019, to Dr. Ashley Hall at hallaa@sfasu.edu.

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A SCAFFOLDING APPROACH TO LEARNING IMPROVES STUDENTS' CONFIDENCE IN THEIR EXCEL SKILLS

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Abstract

In this research, the authors describe changes to a software tools course over several semesters. The changes emphasize a scaffolding methodology of instruction and a revisiting of Excel chapters a second time during the term to enhance student understanding and confidence in ability to use Excel effectively in higher-level courses in a college of business curriculum. The authors also share analysis from three semesters of a student feedback survey. Overall, the scaffolding methodology is contributing to students' confidence in their Excel skillset.

Key Words: teaching methodology, scaffolding, productivity software

Introduction

Teaching software productivity tools has attracted much attention over the decades since the emergence of the initial word processing and spreadsheet productivity software in the early 1980s. Teachers at the K-12 level of education as well as post-secondary college and university faculty continue to explore effective teaching and learning methodologies for these courses. While some universities may now consider it the student's responsibility to do some remedial preparation in office productivity software instead of offering for-credit course work within a student's curriculum, software productivity courses of various structures exist in many colleges and universities across the country.

An effective curriculum results when faculty work together, giving each other feedback about what students are learning (or not learning) in lower-level courses. When instructors of

upper-level courses as well as business advisory groups give feedback that students lack sufficient Excel skills, the challenges continue for those teaching the software tools courses.

Purpose and Methodology

This paper provides an overview of how one public university in the south has revised its basic software tools course required of business majors during their freshman year. While the course content has been revised to provide more focus on Microsoft Excel and Access, the methodology has also been revised to more specifically adopt a scaffolding methodology. The paper explains the rationale for the changes, as well as the content and structure for each of three consecutive semesters.

A survey designed by the instructor and approved by the University's Human Subjects Institutional Review Board solicited self-reported feedback from students to assess the value of the scaffolding methodology which included a "revisiting" of Excel chapters multiple times. Specific questions in the survey asked student opinions to gather the following concerning the chapter "revisits."

- Are students confident in their ability to transform related data into a table?
- Are students confident they could set up a PivotTable?
- Are students confident they could set up an IF function?
- Are students confident they could set up a PMT function?
- Are students confident they could set up the VLOOKUP function?
- Are students confident they can use Absolute Cell References and Relative Cell References correctly?
- Do students perceive their knowledge increased each time they visited the chapters?

Review of the Literature

Having a working knowledge of Excel is a necessity for any business graduate. Often times the lines are unclear as to what that knowledge should be and how to achieve it. Coleman and Blankenship (2017) state that knowledge of Excel is needed in all areas of a business education, including accounting, economics, management, finance, and marketing. However, conflict over what knowledge should be taught still exists; while some believe a few skills for degree specific needs is sufficient, others argue that more broad knowledge of the application is beneficial. Coleman and Blankenship's findings report that faculty who just teach career or industry specific skills are not meeting the expectation of the business experts (Coleman & Blankenship, 2017).

How are faculty to teach a broader spectrum of Excel skills and have students retain the information? Slayter and Higgins (2018) presented a hands-on approach to teaching Excel. In their study, in which a lot of Excel material was presented in a short period of time, the material is presented in "waves." First presenting the theory of how to work the problem by hand, then followed by showing the students the process in Excel, and finally giving the students a project to work on to enforce this skill. The project is meant to practice the concept learned, challenge the student, and ultimately build confidence as they successfully progress through the steps. The project allows the students to use the knowledge they already have and critical thinking to work through the problem, while allowing them to ask questions along the way (Slayter & Higgins, 2018). While not specifically stated, this represents the scaffolding approach to learning.

As defined in a lesson by Study.com, in the field of education, scaffolding refers to the process in which teachers model or demonstrate how to solve a problem, and then step back, offering support as needed. Firestone (2018) reports this concept was first introduced in the

1960s by Jerome Burner. Others suggest that the concept of scaffolding was introduced by Lev Vygotsky in his 1978 work titled *Mind in Society*. Vygotsky never used the term "scaffolding," but in his work he described the developmental levels of learning that he termed the "actual developmental level" and the "potential developmental level." He then went on to discuss what he called the "zone of proximal development," which he defined as the "distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978).

The research of Vygotsky and Burner has been studied and applied in several aspects of child development and education. Throughout, the concepts remain the same: scaffolding is the support provided by a teacher, peer, or some other resource, that enables students to move within their zone of proximal development. Scaffolding allows them to perform tasks that they could not perform individually (Miao, et al, 2012). Fisher and Frey (2010) also cite Wood, Bruner, and Ross's further exploration of the concept of scaffolding in *The Role of Tutoring in Problem Solving*, explaining that scaffolding "enables a child or novice to solve a task or achieve a goal that would be beyond his unassisted efforts." This will require the adult or teacher to control elements of the task that are initially beyond the child or student's capability. This allows the child or student to concentrate on and complete the elements that are within his/her range of competence. Thus, the goal of scaffolding in education is to provide temporary support for students to learn and perform tasks that they initially cannot perform independently, and to help students gain competency, using a higher level of cognitive thinking, which will allow them to perform those tasks without assistance in the future (Miao, et al, 2012).

Scaffolding should not be confused with differentiation. Differentiation refers to a wide variety of teaching techniques and lesson adaptations that educators use to instruct a diverse group of students, with diverse learning needs, in the same course, classroom, or learning environment. In differentiation, different groups of students may receive different lessons or assignments, based off their skill level or needs. Scaffolding does not create different lessons or assignments but does allows teachers to provide individuals the support or help needed to complete the same task. One of the main objectives of scaffolding is to reduce the frustration and intimidation students may feel when attempting a difficult task without the assistance, direction, or understanding they need to complete it (The Glossary of Education Reform, 2015).

The concept of scaffolding is often considered an essential element in effective teaching. While implemented through a variety of instructional techniques, the goal remains the same, providing instruction to allow students to progress towards a stronger understanding and, ultimately, a greater independence in the learning process (The Glossary of Education Reform, 2015). When presenting a new or more difficult task, teachers should provide more assistance and guidance in the beginning, and then gradually decrease the support as the student's work progresses. This shifts the responsibility of the learning process solely from the teacher and then requires the student to assume more responsibility (Larkin, 2002).

The level of scaffolding needed depends on the scope and complexity of the task and the level of knowledge the student brings to the classroom. The more complex the task, the more scaffolding that may be needed. The teacher develops the "support system" and then removes one layer at a time until the student has the skills necessary to complete the entire task. The design of the scaffolding may also vary; while typically scaffolding takes place between teacher and an individual student, it can also be successful for an entire class (Northern Illinois

University, 2015). Determining the knowledge that each student brings to the classroom may also be a challenge. The level of scaffolding needed may not be able to be truly determined until once a class has begun. Teachers in a K-12 system may have more information on the knowledge and skillset of incoming students than that of university faculty.

University students come from a variety of backgrounds and education systems. However, with level of knowledge expected upon entrance into a university and the depth and breadth of information covered before graduation, the implementation of the scaffolding concept into a variety of courses could benefit the student, both in success and in overall learning. Scaffolding can also help to bridge the gap between what students have already learned and what they are expected to learn at the next level of their education (The Glossary of Education Reform, 2015).

The implementation of scaffolding in higher education is less documented than in that of K-12, where various projects and lesson plans can readily be found. In addition, those who teach in higher education typically do not have a teaching or educational background. Faculty are generally experts in their fields of knowledge, and their ideas for learning experiences may not facilitate the desired outcome of their students. When students do not perform well, they experience a great deal of frustration for what they consider high stakes assignments (Caruana, 2012).

The implementation of scaffolding into a course does take both time and design consideration. Having a strong knowledge of the subject matter and reviewing where former students had difficulty will help faculty determine the need for scaffolding (Northern Illinois University, 2015). Caruana (2012) suggests that faculty identify all major assignments and

assessments, and then create a scaffold for each. This may also help faculty determine if the desired outcomes are being met or if the material is no longer relevant.

The guidelines for scaffolding in a classroom generally follow the same structure. The Faculty Development Center at Northern Illinois University (2015) suggests the following: first the instructor does it, second the class does it, third the group does it, and fourth the individual does it. This allows the students several attempts at the task before they must demonstrate that they can successfully complete it on their own. Larkin (2002) recommends that the teacher first consider curriculum goals and students' needs for a selected task. Then the instructor should establish a shared goal with the students; this fosters motivation and students become invested in the process. The teacher then diagnoses the individual student's needs and provides tailored assistance. Then by asking questions, offering praise and giving feedback, the teacher can monitor progress while creating an environment where students feel free to take risks and become less dependent.

In additional to these approaches, Alber (2014) recommends tapping into the students' prior knowledge or ideas on the material. This allows them to connect it to their own lives. Then the instructor could give students time to talk about and process the information. Scaffolding a lesson may slow down the teaching process, but Alber suggests that the end product may be of greater quality and that students have a better overall learning experience.

One of the primary benefits of scaffolding in education is that it engages the students. They are no longer passive listeners, but active participants in their learning. The individualized instruction can help ease students' frustration and motivate them to want to learn. However, the individualized instruction can certainly be very time consuming for the teacher (Van Der Stuyf, 2002). In a university setting, with large class sizes, this may be almost impossible.

Based on the review of prior research related to a scaffolding methodology and its potential to increase student confidence and success, the instructor of several sections of the OIS 200 course (a software tools course within the authors' college of business) applied the use of this methodology in recent semesters, as described in the main body of this manuscript. While some would suggest that several textbooks related to learning productivity software packages offer a scaffolding approach already, the instructor in OIS 200 added a "revisiting" approach to scaffolding the learning.

Scaffolding in the OIS 200 Course

In spring 2017, one of the authors was approached by the academic department head to revamp the current computer literacy course for the College of Business. The instructor had been teaching computer literacy and software tools for over 20 years. One thing observed over all those years is the students' lack of knowledge and confidence when working in Excel. This same observation is one commonly expressed by other business faculty in the college who teach more advanced business courses that require students to use Excel.

Fall 2017—Increased Excel Chapters and One "Revisiting" of Chapters

Taking both the instructor's personal observations and other faculty comments as input, the instructor re-structured the computer literacy course, OIS 200, Computers in the Office. Since students needed more Excel skills, plus an introduction in Access was necessary within the course, the Microsoft Word component was dropped from the course beginning in fall 2017. Pearson's *Exploring Series* was the chosen textbook. Instead of covering four chapters each in Word, Excel, and Access, Word was dropped and eight chapters in Excel were covered instead. By increasing the number of Excel chapters covered, students were now having assignments containing PivotTables, PivotCharts, What-If Analysis, and Statistical functions. The instructor

structured the course so that the last four weeks of the semester provided a revisiting of weeks 1-4 Excel skills, with the students taking more responsibility for completing the work. During this revisit, the instructor provided less guidance than on the first coverage of the materials.

All assignments for the week were due on Friday night. At the end of Week 4 and at the end of the course, students independently completed a capstone project, covering chapters 1-4. These assignments served as the midterm and final, respectively. Once the course was complete, the instructor reflected upon the ease at which some of the students completed the assignments during the "re-visit." For the upcoming semester, the instructor decided to forgo some of the upper chapters in Excel and concentrate on having the students complete the course with a firm understanding of the Excel basics.

Spring 2018—Modified Excel Chapters and Two "Revisits" of Chapters

After seeing the results from revisiting the first four chapters of Excel, the instructor altered the course again. The instructor modified the course content to cover the first five chapters, which took the students through Excel basics and PivotTables. The Access chapters would remain the same. All assignments for the week were due on Friday night.

Using a scaffolding methodology, during each visit of the chapters the instructor used a different approach. For the first time through the chapters (Excel 1 through 5 and Access 1 through 4), the instructor worked through the grader project assignments with the students. She explained concepts and provided examples for the students. During the second visit of the Excel 1 through 5 chapters, the instructor modified the instruction sheets for the grader project by including hints and values expected from formulas and functions. For the third trip through the same chapters, the instructor only facilitated and answered questions when the students were

"stumped." Upon completion of the course, the students were surveyed to confirm what the instructor was seeing in terms of the students' improved Excel knowledge.

Fall 2018—Addition of Pre-class Audio PowerPoints and Simulation Training and Two "Revisits" of Chapters

Seeing the improved student performance, the instructor further modified the course for fall 2018. Prior to beginning a new chapter, students must watch an Audio PowerPoint presentation on the chapter and complete a simulation training exercise. This addition to the course causes students to be exposed to the concepts prior to coming to class. They may not have fully grasped the concept, but the exposure is designed to help the student.

A short presentation of a function without using Excel has also been added. For example, using the VLOOKUP function, the students were presented with a list of names and shirt sizes. Using an accompanying table, the students would determine the price of the shirt. The instructor had the students tell what steps they took to come up with the answer. After verbally working through the steps, VLOOKUP in Excel was used to demonstrate the same pattern of thinking to the students. Figure 1 shows the example used in class.

Name	*Shirt Size*	*Cost*
Joe	L	
Jerry	XL	
Sue	M	
Hugh	L	

Shirt Size	*Cost*
S	$9.00
M	$9.00
L	$10.50
XL	$12.00
XXL	$14.00

Figure 1. VLOOKUP Class Example

Throughout the fall 2018 course, the overall chapter presentation remained the same as spring 2018, but the content assignments were changed along with additional deadlines; the audio presentation was also required. Students again completed two revisits of the Excel chapters covered at the beginning of the semester. Table 1 depicts the full course layout.

Table 1
Fall 2018 Course Content—Required Pre-class Audio PPTs & Simulation; 2 Revisits of Excel Chapters

Week Number	Office Component	Material Covered	Assignments	Day Due
1	Excel	Introduction to Excel	Audio PowerPoint presentation, Simulation Training Mid-level Grader Projects 1 and 2	Sunday night Friday night
2	Excel	Formulas and Functions	Audio PowerPoint presentation, Simulation Training Mid-level Grader Projects 1 and 2	Sunday night Friday night
3	Excel	Charts	Audio PowerPoint presentation, Simulation Training Mid-level Grader Projects 1 and 2	Sunday night Friday night
4	Excel	Datasets and Tables	Audio PowerPoint presentation, Simulation Training Mid-level Grader Projects 1 and 2	Sunday night Friday night
5	Excel	Capstone covering Excel chapters 1 through 4		In-class assignment
6	Access	Introduction to Access	Simulation Training, Simulation Exam, Capstone Grader Projects	Friday night
7	Access	Tables and Queries in Relational Databases	Simulation Training, Simulation Exam, Capstone Grader Projects	Friday night
8	Access	Using Queries to Make Decisions	Simulation Training, Simulation Exam, Capstone Grader Projects	Friday night
9	Access	Creating and Using Professional Forms and Reports	Simulation Training, Simulation Exam, Capstone Grader Projects	Friday night
10	Excel	Subtotals, PivotTables, and PivotCharts	Audio PowerPoint presentation, Simulation Training Mid-level Grader Projects 1 and 2	Sunday night Friday night
11	Excel	Re-visit Weeks 1 and 2 using additional assignments	Simulation Exam, Capstone Homework Grader Projects for chapters 1 and 2	Friday night
12	Excel	Re-visit Weeks 3, 4, and 5 using additional assignments	Simulation Exam, Capstone Homework Grader Projects for chapters 3, 4, and 5	Friday night

13	Excel	Re-visit Weeks 1 and 2 using additional assignments	Capstone Assessment Grader Projects for chapters 1 and 2	Friday night
14	Excel	Re-visit Weeks 3, 4, and 5 using additional assignments	Capstone Assessment Grader Projects for chapters 3, 4, and 5	Friday night
15	Excel	Capstone covering Excel chapters 1 through 4		In-class assignment

Plans for Spring 2019 and Beyond

The instructor chose to continue the requirements of pre-class audio PowerPoints and simulation exercises throughout the Excel instruction, in addition to 2 "revisits" of the Excel chapters going forward into the spring 2019 semester and beyond. In addition to continuing to use a scaffolding approach for the OIS 200 Computers in the Office course, an honors section for OIS 200 has been proposed for future semesters. Additional Excel content would be added to the honors course.

Student Feedback Survey

Near the end of the semester with 5 Excel chapters and two revisits of those chapters (spring 2018 semester), the instructor designed a survey to gather student feedback about the course structure and self-reported level of confidence. The survey was approved by the university's Human Subjects Institutional Review Board. The survey, which was created using Qualtrics, consisted of 7 seven-point Likert scale questions having the choices of "strongly disagree," "disagree," "somewhat disagree," "neither agree nor disagree," "somewhat agree," "agree," and "strongly agree" for answers. For two of the questions, the students had to pick which function—IF, PMT, or VLOOKUP—was the hardest to understand and which was the easiest. The survey concluded with three open-ended questions and four demographic questions.

The instructor administered the feedback survey to her three sections of OIS 200. Upon completion of the Capstone assignment that served as the final exam, the students were

encouraged to log into Moodle and access the survey via the link at the top of the Moodle section. Statistical analysis was performed on the captured data using IBM SPSS Statistics 24 software. After seeing the results of applying scaffolding to that semester's classes, the instructor decided to survey her students for the next two semesters, fall 2018 and spring 2019. This included three sections during the fall 2018 semester and two sections in spring 2019. The survey was administered in the same manner all three semesters. For the sake of consistency, the same statistical analyses were performed.

In spring 2018, 49 of the 89 students completed the survey (a response rate of 55%). In fall 2018, 59 of the 100 students completed in the survey (a response rate of 59%). In spring 2019, 39 of the 66 students enrolled completed the survey (a response rate of 59%).

Demographics

Gender, age, classification, and college served as independent variables for the study. In all three semesters, more females than males completed the survey, as shown in Figure 2. Data for classification were collected using the traditional freshman, sophomore, junior, and senior choices. Due to the small numbers of sophomores, juniors, and seniors, the data were collapsed into non-freshmen. In each of the three terms, the majority of students completing the survey were freshmen, with the fall 2018 term having the greatest number of freshmen completing the survey (see Figure 3). Data for the student's college were collected using Arts & Sciences (A&S), Business Administration (CBA), Education (COE), and Nursing/Allied Health/Culinary (NAH) as the choices. Due to the small numbers representing the non-business colleges, the data were collapsed into Non-CBA students. These results are illustrated in Figure 4. Non-CBA students ranged from 49% non-CBA students in spring 2018 to 38.5% in spring 2019. The students were also asked to self-report their level of Excel knowledge at the start of the semester;

results are illustrated in Figure 5. In all three semesters over 30% reported no previous Excel experience. Between 40 and 50% each semester reported minimal prior Excel experience. Twenty percent or less each semester self-reported their level as experienced Excel user.

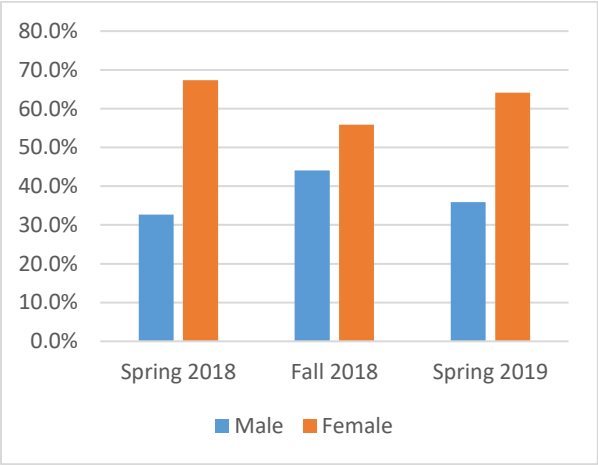

Figure 2. Gender of Respondents

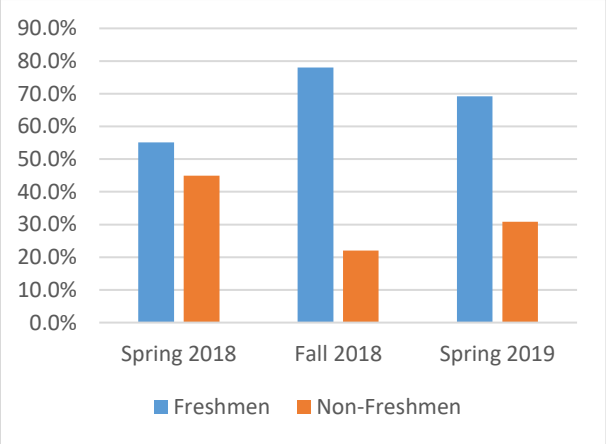

Figure 3. Classification of Respondents

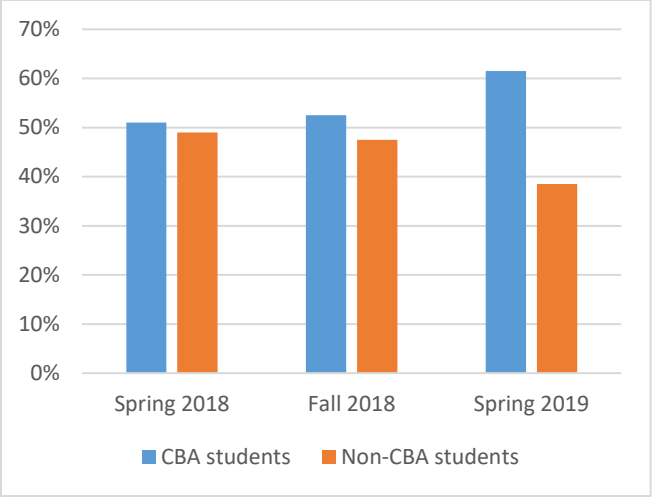

Figure 4. College of Respondents

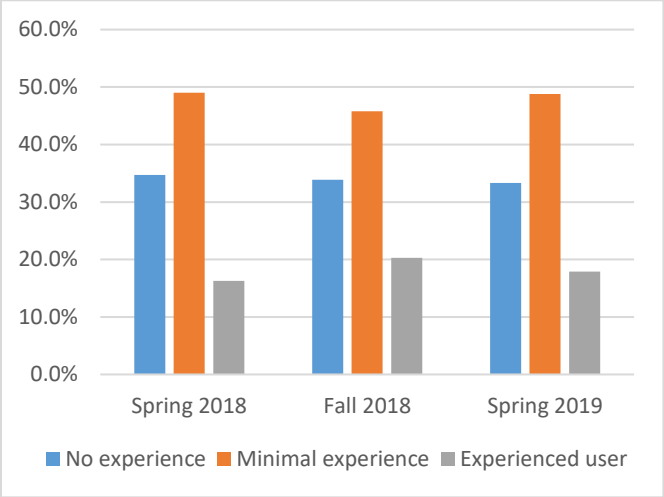

Figure 5. Excel Experience Level of Respondents

Students' Opinions

The mean and standard deviation for each of the dependent variables were computed. These dependent variables related to the students' opinions of re-visiting five Excel chapters and whether their level of knowledge changed. Results are displayed in Table 2.

Spring 2018—2 Revisits of 5 Excel Chapters. The dependent variable "Now believe that they could transform related data into a table with minimal difficulties" had the highest mean (M = 6.56, SD = .769) while the dependent variable with the lowest mean was "Now understand how to setup the PMT function" (M = 4.92, SD = 1.455).

Fall 2018—Addition of pre-class PPT and simulation requirement. The dependent variable "Now believe that they could transform related data into a table with minimal difficulties" had the highest mean (*M* = 6.29, *SD* = 1.018) while the dependent variable with the lowest mean was "Now understand how to setup the PMT function" (*M* = 5.51, *SD* = 1.431).

Spring 2019—Addition of pre-class PPT and simulation requirement. The dependent variable "Now believe that they could setup a PivotTable with minimal difficulties" had the highest mean (*M* = 6.33, *SD* = .806) while the dependent variable with the lowest mean was "Now understand how to setup the VLOOKUP function" (*M* = 5.15, *SD* = 1.710).

Table 2
Mean and Standard Deviation of Dependent Variables

	Sp18--2 Revisits of Excel		F18--2 Revisits & PPT&Simulation		Sp19--2 Revisits & PPT&Simulation	
Dependent Variable	**Mean**	**StdDev**	**Mean**	**StdDev**	**Mean**	**StdDev**
Believe their overall knowledge of Excel increased each time we worked through the chapters (Q1)	6.39	.885	6.22	1.084	5.97	1.135
Now understand how to setup an IF function (Q2)	5.46	1.237	5.66	1.360	5.33	1.364
Now understand how to setup the PMT function (Q3)	**4.92**	1.455	**5.51**	1.431	5.23	1.287
Now understand how to setup the VLOOKUP function (Q4)	5.49	1.583	5.53	1.513	**5.15**	1.710
Now understand when to use Absolute Cell References instead of Relative Cell References (Q5)	6.20	1.190	6.14	1.279	5.64	1.246
Now believe that they could setup a PivotTable with minimal difficulties (Q6)	6.47	.892	6.27	1.014	**6.33**	.806
Now believe that they could transform related data into a table with minimal difficulties (Q7)	**6.56**	.769	**6.29**	1.018	6.23	.959

Green font – highest mean
Red font – lowest mean

T-tests and Analysis of Variance

Mean responses were analyzed for differences among distinct groups of students. Independent samples t-tests and analysis of variance statistical procedures were carried out to determine if any statistically significant differences exist.

Gender. Relating to the seven analyzed questions on the survey, the authors formulated hypotheses (H1-H7) about the differences in the mean of the dependent variables by **gender**. In **spring 2018 (2 revisits of Excel Chapters)**, for the statement, "*By revisiting Excel chapters 1 through 5, I now believe that I could transform related data into a table with minimal difficulties* (H7)," male students had a mean of 6.31 while female students had a mean of 6.69. The hypothesis of equal means was rejected ($p < .001$). In both **fall 2018 and spring 2019 (addition of a pre-class audio PowerPoint and simulation training in addition to the 2 revisits)**, none of the hypotheses in this group were found to be statistically significant. (See Table 3.)

Table 3
Statistically Significant Differences in Mean Responses

Survey Item	Test & Sig. Level	Findings
Differences in Mean Responses by: **Gender**		
Sp 18--2 Revisits - Now believe that they could transform related data into a table with minimal difficulties (H7)	$t_{22.183} = -1.428$, $p < .001$	Male mean = 6.31 Female mean = 6.69
Differences in Mean Responses by: **College**		
Sp 18—2 Revisits - Now understand how to setup the VLOOKUP function (H4)	$t_{36.102} = -.311$, $p < .034$	Non-CBA students mean = 5.42 CBA students mean = 5.56
F 18—Audio PPT & Simulation & Revisits - Now believe overall my knowledge of Excel increased each time we visited the chapters (H1)	$t_{36.949} = -2.208$, $p < .034$	Non-CBA students mean = 5.89 CBA students mean = 6.52
F 18—Audio PPT & Simulation & Revisits - Now understand how to setup the PMT function (H3)	$t_{57} = -2.312$, $p < .024$	Non-CBA students mean = 5.07 CBA students mean = 5.90
Differences in Mean Responses by: **Classification**		
Sp18—2 Revisits - Believe their overall knowledge of Excel increased each time we worked through the chapters (H1)	$t_{29.531} = 3.212$, $p < .011$	Freshmen mean = 6.74 Non-freshmen mean = 5.95
Sp 18—2 Revisits - Now believe that they could setup a PivotTable with minimal difficulties (H6)	$t_{31.405} = 1.658$, $p < .029$	Freshmen mean = 6.67 Non-freshmen mean = 6.23
Sp 19—Audio PPT & Simulation & Revisits - Now understand how to setup an IF function (H2)	$t_{37} = 2.128$, $p < .040$	Freshmen mean = 5.63 Non-freshmen mean = 4.67
Differences in Mean Responses by: **Self-reported Experience Level**		
Sp 18—2 Revisits - Now believe that they could transform related data into a table with minimal difficulties (H7)	ANOVA-0.035 Fisher's LSD-0.011	Minimal experience mean = 6.79 Experienced user mean = 6.00

F 18—Audio PPT & Simulation & Revisits - Now understand how to setup an IF function (H2)	ANOVA-0.044 Fisher's LSD-0.022	No experience mean = 5.05 Minimal experience mean = 5.96
F 18—Audio PPT & Simulation & Revisits - Now understand how to setup the PMT function (H3)	ANOVA-0.038 Fisher's LSD-0.016	No experience mean = 4.85 Minimal experience mean = 5.85
F 18—Audio PPT & Simulation & Revisits - Now understand how to setup the VLOOKUP function (H4)	ANOVA-0.004 Fisher's LSD-0.001	No experience mean = 4.65 Minimal experience mean = 6.04
F 18—Audio PPT & Simulation & Revisits - Now understand how to setup the VLOOKUP function (H4)	ANOVA-0.004 Fisher's LSD-0.024	No experience mean = 4.65 Experienced user mean = 5.83
F 18—Audio PPT & Simulation & Revisits - Now understand when to use Absolute Cell References instead of Relative Cell References (H5)	ANOVA-0.005 Fisher's LSD-0.003	No experience mean = 5.40 Minimal experience mean = 6.48
F 18—Audio PPT & Simulation & Revisits - Now understand when to use Absolute Cell References instead of Relative Cell References (H5)	ANOVA-0.005 Fisher's LSD-0.008	No experience mean = 5.40 Experienced user mean = 5.83
F 18—Audio PPT & Simulation & Revisits - Now believe that they could setup a PivotTable with minimal difficulties (H7)	ANOVA-0.019 Fisher's LSD-0.005	No experience mean = 5.80 Minimal experience mean = 6.63

College. The authors also formulated hypotheses, again tested using independent samples t-test, about the differences in the mean of the different dependent variables by **college**. In **spring 2018 (2 revisits of Excel chapters)**, one statistically significant difference was found. For the statement, "*By revisiting Excel chapters 1 through 5, I now understand how to setup the* ***VLOOKUP*** *function* (H4)," non-CBA students had a mean of 5.42 while CBA students had a mean of 5.56. The hypothesis of equal means was rejected ($p < .004$). In **fall 2018 (addition of a pre-class audio PPT and simulation requirement as well as 2 revisits)**, two hypotheses in this grouping were found to be statistically significant. For the statement, "*By revisiting Excel chapters 1 through 5, I believe overall my knowledge of Excel increased each time we visited the chapters* (H1)," non-CBA students had a mean of 5.89 while CBA students had a mean of 6.52. The hypothesis of equal means was rejected ($p < .034$). For the statement, "*By revisiting Excel chapters 1 through 5, I now understand how to setup the PMT function* (H3)," non-CBA students had a mean of 5.07 while CBA students had a mean of 5.90. The hypothesis of equal means was

rejected ($p < .024$). In **spring 2019 (same requirement of pre-class audio PPT and simulation plus 2 revisits)**, no hypothesis in this group was found to be statistically significant.

Classification. The authors again tested using independent samples t-test, about the differences in the mean of the different dependent variables by **classification**. In **spring 2018 (2 revisits of Excel chapters)**, for the statement, "*By revisiting Excel chapters 1 through 5, I believe overall my knowledge of Excel increased* ***each*** *time we visited the chapters* (H1)," freshmen students had a mean of 6.74 while non-freshmen students had a mean of 5.95. The hypothesis of equal means was rejected ($p < .011$). For the statement, "*By revisiting Excel chapters 1 through 5, I now believe that I could setup a PivotTable with minimal difficulties* (H6)," freshmen students had a mean of 6.67 while non-freshmen students had a mean of 6.23. The hypothesis of equal means was rejected ($p < .029$). In **fall 2018, when a pre-class audio PPT and simulation training requirement were added in addition to the two "revisits**," none of the hypotheses in this group were found to be statistically significant. In **spring 2019 (same pre-class audio PPT and simulation training video requirement and "revisits")**, for the statement, "*By revisiting Excel chapters 1 through 5, I now understand how to setup an IF function* (H2)," freshmen students had a mean of 5.63 while non-freshmen students had a mean of 4.67. The hypothesis of equal means was rejected ($p < .040$).

Self-reported experience level. The authors established seven ANOVA tests, where the Likert-type statements were the factors and **self-reported experience level** was the variable. In **spring 2018, when the course structure revisited the Excel chapters 2 times**, only one of the hypotheses related to **self-reported experience level** questions was found to be statistically significant. For the statement, "*By revisiting Excel chapters 1 through 5, I now believe that I could transform related data into a table with minimal difficulties* (H7)," there was a statistically

significant difference between groups as determined by one-way ANOVA ($F(2,45) = 3.620$, $p = .035$). Because of unequal group sizes, Fisher's LSD post hoc test was used to determine the nature of the difference between the **self-reported experience level** of students; this analysis revealed that there was a statistically significant difference between the mean of the minimal experience students ($M = 6.79$, $SD = .509$) and the mean of the experienced user students ($M = 6.00$, $SD = .756$, $p = .011$). There were no other statistically significant differences between the other **self-reported experience level** means.

Using the same established seven ANOVA tests, five hypotheses were significant in **fall 2018, when the pre-class audio PPT and simulation training was added to the course in addition to 2 revisits of the chapters.** The first hypothesis that was found to be statistically significant between groups was "*By revisiting Excel chapters 1 through 5, I now understand how to setup an **IF** function* (H2)." This was determined using a one-way ANOVA ($F(2,56) = 3.301$, $p = .044$). Because of unequal group sizes for all hypotheses, Fisher's LSD post hoc test was used, in each case, to determine the nature of the difference between the **self-reported experience level** of students; this analysis revealed that there was a statistically significant difference between the mean of the minimal experience students ($M = 5.96$, $SD = 1.091$) and the mean of the no experienced user students ($M = 5.05$, $SD = .1.791$, $p = .044$).

The second significant finding related to self-reported experience level in **fall 2018** was, "*By revisiting Excel chapters 1 through 5, I now understand how to setup the **PMT** function* (H3)." There was a statistically significant difference between groups as determined by one-way ANOVA ($F(2,56) = 3.478$, $p = .038$). Fisher's LSD post hoc test reported there was a statistically significant difference between the mean of the no experience students ($M = 4.85$, $SD = 1.954$) and the mean of the minimal experienced user students ($M = 5.85$, $SD = 1.027$, $p = .016$).

The third significant finding related to self-reported experience level in **fall 2018** was, "*By revisiting Excel chapters 1 through 5, I now understand how to setup the* ***VLOOKUP*** *function* (H4)." There was a statistically significant difference between groups as determined by one-way ANOVA ($F(2,56) = 6.035$, $p = .004$). Fisher's LSD post hoc test reported there was a statistically significant difference between the mean of the no experience students ($M = 4.65$, $SD = 2.033$) and the mean of the minimal experienced user students ($M = 6.04$, $SD = .980$, $p = .001$).

The fourth significant finding related to self-reported experience level in **fall 2018** was, "*By revisiting Excel chapters 1 through 5, I now understand when to use* ***Absolute Cell References*** *instead of* ***Relative Cell References*** (H5)." There was a statistically significant difference between groups as determined by one-way ANOVA ($F(2,56) = 5.874$, $p = .005$). Fisher's LSD post hoc test reported there was a statistically significant difference between the mean of the minimal experienced students ($M = 6.48$, $SD = .802$) and the mean of the experienced user students ($M = 6.58$, $SD = .515$, $p = .001$).

The fifth significant finding related to self-reported experience level in **fall 2018** was, "*By revisiting Excel chapters 1 through 5, I now believe that I could transform related data into a table with minimal difficulties* (H7)." There was a statistically significant difference between groups as determined by one-way ANOVA ($F(2,56) = 4.261$, $p = .019$). Fisher's LSD post hoc test reported there was a statistically significant difference between the mean of the no experience students ($M = 5.80$, $SD = 1.436$) and the mean of the minimal experienced user students ($M = 6.63$, $SD = .565$, $p = .005$).

In **spring 2019, which repeated the requirement of the pre-class audio PPTs and simulation training and two revisits of the Excel chapters**, none of the established seven

ANOVA tests were statistically significant. Statistically significant differences of means identified in all three semesters are summarized in Table 3.

Students' Comments about the Course

While the instructor perceived the re-visiting of the chapters was working effectively, students' open comments were also solicited during the survey. As part of the survey the students were asked, "What did you like best about the course?" A review of those comments from all three semesters revealed that students liked revisiting the chapters and liked the instructor's approach of guiding them closely the first time through the materials and then putting them progressively more on their own. They perceived this helped them understand Excel better than other methods.

Overall the self-reported student confidence in their Excel skills and written comments about the structure of the course confirm the value of the scaffolding approach to the OIS 200, Computers in the Office, course.

Conclusions and Recommendations

This paper has described a three-semester revision of the OIS 200 Computers in the Office course within the college of business at the authors' university. The paper also included analysis of a student survey administered in the third semester, and two additional semesters in which the third semester's course design was repeated. While some might say the value of such a course at the university level is no longer relevant since students learn these skills prior to enrollment, the authors recognize the need for the course continues at their university. Over the several decades since the emergence of office productivity software for microcomputers, much has been written about teaching such a course.

The authors' academic department challenged a key instructor to revise the course to more effectively prepare students to use Access database and Excel spreadsheets in their upper-level courses within their business majors. Based on the research related to scaffolding of instruction, both at the K-12 and post-secondary levels of education, the instructor incorporated scaffolding into the methodology and structure of the course.

As noted in the findings of self-reported knowledge of Excel prior to the course, the students at the authors' university were NOT already knowledgeable concerning Excel. In all three semesters in which students were surveyed, approximately one-third reported no prior knowledge, and another one-half reported only minimal knowledge. Thus, these students would in all likelihood have not been able to perform the tasks individually on first attempt. A key benefit of scaffolding, as noted by Miao, et al (2012), is that the methodology provides instructor guidance that helps the students move from fully guided to a level of independent task completion and understanding. The OIS 200 instructor structured the course to provide Access database instruction following several chapters working with Excel. Then, following the Access chapters, the class revisited Excel chapters and worked with less help from the instructor and finally independently. The most recent structure of the course (fall 2018 and going forward) requires students to complete pre-class audio PowerPoints and simulation training in addition to two "revisits" of the Excel chapters. This coincides with the observations of Larkin (2002), who noted that scaffolding gradually decreases instructor support as students progress, requiring the student to assume more responsibility.

In **spring 2018, which included 5 Excel chapters, with 2 "revisits" of those chapters**, survey findings show mean scores of a low of 4.92 related to setup of PMT function to a high of 6.56 related to transforming related data into a table. In **fall 2018, when pre-class audio**

PowerPoints and simulation training were added to the course content and structure of 2 "revisits" to the Excel chapters, the mean score low of 5.51 related to setup of the PMT function, and the high mean score of 6.29 related to transforming related data into a table. In **spring 2019, which repeated the requirement of pre-class audio PowerPoints and simulation training and 2 "revisits" to Excel chapters**, the low mean score of 5.15 related to setup of the VLOOKUP function to a high mean of 6.3 related to setup of a PivotTable.

Statistical test findings varied with each of the three surveyed groups. Only a few statistical differences were found based on gender, college of student, and student classification. Most of the statistical differences identified were by self-reported Excel experience levels, and these occurred in the **fall 2018 semester, the first semester in which the instructor added the requirement of pre-class audio PowerPoints and simulation training**; no experience Excel course entrants were more confident in several Excel skills than Minimally experienced and Experienced users (interpreted by the authors as significant growth in their confidence).

Based on open comments from the survey, students recognized the value of revisiting chapters to help cement their understanding in working with Excel and increasing their confidence in their ability to do so. They recognized the value of step-by-step instructor guidance and later revisits to the tasks while completing on their own. Thus, overall survey results agree with Alber (2014) who reports that scaffolding leads to overall greater quality end product and a better student learning experience.

In future semesters the instructor will share the scaffolding methodology with other instructors of the course and encourage adoption of the methodology. Feedback from business faculty who teacher higher-level courses within the college of business will also be solicited to

determine whether they perceive a higher level of competence and confidence in students as they continue their work with Excel.

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THE GMETRIX EXAM: A COMPARISON OF PREDICTORS OF SUCCESS FOR THE MICROSOFT OFFICE SPECIALIST IN EXCEL CERTIFICATION EXAM

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Abstract

While the media highlighted wasteful spending as the norm for U.S. higher education institutions, the incremental improvement efforts made by university faculty to reduce costs for students go overlooked. This study draws attention to an effort by members of the Computer Information Systems (CIS) faculty at a 4-year, regional, public institution as they researched ways to reduce the cost of a class – CIS 2000 – Spreadsheet Applications. This effort focused on predictors of success for the class and whether the cost of a one predictor, the GMetrix exam, is necessary.

Keywords: *MOS, Excel, certification scores, predictors of success*

Introduction

Since 2012, the institution's CIS faculty have offered CIS 2000 – Spreadsheet Applications, a class designed to prepare CIS students to successfully earn the Microsoft Office Specialist (MOS) Excel certification. CIS 2000 is one of the required core classes of the CIS curriculum, which means every CIS student must successfully pass the class to graduate with a CIS degree. Faculty expect students who enroll in CIS 2000 to purchase MyITLab access with an e-text book, a GMetrix license, and a voucher to take the MOS Excel certification exam. While the faculty have incorporated the costs of the GMetrix license and the MOS voucher into

the lab fees for the course, the student still must pay for these items as part of the tuition and fees.

Faculty have found that students complain about the cost-prohibitive nature of the separate materials required for CIS 2000. In fact, students often tried to take the course without purchasing one or more of the required materials, often to the detriment of their performance by the end of a semester. Effective Fall 2017, students paid a lab fee of $122.50 that incorporated the cost of the certification voucher and the GMetrix license. Students also purchased MyITLab with an e-text from the bookstore for $132.25, as of Fall 2016. The way students bought the GMetrix simulation tool has changed over time. Originally, faculty required students to buy GMetrix as a single license or a Suite at the cost of $40-120. In response to the voiced concerns about the prohibitive materials costs, the department invested in a GMetrix site license. In doing so, the departmental faculty incorporated the cost of GMetrix into the course fees. Thus, the costs for each student in the class was $254.75 of which approximately $40 was the GMetrix license. The cost of the course led investigators to question if these added fees were worth the potential increase in student success.

In higher education, cumulative grade point average (GPA), SAT/ACT test scores, and high school GPA were well known predictors of student success (Geiser & Santelices, 2007). Understanding the importance of student success indicators led researchers to question whether these indicators of success might be just as successful in predicting the success of students on the MOS Excel certification as the GMetrix exam simulations. If that scenario is the case, should the department still require this added cost for students taking CIS 2000? Accordingly, the researchers in this study sought to address the problem of whether the CIS 2000 faculty required students to invest in a tool that they may not actually need to perform well on the MOS Excel

certification. This study contributed to the body of knowledge related to faculty making course improvements to reduce the cost burden of students by testing whether a required certification-prep simulation tool was a valid and value-added purchase to the already mandatory textbook and certification exam costs of this course.

Literature Review

A review of the literature supplied information on the rising costs in higher education including student-centric quality improvement and wasteful activities. Additionally, researchers found useful information about certifications and simulated practice environments as well as the verification and validation of the GMetrix prep tool. Finally, a large body of literature existed about predictors of student success.

Rising Costs in Higher Education

College tuition costs have been on the rise for decades. According to Wellman (2010), since 1988, out of all other major consumer categories except one, tuition costs claimed the highest year-over-year percentage increase. Rising costs in higher education are now a matter of public concern but establishing a single reason behind increasing higher education costs has not been so straightforward (Archibald & Feldman, 2008). Where some researchers emphasized that tuition costs have risen because of a shift of public resources from government to students (The Pell Institute, 2015), other research efforts concentrated on the wasteful spending by universities on luxury items (Stripling, 2017). Other researchers contended that universities cannot produce high-quality student outcomes without making a substantial investment in higher education. Nevertheless, policymakers remained skeptical that the quality gained is worth the accompanying expense (Archibald & Feldman, 2008). Regardless of the reasons for the

increased costs of higher education, students, their families, and the taxpayers that support them must pay those increased costs to obtain the education the student desires.

Student-centric quality improvements. As these big picture conversations continued in the background, ordinary faculty often sought new ways to make incremental quality improvements to reduce costs and enhance instruction for students within their purview. Faculty took this step by improving course design (Bennett & Lamb, 2017; Brinkerhoff & Koroghlanian, 2007; Stocks & Freddolino, 2000), designing courses to meet unmet student needs (Soule, Fanguy, Kleen, Giguette, & Rodrigue, 2017), and increasing productivity through the removal of any activities that do not add value for the student (Emiliani, 2005; Hazelkorn, 2015). Researchers have found that faculty are willing to reduce the financial burden of students by replacing high cost textbooks and other course materials with open educational resources (Martin, Belikov, Hilton, Wiley, & Fischer, 2017). Other researchers have suggested that finding ways to reduce the total cost of education for students has the potential to improve persistence rates of students who might otherwise, because of high textbook costs, not purchase the textbook, drop/withdraw from a course, or enroll in fewer courses (Florida Virtual Campus, 2012). Given this positive outcome, aligning the costs of a class with increasing the quality of the class is paramount for faculty.

Wasteful activities. According to Plenert (2012), quality and waste were opposing forces that work against one another. Waste was a threat to the achievement of quality in the classroom. Wasteful activities were those that add cost, but do not add value to the customer. According to the ideals of continuous improvement, specifically the Lean methodology, if an activity is adding cost, but is adding no value, practitioners should eliminate those activities

(Zhou, 2016). In eliminating waste, practitioners improve quality and service and enhance overall organizational effectiveness.

Certifications and Simulated Practice Environments

While faculty want to remain cognizant of costs, one way to ensure quality is through the required obtainment of certifications by students. In the Computer Information Systems discipline, certifications were important for students who wish to obtain employment in the industry upon graduation (Adams & Defleur, 2006; Hunsinger & Smith, 2008; Pharris, Tarver, & Penrod, 2017; Schlichting & Mason, 2004). As is the case for many national certifications across a vast reach of industries, various tools, textbooks, and simulation environments were available to help students prepare for individual certifications (Scalese, Obeso, & Issenberg, 2008; Decker, Sportsman, Puetz, & Billings, 2008). GMetrix was a Skills Management System and provider of testing technology that allowed users of the application to take practice exams for information technology (IT) industry certifications in a concurrent or simulated environment (GMetrix, 2017). The MOS Excel certification was one of those IT industry certifications.

Some college classrooms incorporated the GMetrix practice exams into university courses to better prepare students for taking the MOS certification (Gibson, 2017; Rebman, Kelly, & Alaba Ogedengbe, 2013). According to Gibson (2017), "The synergistic efforts of business entities such as Microsoft, GMetrix, Certiport and Wiley provide a performance-based approach for learning that results in a tangible demonstration (i.e. certification) of acquired skills and knowledge that students are intrinsically motivated to accomplish" (p. 7). Gibson (2017) also stated that GMetrix is the provider most preferred for practice exams of Excel versions 2010, 2013, and 2016. Instructors used GMetrix as part of class requirements to give the student a comparable experience to sitting for the actual MOS certification. Instructors incorporated this

tool because they expect that using GMetrix will result in better student outcomes on the MOS certification and in the course.

Verification and Validation of GMetrix

However, does the GMetrix practice exams meet that expectation? Often verification and validation assessed only the accuracy of the simulation application (Balci, 2004). An accurate simulation tool does not indicate that it meets the purpose behind why instructors use it, and "It is often too costly and time-consuming to determine that a model is *absolutely* valid over the complete domain of its intended applicability" (Sargent, 2013, p. 12). Sargent (2013) went on to explain that an evaluation of the simulation tools occurs until "sufficient confidence is obtained that a model can be considered valid for its intended purpose" (p.12). Instructors would have ideally known the validity of a simulation tool before using it.

Almost no academic research exists referenced the GMetrix simulation tool. Moreover, the review of literature found no reference to researchers validating the achievement of the intent behind purchasing GMetrix simulation tool as part of their classroom activities. The researchers for this study found no other studies validating whether performance on the GMetrix predicted student success on the MOS Excel certification exam when faculty incorporated the practice exams into the university classroom environment.

Predictors of Student Success

In contrast to the absence of academic research validating that performance on the GMetrix predicts student success, researchers have examined various other indicators of student success in higher education much more thoroughly in the research. Scholarly research has established indicators related to student demographics such as the socio-economic and socio-

cultural background and academic preparation of the student (Aslan, 2017; Setiawan & Margona, 2015; Wu & Kraemer, 2017;). Additionally, researchers have shown that some activities and achievements that students engage in during their university studies can give students a greater chance at success (Webber, Krylow, & Zhang, 2013). In the review of the literature, the scholars found no studies that determined whether predictors of student success might also indicate success on the MOS Excel certification exam.

In the current study, the intent behind the use of the GMetrix tool was that it prepares students to succeed for the MOS certification. Faculty considered student success in the GMetrix simulation as a predictor of success on the MOS Excel certification, yet no formal study had taken place to prove or disprove this theory. Moreover, the researchers uncovered no support for this theory in the academic literature.

Higher education institutions remain under pressure to remove wasteful activities that increase the cost of education without adding actual value for their students. Because students paid higher student fees to take GMetrix practice exams in the CIS 2000 course, the CIS faculty have the responsibility to ensure students are truly receiving value from the exam. To determine this value, the CIS faculty needed to determine whether taking the GMetrix practice exams predicted success on the MOS Excel certification. It was also necessary to rule out other potential predictors of student success as possible reasons for success on the MOS Excel certification exam. This paper includes a description of the approach taken by faculty at a four-year, regional, public institution in Louisiana to improve a spreadsheet course (CIS 2000) by determining whether the GMetrix exam is an activity that adds customer value.

Methodology

Over the years, one instructor has gathered and recorded the GMetrix scores, as well as the MOS Excel certification scores, for all students in the CIS 2000 sections taught by her at the institution. The period included in this analysis was Fall 2012 to Spring 2017. The Office of Institutional Research provided the data for the ACT/SAT composite score, cumulative GPA, and high school GPA. On the GMetrix scores, the instructor maintained scores for up to three of the practice exams. For the statistical analysis, the researchers averaged the available scores. On the MOS Excel certification, the researchers used the first score the student obtained for the analysis. For the ACT/SAT composite scores, conversion of the SAT scores occurred using publicly available conversion tables. The cumulative GPA was the cumulative GPA at the time the student entered the CIS 2000 class.

On the GMetrix exam, the instructor did not give this pre-test prior to Fall 2013. Thus, the Fall 2012 and Spring 2013 semesters provided data prior to the introduction of the GMetrix exam. The Fall 2013 to Spring 2017 semesters contained data after the introduction of the GMetrix exam. This introduction of the GMetrix exam provided a way to compare the data prior to the introduction of the exam and after the introduction of the exam.

The goal of this study was to answer the primary research question, "To what extent is success on a MOS certification exam correlated to high performance on GMetrix exams as opposed to being attributable to other causes?" A secondary research question was "To what extent have MOS exam scores changed due to the introduction of GMetrix software?". Using quantitative methods, analysis of the data occurred using statistical procedures to determine whether success on the MOS certification exam was a consequence of high performance on

GMetrix exams or whether the success might be attributable to other causes. The researchers for this study utilized basic descriptive statistics, correlations, partial correlations, and t-tests.

Results

The first quantitative analysis involved the use of descriptive statistics on five variables. These five variables were the students' high school grade point average (GPA), cumulative GPA, average GMetrix score, first score on the MOS Excel certification, and the ACT/SAT composite scores. After an initial analysis, the researched removed three outliers – one each for high school GPA, cumulative GPA, and average GMetrix score. Table 1 shows the descriptive statistics produced for the five variables. These descriptive statistics included minimum, maximum, mean, standard deviation, skewness, and kurtosis.

Table 1. Descriptive Statistics for Five Variables.

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
High School GPA	544	1.90	4.00	3.271	.489	-.444	.105	-.517	.209
ACT/SAT Composite Score	535	12	32	21.553	3.687	.343	.106	-.060	.211
Cumulative GPA	762	1.000	4.000	2.934	.644	-.213	.089	-.764	.177
GMetrix Average	578	282	1000	854.424	118.278	-1.927	.102	4.268	.203
First Score on MOS	777	22	1000	731.111	193.168	-1.025	.088	.424	.175

Valid N (listwise)	364								

The next statistical test was correlations between the four variables of high school GPA, ACT/SAT composite score, cumulative GPA, and average GMetrix score and the variable of first score on the MOS exam. Table 2 contains the correlations between the various variables. The first score on the MOS exam has a medium correlation (r(576)=.368, p=.000) with the GMetrix average score. The first score on the MOS exam has a medium correlation (r(542)=.403, p=.000) with high school GPA. The first score on the MOS exam has a medium correlation (r(533)=.433, p=.000) with ACT/SAT composite score. The first score on the MOS exam has a medium correlation (r(760)=.348, p=.000) with cumulative GPA.

Table 2. Correlation Results.

		First Score on MOS	GMetrix Average	High School GPA	ACT/SAT Composite Score	Cumulative GPA
First Score on MOS	Pearson Correlation	1	.368**	.403**	.433**	.348**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	777	578	544	535	762
GMetrix Average	Pearson Correlation	.368**	1	.210**	.203**	.162**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	578	578	403	400	565
High School GPA	Pearson Correlation	.403**	.210**	1	.522**	.474**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	544	403	544	501	534
ACT/SAT Composite Score	Pearson Correlation	.433**	.203**	.522**	1	.330**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	535	400	501	535	527
Cumulative GPA	Pearson Correlation	.348**	.162**	.474**	.330**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	762	565	534	527	762

**. Correlation is significant at the 0.01 level (2-tailed).

The next statistical test was partial correlations, utilizing a two-tailed significance test, where the researchers measured the correlation between the first score on the MOS exam and the GMetrix average score while using a control variable of high school GPA, ACT/SAT composite score, or cumulative GPA. When using a control variable of high school GPA, the partial correlation ($r(400)=.341$, $p=.000$) was significant between the first score on the MOS exam and the GMetrix average score. When controlling for ACT/SAT composite score, the partial correlation ($r(397)=.338$, $p=.000$) was also significant. Finally, when controlling for cumulative GPA, the partial correlation ($r(562)=.344$, $p=.000$) was also significant.

The final statistical tests involved a comparison of the variables before the instructor implemented the GMetrix exam and after the instructor implemented the GMetrix exam. Table 3 shows a case summary of the various variables and their values before implementation and after implementation.

Table 3. Case Summary of Variables Before and After GMetrix Implementation.

	High School GPA		ACT/SAT Composite Score		Cumulative GPA		First Score on MOS Exam	
	Prior To GMetrix	After GMetrix	Prior To GMetrix	After GMetrix	Prior To GMetrix	After GMetrix	Prior To GMetrix	After GMetrix
N	86	458	80	423	119	643	121	656
Minimum	1.90	2.00	15	13	1.000	1.354	22	175
Maximum	4.00	4.00	32	32	4.000	4.000	925	1000
Mean	3.0688	3.3085	20.41	21.97	2.78155	2.96230	572.13	760.43
Median	3.0650	3.3500	20.00	22.00	2.74200	2.97800	609.00	803.50
Std. Deviation	.50949	.47657	3.525	3.570	.616808	.645102	217.547	173.223
Skewness	-.239	-.473	.876	.350	.102	-.277	-.434	-1.102
Kurtosis	-.682	-.484	.735	-.059	-.430	-.763	-.733	.661

The last statistical test was an independent samples t-test comparing the first score on the MOS exam prior to implementation of the GMetrix exam and after implementation of the GMetrix exam. Table 4 shows the results of this independent samples t-test.

Table 4. Independent Samples T-Test: Comparison of Pre-GMetrix and Post-GMetrix.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
First Score on MOS Exam	Equal variances assumed	20.846	.000	-10.527	775	.000	-188.302	17.888	-223.417	-153.188
	Equal variances not assumed			-9.009	149.334	.000	-188.302	20.901	-229.603	-147.001

Discussion

The main point of discussion from the descriptive statistics was that some of the variables exhibited skew and kurtosis. However, based on the sample size and assumptions of normality regarding sample size, per Field (2013), the researchers proceeded with the calculation of the correlations. The correlations showed the highest correlation between the first score on the MOS exam and another variable was with the ACT/SAT composite score while the lowest correlation between the first score on the MOS exam and another variable was with the cumulative GPA. However, the correlations showed a tight range between all the correlations involving the first score on the MOS exam. When looking at the other variables and where the first score on the MOS exam ranked within their correlations, the highest correlation for the GMetrix average

score was the first score on the MOS exam. The first score on the MOS exam was the second highest correlation for the cumulative GPA and the ACT/SAT composite score. The first score on the MOS exam was the third highest correlation for high school GPA.

The correlation coefficients provided evidence of correlation between the GMetrix exam and the first score on the MOS exam. They also provided evidence of correlation between the other variables and the first score on the MOS exam. Given the amount of correlation between all the variables, the attributability of higher scores on the MOS certification exams to performance on the GMetrix exam is questionable. However, the partial correlations provide some support for that assertion given the correlation coefficients were still significant after controlling for one other variable.

The case summary shows the extent to which the scores on the MOS exam changed after introduction of the GMetrix exam. The mean score increased by almost 200 points as did the median score. However, the researchers noted the other academic success variables also increased during this same period. The increase on the other academic success variables may have been attributable to changes in admission standards at the university.

The independent samples t-test showed a significant difference on the first score on the MOS exam between students taking the exam prior to implementation of the GMetrix exam and after implementation of the GMetrix exam. This significant difference supported the idea of the MOS exam scores changing due to the introduction of the GMetrix software. However, given the change in the other academic success variables, the change in admission standards and the resulting change in the quality of students could not be ruled out as the cause of the increase in the scores on the MOS exam.

Conclusion and Implications

Based on the results of the statistical analysis, a medium correlation does exist between the first score on the MOS exam and the average score on the GMetrix exam. However, other causes, such as pre-existing academic success factor, cannot be excluded as the cause for higher scores on the MOS exam. The partial correlations provided additional support for the usefulness of the GMetrix exam in increasing scores on the MOS exam, but it is not conclusive.

Additionally, the pre-GMetrix and post-GMetrix scores provided additional evidence of increases in the first score on the MOS exam since the instructor introduced GMetrix. However, given the changes in the other variables and the changes in admission standards at the university, the researchers cannot conclude the changes in the MOS exam scores were due to the introduction of the GMetrix software.

Given the results indicating some support for the expense of the GMetrix exams, but a lack of a clear answer, a need for additional research is apparent. Researchers could conduct additional experiments comparing students who took the GMetrix practice exams and their performance on the MOS exam versus students who did not take the GMetrix practice exams and their performance on the MOS exam. While researchers would need to work out the ethical concerns of excluding a group of students from a practice material, the ability to conduct a true experimental study with a control group and an experimental group would provide additional clarity to the research questions in this study. Given these internal ethical concerns, one avenue of future research may be to compare the results with other universities who required the MOS exam, but do not require GMetrix.

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THE IMPACT OF SOCIAL MEDIA IN THE HIRING SELECTION PROCESS
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Abstract

This study discusses the literature, statistics, and primary data collection regarding the impact of social media on the hiring selection process. Job candidates are now being evaluated by potential employers regarding information they post online. The results from the survey data explore how bias can have an effect on hiring decisions. Even if the hiring managers are aware of their biases, they will still use social media as a tool in the hiring selection process.

Keywords: Hiring Process, Social Media Posts, Job Candidates, Online Screening

Introduction

Technology has evolved rapidly over the past decade, especially in the form of social media. The total percentage of the U.S. population who uses social media went from 10% in 2008 to 80% in 2017 (Statista, 2018). Because it has almost become an expectation to be able to find someone online, employers expect job candidates to have an online presence (Pew Research, 2017, as cited in LinkedIn, 2019).

Social media platforms allow users to create web-based profiles where they can interact with friends and family. Facebook estimated that 2.2 billion people worldwide use Facebook, WhatsApp, Instagram, or Messenger each day. Over 2.45 billion users are active monthly, and 1.62 billion individuals log onto Facebook daily **(**Facebook, 2019).

With the increased number of people expressing themselves on the internet for the entire world to see, it is no surprise that many employers are screening new employees via their social media accounts. Job candidates must be careful about the information they post to social media

as it can and has become the basis for many employment decisions (Drouin, O'Connor, Schmidt, & Miller, 2015). Social media provides hiring managers with ways to check candidate backgrounds (Nikolaou, 2014). CareerBuilder conducted a survey in 2018 asking businesses that use their site whether they screen potential applicants via their social media pages. Seventy percent (70%) of companies surveyed used social media to screen their prospective hires (Driver, 2018), 7% plan to do so (Ranosa, 2019), 48% look at the social media of their current employees, and 34% have reprimanded or terminated a current employee based on social media (CareerBuilder, 2018). Further, job applicants are expected to have a social media presence; 57% of prospective employers said they are less likely to interview a job candidate if they cannot find the applicant online (Curtin, 2020).

Easy access to information, usefulness, and cost may be important determinants for recruiters in their decision to screen job applicants (Nikolaou, 2014). More than half of hiring managers said they have found something during the social screening process that led them to not hire a candidate (Curtin, 2020; Driver, 2018; Ranosa, 2019).

Types of Social Media Use

LinkedIn is one of the fastest-growing social media networks with over 610 million members (LinkedIn, 2019). On average, two people create an account on this platform every second. LinkedIn has about 172,800 new users every day and about 62 million new users every year. On this professional social media site, users post information about current and previous jobs, projects they are working on, and professional association memberships. Conversely, on nonprofessional social media sites (e.g., Facebook), users post personal information and photos (Stopfer & Gosling, 2013).

Approximately 92% of Fortune 500 companies used the primarily business-oriented LinkedIn in 2017. The second most popular platform among Fortune 500 companies was Twitter (88%), followed by Facebook (85%). In 2018, the results were slightly different. LinkedIn retained its place as the leading social media platform of choice for Fortune 500 companies (92%). However, it shared the lead position with Facebook (92%). Twitter dropped to third place (79%), while the least popular network among Fortune 500 companies was YouTube (38%) (LinkedIn, 2019).

Over 90 million senior-level influencers and 63 million decision makers use LinkedIn today, which is the preferred platform for 77% in relation to recruitment efforts on social media (LinkedIn, 2019). A somewhat lower percentage of recruiters have turned to Facebook (63%). The highest percentage of LinkedIn members use YouTube (94%). The second most popular network among LinkedIn users is Facebook (90%), followed by Instagram (57%), and Pinterest (49%) (Pew Research, as cited in LinkedIn, 2019).

Social Media in the Hiring Process

Because social media is a main form of communication today, employees can learn a lot about applicants by perusing their online profiles and posts to select the right candidate for the job (Curtin, 2020; Eddy, 2012; Searle, 2006). Although social media is intended for connecting with friends and family, these sites can also be used as a professional way of networking, especially in the recruitment and hiring process. While a job candidate's qualifications are a strong reason for interviewing and hiring an employee, social media also influences how the applicant is evaluated. Potential employers can use information from a candidate's social media site to find further information effectively and efficiently, inexpensively, and in greater depth

from which is available through traditional screening processes (Broughton, Foley, Ledermaier, & Cox, 2013).

Employers are increasingly using social media to screen potential employees to distinguish job suitability between applicants based on their social media accounts (Ranosa, 2019). Some hiring managers use social media to determine if candidates are a good fit for the company, to obtain a true representation of the applicants out of context when they are not being assessed, or to see how they interact with others. Roulin and Bangerter (2013) found that recruiters used professionally related social media sites (e.g., LinkedIn) to infer a candidate's job fit—and personal social media (e.g., Facebook) to evaluate a candidate's organizational fit. All aspects of a job candidate's personal and professional life that are posted on social media can have severe and permanent consequences on that person's career. After researching social media, employers have several issues that trigger a red flag and result in their not hiring a job applicant (CareerBuilder, 2018):

Curtin (2020) cited the following reasons for why hiring managers chose not to hire candidates due to their social media presence:

- Posted drinking or using drugs (38%)
- Made discriminatory comments (32%)
- Bad-mouthed previous company or co-worker (30%)
- Lied about qualifications (27%)
- Demonstrated poor communication skills (27%)
- Shared confidential information from previous employer (23%)
- Had unprofessional screen name (22%)
- Lied about an absence (17%)

Ranosa (2019) also found the following:

- Posted provocative or inappropriate photos, videos, or other content (40%)
- Linked to criminal behavior (30%)
- Posted frequently on social media (12%)

Conversely, 44% of employers have found social media content that led them to hire the applicant (CareerBuilder, 2018):

- Candidate's background information supported professional qualifications (58%)
- Candidate showed professional online image (50%)
- Other’s posts about the applicant were positive (34%)

Curtin (2020) also found the following reasons that employers hire:

- Demonstrated excellent communication skills (37%)
- Showed creativity (35%)

Further, Ranosa (2019) noted social media information that showed positive attributes of the candidate:

- Supported job qualifications (37%)
- Showed creativity (34%)
- Conveyed professional image (33%)
- Showed wide range of interests (31%)
- Demonstrated good fit with company culture (31%)
- Had excellent communication skills (28%)
- Noted awards and accolades (26%)
- Referenced by others impressively (23%)
- Interacted with company’s social media accounts (22%)

- Posted compelling video or other content (21%)
- Had large number of social media followers or subscribers (18%)

The Society for Human Resource Management (SHRM, 2011) found that organizations use social media for screening job candidates to retrieve information outside of the contents of the job cover letter (70%), gain information with little time and effort (63%), evaluate applicant fit with the company (34%), and confirm the validity and reliability of the information (28%) (Broughton et al., 2013).

Additionally, employers monitor current employees' online presence, with 48% using social media to check on current employees; 10% doing so daily. Further, 34% have found social media content that caused them to reprimand or terminate an employee (CareerBuilder, 2018).

Pros and Cons of Using Social Media in Hiring Decisions

Brown and Vaughn (2011) reviewed the positives and negatives of using social media as a tool in the hiring process. Research suggests that an individual's post and "likes" online are very indicative of their actual behavior (Brown & Vaughn, 2011). Therefore, users should be more careful about how their entire social media presence can affect their future job chances. Unprofessional postings can significantly hurt an applicant's probabilities of being hired (Ranosa, 2019) and can even result in a lower salary offer (Bohnert & Ross, 2010; Broughton et al., 2013). A person might show that he or she is not conscientious, such as being drunk again; or if the user posts content showing a tendency toward large swings of personal or emotional experiences, he or she may be seen as having low emotional stability (Lamoureux, 2012).

Employers might assume that online posts are more accurate than the information in an applicant's cover letter; whereas, applicants do not expect their social media to be seen by employers, so they do not necessarily have to behave themselves on their personal social media

sites (Davison, Maraist, & Bing, 2011). Unprofessional postings, such as political statements, alcohol-related photos, or dissing an employer, can make the decision for the employer not to hire a candidate (Bohnert & Ross, 2010; Davison et al., 2011; Nigel Wright Recruitment, 2011) Alas, Bohnert and Ross (2010) found that 41% of job candidates admitted to online postings about their own extreme intoxication from drinking or drug use. Everything from how the person is dressed in the photos to the activities being performed can have a significant impact on being hired or not. Additionally, employers can gain access from third parties online for which accurate information cannot be confirmed. Therefore, a major concern is whether job-relevant characteristics can be assessed correctly via social media. If not, it is challenging to use the information in hiring decisions, especially since respondents rated negative online information of higher importance than positive information (Chang & Madera, 2012).

The Ethicality of Using Social Media in Hiring Decisions

Some question the ethicality and violation of privacy of employers looking at a candidate's private social media site (Davison et al., 2012). One survey indicated that lifestyle rather than employment-relevant information was the most common reason for rejecting job applicants (Broughton et al., 2013). Bohnert and Ross (2010) noted a study that showed 56% of social media users believe it is unethical for employers to check them out online because the information can be misleading or even have been posted by someone else. Others think that it violates their equal employment opportunity rights. Alternatively, it can be expected that employers practice due diligence when recruiting and hiring employees. Good applicants might be driven away from the firm if they find out that personal sites are being reviewed. A survey by Deloitte found that 53% of the employee respondents thought that social networking sites were

not their employers' business (Davison et al., 2012). Job seekers should be aware that firms might be able to match pre-application and application data (Searle, 2006).

Companies can also end up with legal risks relating to breach of privacy or discrimination by using social media information to evaluate candidates (Broughton et al., 2013; Kluemper, 2013; Lamoureux, 2012; Nicolaou, 2014). They also found that employers who do not use social media for screening applicants questioned the legality of such use (66%), were concerned about not being able to verify information (48%), and had worried about invading privacy (33%). Potential employers can learn discriminatory information about job applicants, such as gender, ethnicity, religion, marital status, age, sexual orientation, and political affiliation (Broughton et al., 2013; Brown & Vaughn; Davison et al., 2012; Nikolaou, 2014). Broughton and others (2013) found the most primary concerns among recruiters were that using social media may disadvantage candidates who do not have access to or do not use social media (50%), applicant privacy (36%), and possible discrimination based on applicant personal characteristics (28%).

Employers are legal as long as their process is non-discriminatory and does not infringe upon race, gender, religion, national origin, age, disability, or other protected classes. Recruiters must be cautious to make decisions as to the relevance of the online information to the applicant qualifications for the job (Eddy, 2012). Additionally, accuracy of information should be considered because it can be unreliable due to alteration, fabrication, or embellishment to make the social media user look good (Broughton et al., 2013; Davison et al., 2011; Lamoureux, 2012; Nigel Wright Recruitment, 2011).

However, one cannot only base opinions of others on what they do or do not post online. Further, there is the legality issue of whether hiring or not hiring a person based upon online pre-screening is discrimination. An employer might say that he/she was not going to hire an

individual because of the lack of credentials, education, or experience. Although sometimes employers can be noted for not hiring someone for discrimination purposes. Trindade (2015) perfectly described the struggles that hiring managers and human resource managers must go through when using social media, "Using social media to uncover information may unwittingly uncover sensitive and federally protected information like religion, race, age, or disability that could leave organizations vulnerable to claims of discrimination" (p. 3). There is that gray zone where a company cannot ask individuals their marital status, their sexual orientation, or their religious beliefs; but they can look at that individual's page, and it could possibly sway their opinion.

The positives of using social media in the hiring process also exist (O'Shea, 2012). Black, Stone, and Johnson (2014) stated many reasons why hiring managers want to use social media to help narrow down the pool of applicants. Organizations are increasingly using social media in the hiring process to maximize dependable role behavior, ensure applicants are trustworthy, and avoid negligent hiring lawsuits. Companies want to ensure that they are hiring the best person for the job. Even though they have an individual's résumé, and they can conduct many interviews to make sure they are hiring the right person, the process is not always enough. On their résumé, people try to make themselves look like one of the best employees that the company will ever have. They dress professionally and tailor their answers in interviews to make themselves look like the perfect candidate. Companies do not want to hire an individual who looks good on paper, but posts things on social media that the company might find unprofessional and against the company's values. Further, companies do not want to get into trouble for not vetting an individual completely in case something bad arises in the future. Businesses want to find the best candidate while also keeping their company away from negative

publicity. They have to weigh the positives with the negatives. If employees post something publicly and do not utilize various privacy settings, an employer is invited to look at their social media (O'Shea, 2012). The employer could even ask employees on their employment application if it is okay with them to review them online (Trindade, 2015). The problem arises when an individual's biases come out (O'Shea, 2012).

Based on this new hiring screening process, individuals must understand that their social media posts and pictures might impact a potential employer's decision whether to hire them or not.

Methods and Procedures

To determine how social media is used in the hiring selection process, a questionnaire was created using Survey Monkey and posted on Facebook and Twitter. Eighty-four (84) people completed the survey. The survey asked ten questions to determine the effects of job candidate's social media on recruiter's hiring decisions. The first question asked the respondent if he or she was or has been involved in the hiring process. The remaining questions were only answered by those who currently do or have had to hire employees in the past. Demographics of the respondents are shown in Table 1.

Table 1. Demographics of Survey Respondents

Age Range			**Ethnicity**			**Income Level**		
<18	0	0%	Caucasian	73	87%	**<$15,000**	0	0%
18-24	2	2%	African American	7	8%	**$15,000-$29,999**	2	2%
25-34	3	4%	Hispanic	4	5%	**$30,000-$49,999**	5	6%
35-44	7	8%	**Political Affiliation**			**$50,000-$74,999**	17	20%
45-54	29	35%	Democrat	34	40%	**$75,000-$99,999**	22	26%
55-64	41	49%	Republican	25	30%	**$100,000-$149,999**	38	45%
65+	2	2%	No Affiliation	25	30%	**$150,000+**	0	0%

The substantive question of the survey asked respondents to pretend they were hiring managers looking at the online profiles of prospective hires. Eight different images were displayed in this order: 1) a gay couple getting married, 2) a #blacklivesmatter post, 3) a Muslim woman, 4) a Trump supporter, 5) a xenophobic post, 6) a drunk woman, 7) a man holding a big gun and flipping off the camera, and 8) a sonogram.

Data Findings and Analysis

All 100% of respondents had a social media account. Respondents had used the following social media platforms:

- 94% Facebook
- 81% Instagram
- 76% YouTube
- 71% Twitter
- 71% Pinterest
- 51% LinkedIn

Additionally, 86% have used social media to look up a person (personally or professionally). Respondents were asked to look at some prospective hires' social media pages. The posts they saw are shown in Figure 1. Respondents were to checkmark each post that would make them not hire the job candidate.

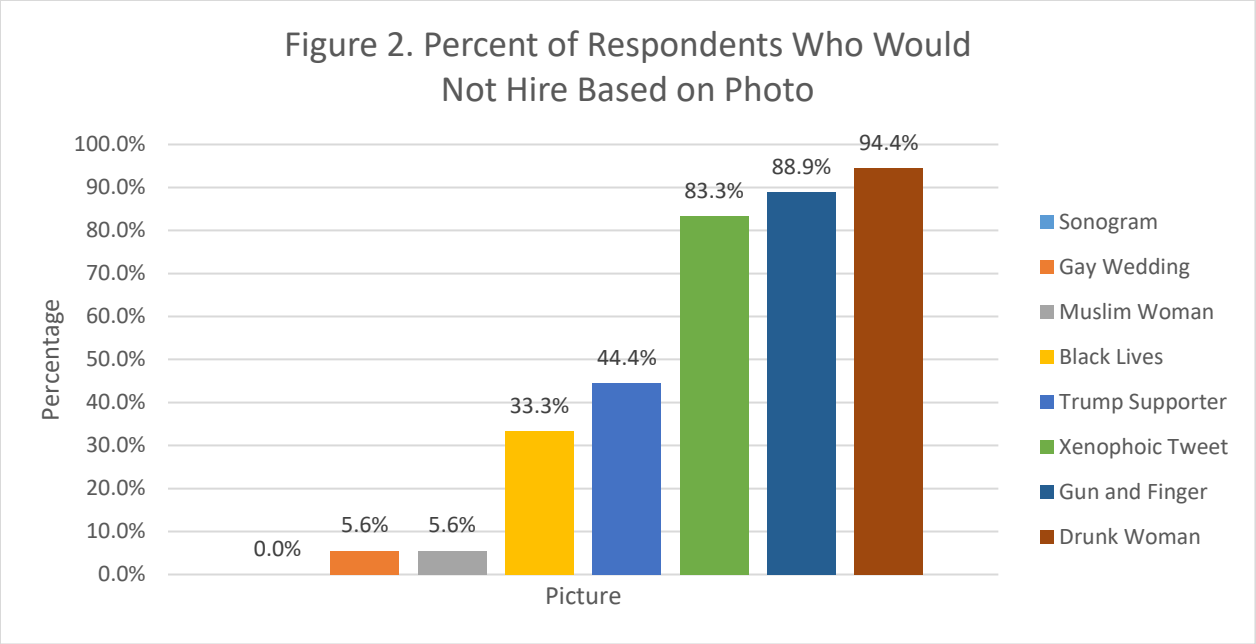
The breakdown of percentages by respondents who would not hire the candidate based on the photo is depicted in Figure 2. Of the eight pictures, three different types of responses were noted and grouped together. The group that earned <10% were the sonogram picture, the gay wedding, and the Muslim woman. Even though 0% of the people who participated in the survey felt any bias towards the sonogram, that does not mean it could not be a problem. According to an article published in *The Guardian*, 40% of managers avoid hiring young women so that they do not have to deal with maternity leave (Association, 2014). That is why during an interview an interviewer may not ask the applicant's marital status or parental status.

Figure 1. Postings on Social Media Rated by Percentage of Respondents Who Would Not Hire Based on Photo. (N=84)

	
(The Texas Tribune, 2012) 0%	(Pinterest, 2018) 5.6%

	
(Buzzfeed, 2016) 5.6%	(Pinterest, 2015) 33.3%
	
(Fox News, 2017) 44.4%	(Saving Country Music, 2016) 83.3%
	
(The Electronic Intifada, 2013) 88.9%	(Steemit, 2016) 94.4%

However, because of social media, employers do not need to ask; they can just look at the baby pictures of the applicant's children online. Unfortunately, some managers still have the mentality that young women should be married and have children while their husbands work.

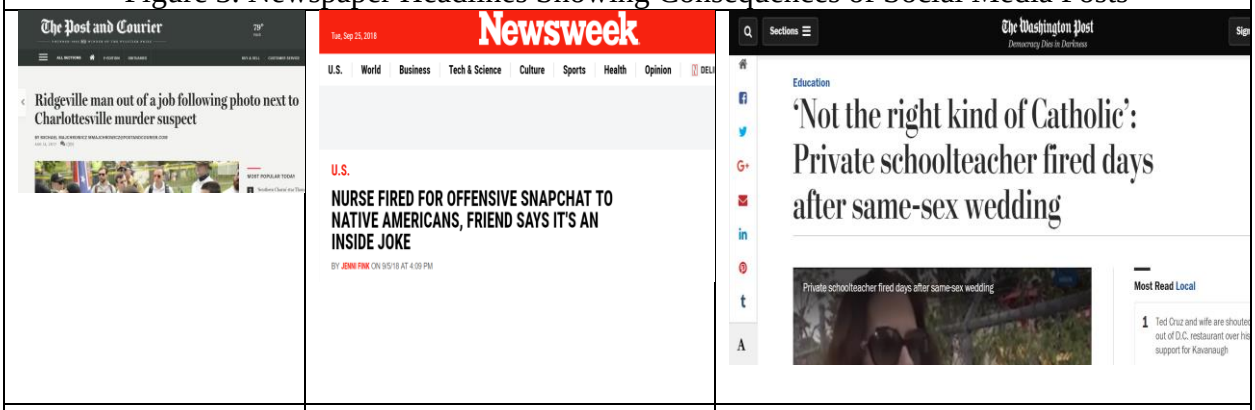


The next set of pictures was in the 10-50% range. The posts in this category were the "Black Lives Matter" tweet and the Trump supporter. Both are controversial issues. The people who chose the "Black Lives Matter" tweet tended to lean towards Democrat; whereas, the man wearing the "Make America Great Again" hat leaned more Republican. These two questions were the only two that, based on the data, had a political party bias.

The last group was >50%, which included the xenophobic tweet, the man with the gun giving the finger, and the drunk woman. The post with the most bias was the drunk woman. Interestingly, both the author of the xenophobic tweet and the person holding the gun were men. Therefore, it might be reason to show gender bias concerning professionalism, based on the way the picture was taken. However, many different factors may affect why the respondents had more bias towards these three posts.

Individuals clearly can be discriminated against based upon their social media postings as shown in Figure 3.

Figure 3. Newspaper Headlines Showing Consequences of Social Media Posts



(Fink, 2018)	(Wootson & Balingit, 2018)	(Majchrowicz, 2017)

Finally, if given the opportunity to hire a new employee, 81% of respondents said they were likely or very likely to look at the job applicant's social media page.

Summary, Conclusions, and Recommendations

The use of social media has skyrocketed in the last decade, as has the use of the platform in the hiring selection process. This increase in users has also seen the rise in companies using the information that individuals post to determine if they want to hire them. There are both positive and negative aspects to this practice. However, this aspect is not going away any time soon, most likely not until legal practices change in regards to hiring based upon social media.

Job applicants must monitor their own activity and how they interact with others on social media. Not only the content that candidates post, but also the information that others post about them can be seen by recruiters and can affect their chance of being hired. Employers who used social media for screening had found information that caused them not to hire a candidate, with reasons ranging from inappropriate pictures or information, poor communication skills, alcohol or drug use, falsified qualifications, and negative comments about previous employers.

The conclusions from the data analysis dictate that those individuals looking for employment should assess their social media pages. If they do not want their future boss to look

at what they are posting online to everyone, they need to either update their profiles to be more professional or update their security settings.

It is critical that employers and recruiters adhere to a consistent policy on how they will use social media and the information found online to screen job applicants—and whether it is worth the possible legal trouble.

Some researchers recommend that job applicants not post information online that they do not want employers to see. Ultimately, the information that potential employees post on social media should be closely managed and monitored. Lack of professionalism can lower a person's salary or, worse yet, lead to the candidate not being hired. Potential employees must be vigilant in their postings.

Job candidates should use social media to their advantage to find jobs and to present themselves in the best possible light, promoting their communication skills and professionalism. Recruiters reported that online information made them more likely to hire a job applicant based upon professionalism, effective communication skills, and strong recommendations from others. Applicants should use social media to display their positive qualities and skills. Social media users are successful if they show passion for what they are doing. Many employers are more likely to hire a candidate if they have a good feel for the candidate's personality from their profile. Positive and personal information shows agreeability and trusting of others; and professional and family-oriented photographs show responsibility and seriousness about one's career, all critical factors in successful work relations.

Some recommendations to self-assess one's online presence include the following:

- Google yourself to see what it says about you.
- Be selective about making certain social media profiles private (e.g., Instagram, Snapchat).
- Review your profiles as if you were going to hire yourself to see how professional you appear, including photos that you are tagged in.
- Post some meaningful content, such as a story about a successful business transaction or customer service interaction.

Implications for Teaching

Social media users must realize that their postings can have a negative impact on their future. Educators in information systems and communications courses can demonstrate the effects of inappropriate pictures and other information on the employability of graduates. Through the use of social media examples and evidence of applicants who were not hired, or even fired, as a result of their online posts, students can become more aware of the significance of their virtual footprint on their future.

Once an individual posts publicly on the internet, there is no requirement of privacy. Employers can use any public information against potential employees unless doing so would violate the law. Therefore, job candidates should keep their social media profiles private. Conversely, they should maintain business social networks, such as LinkedIn, keeping their skills, job history, and affiliations with other professional organizations up-to-date.

Implications for Future Research

It would be noteworthy to see whether the percentages for each picture in this study would be the same if the gender of the drunk person was changed to male. Gender should be

addressed to determine if gender is a factor. Would the picture of the individual who was intoxicated in a cauldron have been the most biased-inducing post if the individual were a man? Alternatively, what if the person holding the gun was not a shirtless man, but a scantily clad woman? Perhaps, future study should examine the hiring decision based upon gender of the pictures and the interviewee or the interviewer.

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21ST CENTURY CUSTOMER SERVICE: INVESTIGATING HOW COMPANIES USE SOCIAL MEDIA FOR CUSTOMER SERVICE

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Abstract

When considering how businesses and customers or potential customers interact, social media is changing the status quo. An increasing number of people are choosing to use social media to reach out to the organization for customer service issues. The purpose of this study was to investigate how companies respond via social media and what types of differences, if any, exist between various social media platforms.

Keywords: social media; customer service; customer support

Introduction

Our society is saturated with social media. According to Smith (2018), there are 3.03 billion active social media users out of the 7.6 billion people in the world. With so many people active on social media, businesses have followed suit to meet customers or potential customers where they are – online. It has been reported that 91% of retail brands are active on two or more social media platforms (Smith, 2018). The prevalence of businesses active on social media has changed how customers choose to interact with the company as well. Not only do many people share their experiences, both positive and negative, on social media, but they also use it as a tool to reach out to companies with customer service inquiries. The purpose of this research study was to investigate how social media is used by companies for providing customer service.

Literature Review

To reach out to the business for a customer service inquiry, customers used to have to call a 1-800 number and wait for an agent. This practice has become less common in recent years. Instead, customers frequently reach out to businesses via social media with the goal of getting a faster response. Walgrove (2018) reported that 80% of consumers use social media to engage with brands. Shockingly, Windels (2015) found that only 4% of questions that were posed directly to brands on Twitter (via @ tagging) received an acknowledgment within the timeframe expected by customers – a mere 15 minutes. This finding indicates how social media has affected people's expected response time.

In a 2013 study, Lithium Technologies found that 72% of people expect that companies will respond to their Twitter complaint within one hour. Even more alarming is that, "When companies don't meet these lofty response expectations, 38 percent feel more negative about the brand and a full 60 percent will take unpleasant actions to express their dissatisfaction" (Lithium Technologies, 2013, para. 3). These findings have serious implications for organizations, as poor response time has far-reaching implications.

There are numerous negative repercussions of response time expectations not being met. For example, a person may choose to share the negative experience with friends and family members, thus further exacerbating the issue. Another possible recourse is utilizing another channel to reach out to the business. This may result in lost productivity as different employees respond to repeated inquiries multiple times. There may be a loss of future sales if customers have such a bad customer service experience that they choose to take their business elsewhere. Similarly, even if a customer does not disassociate from a brand completely, he or she may not fully recommend the brand to others. This loss of brand recommendation can have far-reaching

negative impacts for businesses. Poor response time may even escalate to a customer complaining publicly on social media about the experience (Gregory, 2019).

It has been predicted that customer experience will be the key brand differentiator by 2020 (Kulbyte, 2019). Customer experience has been defined as "your customers' perception of how your company treats them. These perceptions affect their behaviors, and build memories and feelings to drive their loyalty" (Kulbyte, 2019). While businesses formerly competed based on elements such as price or product, customer loyalty is no longer based on these elements alone (Kulbyte, 2019). A recent survey by Salesforce found that "79 percent of consumers prioritize CX (customer experience) just as highly as products or services when doing business with a company" and "according to 67 percent of respondents, their expectations are the highest they've ever been" (Delmore, 2018, para. 1). PwC found that among U.S. consumers, "even when people love a company or product, 59% will walk away after several bad experiences, 17% after just one bad experience" (PwC, 2018). As such, response time is a critical issue.

Facebook has even implemented a badge that rewards fast responses. A "very responsive to messages" badge shows which Pages respond to private messages quickly and consistently. Quickly means a response time of less than 15 minutes. Consistently is determined to be a response rate of 90% or more ("How does," n.d.). The very nature of the Twitter site encourages immediate replies. The platform has been compared to a 24-hour news ticker (Gregory, 2019), and in 2017, the character limit on Twitter increased from 140 to 280 (Perez, 2017).

Kaemingk (2019) predicted that more companies will use social media for customer support due to the younger generations becoming the primary consumers. Since younger generations grew up with social media, they "expect brands to be engaging with them and monitoring their complaints and mentions" (Kaemingk, 2019). As such, in addition to addressing

questions or concerns directed to the business, the company must also decide how to handle online chatter that is occurring about them that does not specifically tag them. Windels (2015) found that approximately 96% of people who used online sites to discuss brands did not follow the brands themselves. Whether directly or indirectly, people are talking about brands online. As such, strategic decisions regarding how the company will respond must be made.

There are multiple social media monitoring tools that companies can use. By monitoring brand mentions, companies can see what is being said about their organization. In addition, keeping tabs on relevant hashtags can also provide insight into comments that are being made about the company but do not specifically tag the organization. Searching for mentions of competitors can also result in finding relevant posts, as well as keeping up with general trends that apply to the industry (Mindruta, 2019). Customer service focuses on three steps: listen, appreciate, and resolve. The question remains whether this can be accomplished in 280 characters or less.

Methodology

A purposeful sample of 25 companies' social media sites were studied to better understand how they use social media for handling customer service issues. The following research questions guided this study:

RQ1. How do companies respond to customer service issues via social media?

RQ2. What types of differences, if any, exist between the company's various social media platforms?

To collect data for this study, the researcher studied the top 25 companies from the 2018 *Fortune 500* list. The Facebook and Twitter profiles of these organizations were used to gather data to

subsequently analyze. The researcher collected publicly available information and the posts were analyzed until data saturation was reached for each company.

Findings

Research question 1 asked "How do companies respond to customer service issues via social media?" Four primary themes emerged from the data in response to this question. The most common response was "DM us with details." This accomplishes several things. For one, it moves the conversation from a public space to a private one. Whatever a customer posts on the public social media site is there for everyone to see. However, what occurs via direct message is not visible to everyone. This allows customer service representatives to gather more pertinent, private information such as order numbers without everyone else being privy to the interaction. At the same time, by posting a comment similar to "DM us with details," others can see that a customer service issue is being addressed by the organization and not being ignored. This can generate a positive impression of the business by those who see or follow the business' social media pages.

The second most common response type was providing answers or links to support articles. This was most often used when the issue could be easily resolved. This customer service approach showed that the issue was addressed and could be utilized by others who may search the social media page for answers to frequently asked questions. For easily solvable issues that do not require customer-specific information (such as order numbers), this approach resolves the issue sufficiently.

The third most common response was to instruct the customer to contact store management. This response shows a disconnect between the corporate offices and the local store.

While the local store management may be better suited to address the issue, this response may be perceived negatively from the customer who utilized the business' social media to try to get a resolution to a customer service issue.

The fourth category of response, though used significantly less frequently than the other response types, was to email the company with details. While this allows the company to continue the conversation privately, similar to the most common response to direct message the business, utilizing a different platform may frustrate customers because their issues cannot be addressed on the same platform used to reach out to the company.

The second research question asked, "What types of differences, if any, exist between the company's various social media platforms?" To investigate this question, the researcher analyzed differences between the types of posts on the Twitter and Facebook pages of the businesses. It was discovered that Twitter was used much more often than Facebook for customer service issues. Some accounts provided response time guidelines to help customers know when they can expect a response. While some organizations touted 24/7 customer service online, many indicated the times and time zone when agents would reply to customer service inquiries. Another common practice that was discovered was the existence of designated Twitter handles for support issues. This allows the customer service representatives to only have one social media account to monitor to respond to customer service inquiries. In addition, this keeps the main social media pages for non-customer service issues.

Implications for Business

There are numerous lessons businesses can take away from this study's findings. For one, businesses need to train the employees who provide customer service via social media. While the

principles of customer service may remain the same, the new platform necessitates a modern skillset. One aspect that may be most noticeably different is the expected response time. When calling a 1-800 number, individuals often expect to be on hold for a while. However, the same principle does not apply to customer service inquiries made via social media. As such, it may be in the business' best interest to provide response time guidelines. This could temper the desire for instant feedback at a time when there are no agents available to respond to customer support issues. Businesses should also consider creating a designated support handle so that the main social media sites are not crowded with customer service messages. Another benefit of a designated page would be that it is easier to keep up with posts. Instead of searching through numerous posts to see if there is a customer service inquiry that needs to be responded to, customer service agents only have one place to look. A final implication for businesses to consider is whether they are going to respond to posts where they are not specifically tagged. While this could help address issues of customers complaining about a company, it may be perceived negatively by customers since they did not specifically direct their comments to the organization.

Future Research and Conclusion

Given the rise of social media use for customer service issues, numerous areas warrant further study. Future research should analyze customer service via social media by industry. This would allow researchers and practitioners to better understand industry-specific nuances. For example, do customers interact differently with organizations that handle personal, sensitive information such as financial institutions or health insurance companies?

In addition, future research should be conducted to analyze social media's use for customer service based on business size. Since this study utilized the top companies on the

Fortune 500 list, only large organizations were analyzed. It would be worthwhile to investigate how medium sized or small businesses handle customer service online. Such studies would allow for a broader understanding of social media's use in customer service and be more applicable to a wider audience of businesses.

A third area for future research centers around the customers themselves. Generational differences may exist among those who utilize social media to address customer service issues with an organization, so researchers should investigate how the generation of the customer impacts the use of social media to reach out. As a greater percentage of customers is comprised of individuals who grew up using social media, this shift to customer service via social media may become even more prominent.

A final avenue for future research is how businesses train their customer service employees. By better understanding the preparation these workers undergo, recommendations can be made for how businesses should prepare the employees for the rapidly changing communication mediums utilized. With the increased emphasis on customer experience, those front-line workers need to understand the importance of their role in keeping customers for the business.

In conclusion, this study analyzed the Facebook and Twitter profiles of 25 companies on the *Fortune 500* list to investigate how they responded to customer service issues on social media and what types of differences existed between the company's various social media platforms. With the growing emphasis on customer experience as a brand differentiator, companies need to meet the customers where they are and meet or exceed their expectations. Inherent with social media is the expectation for a quick response time. As such, companies must work to satisfactorily resolve customer service issues quickly using social media sites. Failure to

do so can have devastating results for the company. This study found that Twitter is used more often for customer service inquiries, and companies often request that a person direct message them with additional information to move the conversation from a public space to a private one. Implications of this study for business were discussed, along with multiple avenues for future research.

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TO TWEET OR NOT TO TWEET, THAT IS THE ANSWERED QUESTION: SOCIAL MEDIA USE FOR BUSINESS AND EDUCATION

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Abstract

The purpose of this study was to educate undergraduate students concerning the use of Twitter in the business environment. Students were exposed to examples of how businesses currently use Twitter, they then applied this knowledge by using Twitter in a professional manner. Students completed a survey concerning their perceptions of using Twitter. These survey results will be presented as well as tips educators might use in their own classrooms for utilizing Twitter as a teaching instrument.

Introduction

From its beginning in 2006, the real-time microblogging site Twitter has continued to build a robust and familiar name in our society. Twitter has become increasingly popular by a diverse group of users including academics, students, business people, policymakers, politicians and the general public (ESRC, 2019). These groups use the platform to access a large group of people quickly; to follow the work of experts; to keep up-to-date with news and developments; to reach new audiences; to request feedback and responses; to follow and contribute to bodies of knowledge; and to inform (ESRC, 2019).

For example, students are using Twitter to stay informed of their school's social and academic events and news, as well as to stay in touch with their social connections (Prestridge, 2014). While Twitter is used extensively for personal connections, it has become a strong marketing tool for businesses. Twitter can be used for free marketing by businesses and for

connecting quickly with customers. In the business field, many employees are expected to use social media resources to communicate with colleagues on the job and to obtain inner-company information quickly, as well as to use Twitter to promote and leverage the company brand. A study conducted by Clutch shows that companies are using social media to increase revenues (Herhold, 2017). Of these, Twitter is one of the most valuable social media tools used by 80% of the businesses surveyed, and nearly 80% of companies post their own content to their social media sites. This increased use of social media creates a potential skill that many students should have. If companies are posting their own material on their sites, these same companies will need employees to generate this content.

When instructors use Twitter, and other social media platforms, engaging and informed conversations and connections concerning business use can take place. As shown in the literature, many employees are expected to use social media resources to communicate on the job and obtain information quickly. Therefore, introducing and reinforcing appropriate online behavior is a priority of educators.

Problem Statement

Students use social media for personal reasons, but are often unaware of how to transfer these skills into a professional setting. This study will show how instructors at one university used Twitter in a business class to help students bridge the skills gap and present students' perceptions of the value of Twitter.

Purpose and Objectives

The purpose of this study was to expose students to the professional use of Twitter, as well as to further teach them how to become better personal and professional communicators. This study is a continuation of a study that reported students initial perceptions of social media

(Wright, Rogers, & Smith, 2019). Results from the study show how student perceptions change as they are exposed to the tool, then provide teaching suggestions for instructors to use it in their own classroom. The goal was to help educators better prepare students entering a workforce which is engaged in social media platforms such as Twitter. Questions addressed in the study include:

- How are businesses using Twitter to promote and market their businesses?
- What are student perceptions of using Twitter as a class activity to enhance learning?
- What are practical uses for Twitter in a business class?

Review of Literature

Twitter's website states that its services help a business thrive by directing traffic to the business' website and by engaging customers. As many know, Twitter allows for sending quick, short messages to followers (Blessing, Blessing, & Fleck, 2012). Because Twitter allows back-and-forth comments, online conversations can be used to establish and maintain a relationship with customers. The ability to constantly update customers allows businesses to stay in touch with continuous updates, promotions, and other items of interest.

According to a letter to its shareholders, Twitter (2019) has continued to grow, with over 110 million daily active users worldwide, an increase of 15% from the prior year. With so many potential customers, it is logical that companies would begin to interact with and promote their products using Twitter. In fact, Holmes ("Inside the Growing…," 2016) states that 90% of U.S. companies use some form of social media to reach their customers. However, many of these same companies are not training their employees n how to effectively use Twitter to promote and establish business relationships. While at one time social media managers were the main contacts on a company's Twitter page; these same companies are now looking for their

employees to engage audiences. This disconnect leaves a potential skills gap that new hires will need to fill.

This new trend now has many companies asking employees to post about their company on their own personal Twitter accounts because messages sent by a friend or acquaintance are more likely to be trusted (Holmes, "Top 5 Social…," 2016). If an employee posts about a new product offering, the receiver may be more likely to try it. This concept extends the company reach to more people and more potential customers.

Twitter's website states that its services can help a business prosper by directing traffic to the business' website and engaging customers. To support this idea, Blessing, Blessing, and Fleck (2012) state, "Twitter allows the quick transmittal of short messages (tweets) to anyone who subscribes to a user's message feed. These messages keep the receivers apprised of the sender's thoughts and actions on an ad hoc basis" (p. 268). Because Twitter allows two-way conversations, relationships can be established and sustained. The ease of allowing constant updates allows businesses to stay in touch with customers with continuous updates, promotions, and other items of interest.

Because of the push for employees to use their social media accounts to help promote the business, new hires should be taught to effectively use social media to bring more value to their companies, which is where using Twitter in the classroom can help our students build these skills. The computer company, Dell, utilizes a Twitter account for "24X7 Global Support" to provide help and proactive information to their customers (@DellCares, 2017). With this type of constant connection, it is important for students to realize the impact that social media can play on the connections and networking of the business and the customer. In the business arena, Twitter is being used to market, brand, and create synergy between organizational groups (Greer

& Ferguson, 2011). Twitter is also being used to gather marketing data, communicate in emergency situations, and even provide health-related information to the public (Hughes & Palen, 2015). It has found a way to impact people's daily lives in a variety of situations.

In education, many academic studies have shown how Twitter was used to better engage students. KQED, Inc. (2017), explains that Twitter can be used between teachers and their students outside of the classroom to continue the class discussion. These studies can guide instructors in how to use the tool for their own classrooms. Junco, Elavsky and Heiberger (2013) used Twitter outside the class and found increased student engagement and higher grades. This study also found that active faculty engagement in Twitter helped to stimulate learning on the platform.

Another study, that had the instructors tweeting informative messages pertaining to course concepts each day, found that students receiving the Tweets outperformed students who did not receive these same messages (Blessing, Blessing, & Fleck, 2012). These authors believed that these simple reminders helped students to better recall information because the students were more likely to reflect on the course material outside of class. Junco, Elavsky and Heiberger (2013) stressed that the way Twitter was used made a difference because the platform seems to be better suited for "answering questions, encouraging discussions and providing support" (p. 283.)

Methods and Procedures

In this study, Instructors presented and modeled Twitter use in a business setting by creating a Twitter account specifically to be used for the course. Students were led through the set-up and creation of their own professional Twitter accounts, including how to set privacy and other settings. Students who already had Twitter accounts were instructed not to utilize those

accounts for the purpose of this study, but instead asked to use a newly created professional accounts for class activities.

Students were required to then use their professional Twitter accounts to connect (follow) that Instructor's professional Twitter account. The instructors, as the Social Media experts, provided examples via Twitter (as well as classroom discussion) to the students, in order to model proper business communications on Twitter. Giving students the opportunity to engage in professional social media communications in a school learning environment provided a safe place to develop skills in using Twitter, as well as helped to encourage using proper business communications in professional environments.

Students were required to follow various business organizations on Twitter and to retweet and/or create their own Tweet, all using Twitter. Students were also required to take part in professional discussions of class content using their Twitter accounts.

This study used Twitter in three sections of a Sophomore-level introductory Business Communication class at a regional university in the Southwest United States. The study was conducted in the Spring semester of 2018 and in a course that is required of all general business majors, in addition to being a core course for the university. Before using Twitter for classroom engagement, students were surveyed about their use and perceptions of Twitter in order to understand their background with using the social media tool. Students also completed a survey at the end of the semester (n=55) that asked about their current use of Twitter, their perceptions of social media skills in the workforce, and whether they were familiar with using Twitter. Survey data was collected using Qualtrics, an online survey system. Findings from this survey were used to inform the two instructors who would use Twitter extensively in class assignments throughout the semester. Descriptive statistics are provided in the findings.

Students' initial perceptions were measured at the beginning of the course. A total of 92 responses were collected from three sections of the course, which was a 97.9% response rate. This sample included a diverse mix of students and included 15% freshmen, 46% sophomores, 34% juniors, and 5% seniors. Many of these respondents could be considered traditional college students as indicated by their age as 92.4% were between 18-22 years old. Only one respondent was over age 30. The majority of respondents (45%) indicated their field of study was in the College of Business, whereas 28% were in the College of Education, and 14% were in the College of Sciences and Mathematics. Other majors represented include College of Fine Arts (7%), College of Forestry and Agriculture (3%), and College of Liberal and Applied Arts (3%).

At the end of the semester, students were surveyed again to assess how their social media use and/or perceptions changed, and these finding are presented here.

Findings and Results

Results from the survey are presented below and explained further in the Discussion and Implications for Educators sections that follow.

Many students already use Twitter. In the initial survey, students were asked if they had a personal Twitter account. Student responses showed 90.9% did have an account, but 10.9% indicated the account was inactive. Those students who indicated they did not have an account showed that 5.5% no longer had an account, and 3.6% never had an account. Of these respondents in the initial survey, 72% currently posted on the account. Table 1 below shows the response to the question about how often students were posting on their Twitter accounts.

Table 1 On average, how often do you post on your personal Twitter account?		
	Pre-Test	Post-Test
Multiple times a day	21.74%	14.6%
Once a day	2.17%	10.9%
A few times a week	15.22%	12.7%
Once a week	5.43%	7.3%
A few times a month	16.30%	14.6%
Once a month	0.00%	5.5%
Less than once a month	8.70%	14.6%
Never	17.39%	12.7%
Not applicable because I do not have a personal Twitter account	13.04%	7.3%

Overall, there seemed to be a decrease in the frequency of postings to personal accounts in that those who posted multiple times a day decreased from 21.74% to 14.6%. However, more students (10.9%) were posting once a day than previously (2.17%).

Students were also asked about following accounts through their personal Twitter account. In response to the question, "Do you follow any people or organizations (Other than what is required of this course) on your professional Twitter account?" 92.41% responded they

did, but 7.59% responded they did not follow others. Next, students were asked how many people or organizations they followed. The vast majority (65.88%) followed more than 50 accounts. However, 15.29% of respondents only followed one or two accounts. Most students (61.96%) believed they were very familiar with using Twitter and 17.39% were somewhat familiar with using Twitter. Other student responses indicated that 10.87% were only familiar with Twitter "very little," and 9.78% not very familiar with Twitter at all. Students were asked about how they used Twitter. Most students used it as a way to stay in touch with friends, read about news and events, and be entertained (i.e. watching videos).

Because the study was to expose students to how social media could be used in their future careers, students were asked, "Do you think you will use Twitter in your chosen career/job?" Table 2 below summarizes the responses.

Table 2

Do you Think you will use Twitter in your chosen career/job?

	Pre-Survey	Post-Survey
Yes	34.78%	47.3%
No	19.57%	27.3%
Maybe	45.65%	25.5%

In the post-survey, more students (47.3%) indicated they would use Twitter, but more students (27.3%) also indicated they would not. There was a large decrease in how many student chose "maybe" as a response.

An open-ended question prompted students to explain why they indicated there responses in to their future career. A few select student responses help to explain their answers:

- As a social worker, I do not feel it is appropriate to use. If I need to talk to clients or colleagues I will find another form of communication.
- I might use it to communicate with a client, but it isn't very formal.
- I am a nursing major and it's not like I can post personal information about a patient or my boss, so I do not think my career will use Twitter!
- Using Twitter could be a way to show the world about your career or something happening within your job.
- I am an accounting major. Twitter might be a little to informal
- If I go to work at a bank in then I will most likely not being using it since it isn't very formal.
- Twitter is more of a personal interaction for me. If I were to use some sort of social media platform for my career/job, it would be Facebook.

Table 3 presents student responses to the question, “As a future professional in your field, how important do you think the use of social media skills such as Twitter will be?”

Table 3

As a future professional in your field, how important do you think the use of social media skills such as Twitter will be?

	Pre-Survey	Post-Survey
Very important – I need to have these skills when I graduate	33.70%	30.9%
Important – I need to have these skills when I graduate, but will have time to improve	32.61%	38.2%

Needed, but these can be learned on the job	25.00%	21.8%
Not important – my chosen field does not rely on communication skills to be successful	8.70%	9.1%

In the post survey, a question was added that asked students if they believed using Twitter in the classroom has enhanced and/or improved your business communication skills. The majority of students answered positively: 43.6% answered yes and 32.7% answered somewhat.

Two open-ended questions were added to the post-survey.

- How does your profession [i.e., chosen major] currently use social media?
- How might your chosen profession be planning to use social media in the future?

Some of their responses to the first question concerning how does your profession currently use social media focused on advertising and promotion activities. These comments included '…used to advertise and communicate with other people'; '…used to promote the hospital'; '…used to recruit both customers and employees'; '…used to help sell their items…'; and '…used to post and share stories with individuals who might be struggling.' Comments for the second question concerning future use of social media focused on communication. They comments included: '…used as a way to give more information'; '…used to let our society know of health outbreaks'; '…used to showcase skills to potential clients'; and '…used to send a message to brighten someone's day' [Counseling major].

Discussion

Educators who are considering the use of social media in their classroom can use these survey results to inform their methods. For example, based on student pre-survey

responses, over 90% have a Twitter account and post at least once a week (44.5%). Therefore, it can be generalized that including the use of Twitter in the classroom would not require a significant instructional segment on the use of Twitter.

Although most students use some kind of social media on a daily basis, these interactions are usually limited to personal exchanges. Beginning with a pre-survey before using the tool allows the instructor to gear the pedagogy toward a particular class' existing body of knowledge as it relates specifically to Twitter. The survey data provides insight into this body of knowledge as well as the cultural underpinnings of Twitter use, specifically.

Students may be familiar with Twitter and its positive social usage, but their lack of awareness of the professional implications is apparent. With over 45% of students marking "Maybe" on the pre-survey question, if they would use Twitter in their chosen career/job, it was clear students did not see how social media could impact their professional lives. As the Clutch (Herhold, 2017) survey found, with 80% of companies creating and posting content, it is likely these students will be using social media in their jobs. After the study, student survey results changed to show that students were more decided on whether or not Twitter would be used in their chosen field with the "maybe" going from 45% to 25%. Student survey results showed an increase that students believed that Twitter would be used in their chosen career by increasing from 34% to 47%. Students were also more decided that Twitter would not be used in their chosen careen with the "no" results increasing from 19% to 27%.

Although most students (over 91%), in the pre-survey, believed that social media skills would be something they would need in future jobs, only 33.7% thought it was very important to have these skills upon graduation. We see this as a disconnect and believe it is an implication of the importance of teaching social media use such as Twitter in the business classroom.

According to the survey, while our students knew social media is important, they could not articulate how it specifically applied to their own field, thus leading to the 33.7% response rate mentioned above. In the post-survey results, student responses of Twitter being a very important skill to have upon graduation, dropped slightly to 30% while the survey results that the skill was important to have grew from 32% to 38%.

The students were asked an additional question in the post-survey of whether or not they thought using Twitter in the classroom enhanced and/or improved their communication skills. Over 75% of students felt that using Twitter in the classroom enhanced and/or improved their business communication skills in some part or as a whole. So while 27% of students did not believe they would use Twitter in their chosen career, over 75% of students felt it was beneficial to use in the classroom.

Student responses to the open-ended questions in the post-survey shows the insight the students developed regarding Twitter use. They came to understand the personal and professional relevance of being social media savvy on a business professional scale.

Implications for Educators

As business professionals, we instructors know that some employers may provide social media platform training, but this may not be the case in every business. A future job candidate may find that others are already more adept at these skills as it relates to business communication and therefore miss an opportunity. Teaching Twitter in the classroom provides excellent opportunity for college-to-career instruction. Over 84% of the students surveyed had a personal Twitter account but struggled with ways to apply the communication benefits and networking in a professional manner. Utilizing Twitter in the classroom provides excellent opportunities and examples of positive and effective communication and marketing skills and situations.

Incorporating Twitter into a classroom requires a departure from a traditional teaching approach. Although it is easy for an instructor to begin using Twitter to communicate with the class, careful consideration should be made to illicit the true benefits of student engagement. As Lumby, Anderson and Hugman (2014) state, "A superficial approach to social media would frame it simply as a collection of new channels of communication between lecturers and students…. [instead] social media opens up new possibilities for engaging students in their own active learning" (p. 129). Asking students to use Twitter and other social media requires them to engage in the material in a more contemporary mode with which they are likely to be familiar. Students are responding using prompts that are more like "real world scenarios." The days of self-contained learning from the four walls of a classroom are gone; replaced by global access to information and individuals from virtually any place on Earth. By utilizing Twitter to have students connect with and follow businesses, students engage in active learning and build connections that can help lead them to a successful career in business.

Although most students in the study (79%) indicated they were familiar with using Twitter, some instruction must still be provided to ensure students are using the technology correctly and to help those who need additional assistance with the tool. It is also important to help the students connect their personal use of Twitter with their planned future professional communications. As instructors, we learned that while students are aware of the value of social media in their personal lives, and that they can acknowledge the idea of social media being used in the business arena, there may be a disconnect between how social media platforms such as Twitter can be used in their selected careers.

Several students gave examples of how Twitter was too informal to use in their chosen careers because they were focusing on Tweeting about the content of their careers and not the

connections to the community. One student gave the example of wanting to be a social worker and that it was inappropriate to use Twitter to talk to clients. While we highly recommend not using Twitter to talk to clients about private affairs, social workers could use Twitter to connect with the community and ask for donations for families, advertise upcoming food drives, advertise about child abuse awareness month, etc.

Students use Twitter, but they do not always understand how it can be used in a professional setting. It is important for students to learn the difference of professional postings, versus personal postings, and how to engage the community in their chosen field.

To increase student engagement by using Twitter in the classroom, suggestions include:

- Have students tweet links to their own weblog or website so that others can view the information more readily (McCorkle & Payan, 2017)
- Provide a class hashtag to encourage or require in-class tweeting to stimulate discussion much like what is used at a professional conference (McCorkle & Payan, 2017)
- Create interest in the course content by having fun and/or competitive goals using Twitter
- Ask students to locate experts in the business field on Twitter and Tweet these experts with questions (KQED Inc., 2017)
- Utilize unique hashtags for quick reference to online information for notes, articles, and discussions
- Require groups to follow a business on Twitter or create a Twitter page that other class groups can then follow
- Encourage students to follow local Twitter pages in areas such as arts, athletics, news, and their own personal/professional interests (Wright, Rogers, & Smith, 2019)
- Expect students to follow academic Twitter pages (i.e. school/university/academic clubs)

- Create interest in the course content by having fun and/or competitive goals
- Utilize unique hashtags for quick reference to online information for notes, articles, and discussions

Future Research

With the multitude of social media platforms, the study could be extended to review how other platforms, such as Instagram, can be used in a professional setting. The study could also be extended to review the public perception of well-known businesses and how much was learned about the business through a social media platform. A connection could also be researched about how large a part social media plays in the advancement of international business ventures and client perception in local markets.

Social media has many platforms with new technology being produced every day. Our students live in a culture of sharing and connection via these platforms. It is important to provide instruction on professional behavior online, and in-person, while helping to connect them to future business opportunities.

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USING ZOOM CONFERENCING SOFTWARE TO ENHANCE ENGAGEMENT IN FACE-TO-FACE AND ONLINE CLASSES

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Abstract

The purpose of this study is to explore the use of video conferencing technology and to survey business courses (both face to face and online) to determine how video conferencing can enhance the educational experience. Using a video conferencing option like Zoom can enhance engagement for students. By using Zoom for chats, for online office hours, for exam proctoring, for conferences with online teams, and for exam review, students experience a sense of engagement in the course that is not always present in an online course. The findings in this study indicated that students felt that using video conferencing with Zoom enhanced the learning in the course.

Keywords: video conferencing, Zoom, online courses, face-to-face courses, chats

Introduction

Instruction of students in traditional face to face classrooms and online courses has taken great leaps forward in the methods to deliver materials in order to engage students to maximize their learning potential. In the face-to-face classroom, we have moved from using blackboards to whiteboards, video projectors, and now integrating computers in delivering instructional materials. The internet, desktop PCs, laptop PCs, tablets and smart phones have enabled higher education institutions to reach students not able to attend face-to-face campus classes (Rudd & Rudd, 2014). Issues identified by Stafford and Lindsey in 2007 that included advancing

technology, cost containment, and accessing nontraditional students have largely been resolved through the fast expansion of online education and the growth of technologies to support it. Expanding higher education's reach and need to be able to engage and enhance student engagement and learning will be one of the keys to developing each student to their maximum potential. The instructing and perception of online programs from both faculty and students has come a long way since Wilkes, Simon and Brooks' research in 2006. At that time faculty had relatively negative viewpoints toward online courses and students were concerned about the loss of live interaction with faculty. By 2015 in Fish and Snodgrass' study of students at an AACSB accredited private university in the northeast on the perception towards online vs face-to-face classes found that as students take additional online courses they have a more positive attitude towards the method of instruction. A future recommendation for study was "a deeper understanding of student perceptions is needed to foster learning" (Fish & Snodgrass, 2015, p. 93). With the explosive demand for online instruction, many of the original attitudes have changed. Better software platforms, improved course materials and easier access (hardware, connectivity, and bandwidth) have alleviated many of the concerns of both faculty and students.

The technology relating to video conferencing has improved significantly in ease of use and availability moving from a high cost option for corporate businesses to one now available affordably to education. There are many video conferencing programs provided by Microsoft, Google, Cisco, and Zoom as well as multiple smaller companies in the market. All of these companies offer quality software tools. The cost and accessibility varies among vendors. Capterra is an online free source for identifying video conferencing software for organizations (for profit and non-profit, business, education and government). Software vendors provide information, and Capterra provides directory lists for all vendors. The goal is to help

organizations make the best-informed decision when procuring a software product (Welcome to Capterra, n.d.).

Purpose of the Study

The purpose of this study was to examine if video conferencing was enhancing student engagement as perceived by the students in both face-to-face campus classroom courses and online course instruction.

Research Question

Do students believe that video conferencing enhances their engagement with class—in both face-to-face campus and online delivered courses?

Review of Literature

In reviewing current research in the field, five areas apply to this study which include video conferencing instructional value, video conferencing perceptions for online courses and workplace applications, academic integrity through use of video conferences, engagement through technologies, and Zoom video conference software.

Video Conferencing Instructional Value

In their review of the use of videos in online courses (Rudd & Rudd, 2014) in the Journal of Instructional Pedagogies, the synchronous and asynchronous use of video instructional materials with online courses was researched. Real time (synchronous) use of videos used in conjunction with web conferencing provided for immediate interactions, and posted (asynchronous) videos provided for interactions over the entire course period.

Studies cited on the employment of web conferencing with online instruction provided the link between real world business as well as the delivery of course materials to enhance learning. The second major aspect was the positive feedback from students that included increased levels of motivation and participation with online instruction (Rudd & Rudd, 2014).

The major disadvantages identified with use of video instruction were to the cost of software, bandwidth, connectivity and hardware (Rudd & Rudd, 2014).

Hawk and Shah's article on "Learning Style Instruments to Enhance Student Learning" (2007) reviews five learning style models and instruments used in student learning. Student learning is enhanced when more than one of the senses is involved in the learning experience. The model that relates to video conferencing is the Visual (V), Aural (A), Read/Write (R) and Kinesthetic (K) or VARK. Video conferencing tools as a method of learning fit well into the VARK sensory model dealing with perceptual modes of visual and aural learning. According to Fleming (2001) 41% of the population prefer a single learning method (visual, audio, kinesthetic, or read/write) and an additional 27% prefer two of the four styles, video conferencing therefore may cover 68% of a student's learning needs.

Video Conferencing Perceptions for Online Courses and Workplace Applications

Feldbush, Mandernach and Valenti, conducted a comparative study on attitudes towards the use of videos in online classrooms after identifying there was a dearth of research on student and faculty perceptions of the use of video content (2019). Faculty perception findings of the study included that they desired more opportunities to engage with online students using video-based discussions, video-conferencing and student developed videos. Student's perceptions were centered on the desire to have multimedia options that are integrated into the delivery of materials that would allow them to learn quickly or be more mobile with learning activities.

The use of videoconferencing in the workplace enables meetings to be held without the necessary travel for all participants to physically be in the same location. Research conducted on Access Grid (AG) a networked video conferencing application in 2012 by Fielding and Fielding found that there was a general high satisfaction response with the use of the AG platform with members of the study group. The AG software created the feeling and illusion of a co-presence during its employment. A major finding was that the use of AG was preferred over face-to-face meetings as a cost saver related to attending face-to-face meetings that required traveling to participate in research meetings and or teaching sessions (Fielding & Fielding, 2012).

Academic Integrity through Use of Video Conferences

A study involving students at Portland State University School of Business on using video conferencing software found three areas that provided value over using just a standard online platform in ensuring academic integrity. First, the software provides a structure that enabled instructors to be present with students in a face-to-face manner similar to being in a traditional class enabling development of student-instructor relationships. The second area provided for checks to avoid impersonations schemes, a common problem with online courses. The last finding was that video conferencing assisted in keeping students up to date on course materials, which helps mitigate cheating (Wagner et al, 2016).

Engagement through Technologies

An early study of integrated desktop video conferencing in 2009 involved a study to see if multimedia and conferencing technology could be used to improve student learning. This study involved 67 freshman students in an English course in the Netherlands. The researchers indicated both positives and negatives with the use of the technology. On the positive side was student perception that the technology enhanced the student learning. On the negative side was

the fact that information was presented with new technologies that provided a cognitive overload for some students who had difficulty figuring out what the teacher was trying to demonstrate (Schols, 2009). Cognitive overload can still be a concern in the design of the online course experience as explored by Çakiroğlu & Aksoy (2017). The authors recommended that additional research work be done to ensure that course design accommodates for the cognitive challenge from various sources of technology. For example, is the student lost trying to type in a chat while the instructor is focusing on a whiteboard or speaking directly to a student on video.

Basko and Hartman research conducted on 58 undergraduate courses with 1302 students on the use of video conferencing for increasing student engagement found that to increase student participation that instructors may need to add another tool (Remind) to increase the number of students attending video conferences. Just offering the synchronous video conferencing was not sufficient for student engagement. In fact, only 17% of the online students initially participated in video conferences. The researchers decided that the students needed a better notification system of the times and dates of the video conferences. Implementation of a combination of Remind with Zoom resulted in a doubling of student attendance to video conferences increasing engagement. The authors reported that when students participated in the first video conference, 92% of those students passed the course (2017). The researchers further indicated that creating a sense of presence in the classroom is important for the online class and that video conferencing is one tool that can be used to fill this requirement.

ZOOM Video Conference Software

Zoom Video Communications provides ZOOM video conference software as part of a broad range of communications software that combine video conferencing, online meetings, chat, and mobile collaboration tools to clients. The company provides video conferencing from a

free Basic program (individuals and small businesses) to Enterprise (higher education, corporations, and government) wide solutions (Video Conferencing, n.d.).

All of the products offer the following services:

- Participants (100 to up to 1,000)
- Unlimited 1 to 1 meetings
- 40 minutes to 24 hour meeting duration times
- Unlimited number of meetings
- Video Conferencing (multiple features)
- Web Conferencing (multiple features)
- Group Collaborations (multiple devices access)
- Usable with any operating system and device (only web access required)
- Security

Zoom Video products provide users a full featured solution at a value cost (Video Conferencing, n.d.).

Methodology

This study was conducted at a mid-size public university in the state of Texas with a total student population of 12,000+ providing both face to face on campus and online courses. The study was conducted at an AACBS accredited college of business.

A survey composed of 16 questions which included demographic information and opportunities to respond to questions relating to the use of technology including video conferencing, video lectures, PowerPoints, and video messages was completed by students in

face-to-face and online courses. Students could add comments as well as judge the effectiveness of the various presentation models by using a sliding scale from 1-100.

Students from one face-to-face campus classroom and two online business courses comprised the survey population of 180 individuals; a total of 63 responses were returned for a return rate of 35%.

Of the responses 4.7% were from freshmen, 14.3% were from sophomores, 53.9% from juniors, and 26.98% from seniors. The students fell into the following age groups: 1) 53.9% between 18 to 21, 2) 22.2% between 22 to 26, and 3) 15.8% 27 and over. When asked about the number of online courses they had taken (including those taken during the current term), over 89% of the students reported that they had taken 3 or more online courses. This number indicated that the majority of the survey population were experienced online students.

The university has been instructing students online since 2001, and currently uses Brightspace by D2L as the primary platform to provide instructional materials. Since the summer of 2018, the primary software for video conferencing has been ZOOM Video Conferencing from ZOOM Video Communications.

As discussed earlier ZOOM software offers a number of tools for enterprise clients that enable instructors to interface with students at a value cost.

The same lecturer provided instruction to all students participating in the survey. With online courses the major ZOOM applications were group meetings, exam review, exam proctoring, course news, lectures, and office hours. The platform was used with face-to-face courses as a substitute for face-to-face meetings, test reviews and office hours.

Findings and Results

Major findings of the survey supported prior work that adding video conferencing can enhance student engagement with online courses, and additionally provided the same for face-to-face on campus classrooms. Students were given a series of questions and asked to determine how effective the item was using a sliding scale of 1-100 with 100 being the highest level of effectiveness. For each question the mean of all the answers was determined so student perceptions of effectiveness could be determined. The major findings related to use of Live video conferencing, PowerPoints, recorded video lectures, and video messages (news, class announcements, updates). The individual questions and results are as follows:

Live Video Conferencing: 56.25% of participants responded that instructors have used live video conferencing as a method in the course. The survey mean for effectiveness as perceived by the students was 70.02%.

PowerPoints: 95% of participants responded that their online classes had used PowerPoints as a method of instruction for the delivery of course materials. The survey mean for effectiveness as perceived by the students was 68.29%.

Recorded Video Lectures: 62.25% of the participants responded that recorded video lectures were incorporated into course materials with lengths running from 5 to 17 minutes or more. The survey mean for effectiveness as perceived by the students was 68.22%.

Video Messages: 68.12% of participants responded that instructors used some type of video messages to provide additional course materials. The survey mean for effectiveness as perceived by the students was 66.73%.

Those surveyed were also given the opportunity to provide additional comments on what they felt were the most useful video tools employed with online instruction as follows:

- A very useful video tool is the voice-to-text dictation where the video is accompanied by text essentially acting as subtitles. This allows me to clearly follow what's going on in the video. Additionally, the screen sharing feature used by the professor was very beneficial, because I could actually see what they were doing on screen and follow along on my own computer.
- The most useful is when the professor is able to explain the material in a video. They clarify points that I might have struggled with when just using the written material.
- I think Zoom technology is the best because it's helped me with my own projects along with learning from teachers

The survey respondents indicated that videos and/or video conferencing are not used in all online classes. In fact 86% of those that participated in the survey reported that they had taken online courses where no videos or PowerPoints were provided as part of the course content.

The students who responded to the survey indicated that the use of video presentation tools; PowerPoint, videos, video lectures and video conferencing enhanced engagement in face to face and online courses.

ZOOM Video was the platform used for video conferencing and was well received by the students participating in the study. The highest mean in the study indicated that 70.2% of the respondents believed video conferencing enhanced the course experience. Many of those surveyed provided comments on the use of video conferencing with online courses. These selected comments reflect the majority of student perceptions.

- I like them. It gives you more of an "in person" feel.

- I feel that the videos are very helpful with online courses. There are some online courses that you do not hear anything from the professor at all throughout the semester and those classes are the most difficult for me. You don't really know what to expect and there are no expectations set. You feel like the professor isn't really there to help you or care if you succeed.
- Some of us students are distant students and can only take online courses. It would be nice to have all professors utilize video lectures.
- When professors use video lecture, power points with audio or podcasts to relay information it helps give the students a connection with the professor and the information that is being presented.

The results of this study supported the work of Basko and Hartmann (2017) who found that video conferencing was key to the success and participation of their students. The researchers also felt that the student perception of the effectiveness of the tools as well as their qualitative comments merit continued development and use of video conferencing technologies in the classroom and online learning environment.

Recommendations for Future Research

Future studies can further examine the correlation between the use of video conferencing and the success of student performance as determined by course grades. Engagement could also be studied by tracking the number of student contacts related to video conferencing events. For example, do more students choose to attend a chat as compared to a lecture.

The primary use of Zoom as a video conferencing tool was in chats with students and in messaging. More research could be conducted on the value of Zoom for exam review, proctoring exams, and online office hours. Other uses for Zoom that could be of value to the

student population would include advising, bringing guest speakers to the online environment, and providing other real-world applications.

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DOING BUSINESS WITH BRUNER: SCAFFOLDING FOR SUCCESS IN EVIDENCE-DRIVEN BUSINESS COMMUNICATION

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Abstract

Information literacy—i.e., the ability to find, evaluate, and use information—is a crucial skill set in the business world. The traditional means for teaching information literacy in many college courses—the research report—is often ineffective in helping students build these skills. By scaffolding the traditional assignment of the business research report with the help of a variety of educational technology applications, this project aims to help students master the elements of information literacy most relevant to real-life business practice.

Keywords: Information literacy, business communication, undergraduate research, scaffolding

Introduction

Informed decision-making is crucial for the successful operation of any business or organization. In a national survey of AACSB programs, Cooney (2005) found that business information literacy is a vital but growing area for business schools. She argues that business students must be information literate and links those skills to potential success in today's global workplace. In addition, Kanter (2003) argues that "information has become the leading business asset" (p. 23). When making a business decision, managers and business leaders do not simply want to hear opinions from employees; they want to hear viewpoints that are based on credible evidence, expressed logically, and relevant to the issue at hand (Klusek & Bornstein, 2006;

Conley & Gil, 2011)). In other words, they want employees to possess *information literacy*, that is, the "ability to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 1989, para. 3).

In business colleges, the information literacy instruction often occurs in undergraduate business communication courses. In part, the inclusion of information literacy instruction in business communication courses is needed since the two skill sets are critically linked; you need one to effectively do the other (Katz, Haras, & Blaszczynski, 2010). One common means for teaching and evaluating information literacy skills in business communication classes is the business research report—an assignment that has much in common with the academic research report found in other university disciplines. These assignments are often complex and robust, and students are expected to learn and apply a hefty range of knowledge sets and skills in relatively short order. The sheer volume and variety of tasks involved in a traditional research project can overwhelm students, especially if they lack meaningful previous exposure to the processes and products of business or academic research. The result is bad for everyone: students produce sub-par work, and faculty are left frustrated and disillusioned.

If business communication instructors are to help students learn the skills that are so important to their academic and professional futures, it will require a substantial re-visioning of the everything-at-once approach to teaching information literacy. A review of the work of Vygotsky and other educational theorists can help us determine a more measured and effective way of introducing research-related tasks to students. By helping students to build their skills over time, and by offering them appropriate support along the way (in other words, scaffolding the skills), more students will be able to effectively select, evaluate, and use information as expected in their professions.

Review of Literature

In business colleges, information literacy instruction is often located in undergraduate business communication courses. Many commonly used business communication textbooks devote substantial sections to the process of finding, evaluating, organizing, and presenting (either orally or in writing) business-related information (e.g., Schwom & Snyder, 2016; Cardon, 2018, and Guffey & Loewy, 2015). While some business communication textbooks use the term "information literacy," most resort to the word "research" as a shorthand for the process and results of gathering information. In addition, these textbooks often have two or three "research chapters"—collectively, more chapters than are devoted to any other subject in the textbooks. The research chapters address such topics as primary and secondary research methods, evaluating print and online resources, citations and referencing, and organizing the research results into effective paragraphs and larger documents (Schwom & Snyder, 2016; Cardon, 2018, and Guffey & Loewy, 2015).

While many business communication textbooks acknowledge that research can be integrated into all kinds of business-related communication contexts, from social media posts to persuasive emails, the "research chapters" are primarily devoted to showing students how to integrate research into longer, more formal, and more complex documents. For example, Shwom and Snyder's 2016 text focuses on "proposals, reports, and presentations" (p. 247); Cardon's 2018 text focuses on "reports" and "proposals" that are more "thorough" than other business documents (p. 369). Both authors emphasize that the purpose of business-related research is different from that of traditional academic research; Shwom & Snyder, for example, say that "workplace research and academic research differ in two key ways: their starting points and their goals" (p. 247). Academic research, they assert, starts with an assigned topic and is

meant to help students learn; business research starts with a question or problem and is meant to address that question or problem. Beyond that, however, the processes and outcomes of research as described in the text resemble those found in other academic disciplines. For example, in their cross-disciplinary study of faculty and students' perceptions of academic writing, Thaiss and Zawacki (2006) found that all disciplines expect academic writing to be demonstrate an approach that privileges reason over emotion, that addresses or imagines a critical and rational audience, and that presents the writer as a "fair student and analyst of competing positions" (p. 6). To get a sense of what "good" academic writing looked like, the authors reviewed grading rubrics from a variety of disciplines; this review made it clear that faculty across disciplines expected student research reports to have certain characteristics, including:

> Conciseness, clarity, looks/sounds professional, gets to the point; efficient, organized, cohesive; research, accurate facts; reliable sources; thoroughness of argument; good supporting points; sentence structure, good grammar, correct terms; adherence to correct style (MLA or APA usually) (p. 104)

A survey of the three business communication textbooks—Shwom & Snyder (2016), Cardon (2018), and Guffey & Loewy (2015)—shows that the same characteristics are expected in undergraduate business research reports. The skills needed to complete an effective business report, as presented in these textbooks, can be distilled into the following list:

- **Task 1**: Define the problem to be solved or the question to be answered
- **Task 2**: Search for sources relevant to their research question/problem.
- **Task 3**: Recognize the difference between credible and non-credible sources for their topic.

- **Task 4**: Identify specific material in the sources that is relevant to/supports their assertions.
- **Task 5**: Paraphrase or summarize the relevant content from these sources without plagiarizing.
- **Task 6**: Organize the external material and their own contextualization of it into coherent paragraphs.
- **Task 7**: Identify the sources of the external material in their report according to a widely accepted citation system (in this case, APA).
- **Task 8**: Organize the paragraphs into a coherent research report that fulfills its intended purpose.
- **Task 9**: Format the completed paper according to guidelines provided regarding spacing, font, page numbering, etc.
- **Task 10**: Apply professional-level standards of effective writing at the sentence level, including grammar and mechanics.

These are largely the same tasks that students need to perform in order to complete an academic report for a course in other academic disciplines. For example, in a study conducted by the University of Rochester's River Campus Libraries, faculty members in a variety of academic fields were asked to describe the hallmarks of a "good" undergraduate research paper. These hallmarks include "meeting the needs of the assignment"; having a workable and "interesting" topic; having a "clear thesis statement" and "well-developed arguments in relation to the sources used"; using "appropriate, high-quality sources"; being written in a style appropriate to the discipline with few or no mechanical errors; have a clear and appropriate "beginning, end, and middle"; and featuring "no plagiarism" (Alvarez & Dimmock, 2007, p. 2).

While the language used to describe business and academic reports are different on the surface, they reflect nearly identical processes: identifying the appropriate topic/focus, gathering relevant information from credible and appropriate sources, organizing that information in ways appropriate to the context and audience, acknowledging sources, and following accepted standards of language and style. Perhaps most importantly, students are often expected to both learn and demonstrate/master these research skills within a short time frame during a given semester. In addition, many students are engaging in the research process for what is, essentially, the first time, at least to the extent expected in many upper-level undergraduate courses. While students often write reports in high school, this experience does not adequately prepare students for such tasks as formulating research questions and interpreting and synthesizing information in sources (Alvarez & Dimmock, 2007).

Acquiring and applying this long list of skills in a short time represents a heavy cognitive and emotional burden for many students; moreover, this process can negatively impact their experience of, and reaction to, researching for college courses, according to Detmering & Johnson (2012). When Detmering and Johnson asked upper-level undergraduate students to describe their "experiences locating, evaluating, and using information in the context of academic research" (p. 5), students viewed their roles as researchers as "tenuous" (p. 5) and often described the research process as "torture" or "a nightmare" (2012, p. 11). As Detmering and Johnson observe, "[s]tudents typically describe themselves as heroes facing the challenge of writing a research paper, often with the handicap of nonsensical or fiendishly difficult restrictions and rules given by the teacher" (2012, p. 11). Other researchers have also observed this lack of consistency in teacher's instructions, from one course to another (Valentine, 2001).

From the start, then, students often view the prospect of writing research papers as negative—with the process being perceived as onerous and irrelevant at the same time.

Students' views do not improve once they actually begin the work of researching and writing. First of all, they feel that their own original thoughts or perspectives get lost in the "pasting together" of material created by others (Detmering & Johnson, 2012, p. 12). Secondly, they often do not understand the sources they are reading well enough to integrate them into a coherent argument or point. Finally, if a student has a truly original idea, they often have trouble finding appropriate sources that address that idea, so, paradoxically, they often choose less-original topics or arguments because they can find more published information, which they can then incorporate into a report or presentation. Together, all of these aspects add up to a learning experience in which students see little value. As one wrote, "I honestly just didn't want to waste my time working on a paper which used mostly old information to try and support an only slightly new opinion" (p. 13). Interestingly, Gustavson & Nall (2011) report that first-year college students are often extremely confident in their ability to conduct library research—a confidence that far outstrips their actual performance in such tasks as locating and interpreting sources. Clearly, by the time students reach their junior and senior years, this confidence yields to confusion, frustration, and a sense of inadequacy.

The struggles students experience during the research process often lead, not unsurprisingly, to less-than-adequate results. In Alvarez & Dimmock's study, faculty reported the following common issues in the reports their students submit: "poor time management skills"; poorly formed arguments and topics; "poor-quality sources"; absence of "focus," "critical judgment," and "reflection upon the sources"; plagiarism; lack of understanding of referencing and citation practices and standards; "often unintentional" plagiarism; and too many stylistic

and/or mechanical errors (2007, p. 3). As instructors of business communication, we recognize many of these same issues in assignments we receive in our courses. The reports often lack a clear or focused topic; lack substantive and relevant supporting evidence, or include evidence from suspect sources; include substantial plagiarized portions; have disorganized paragraphs and larger report sections; include evidence that is simply summarized rather than analyzed; use error-ridden language and style; incorporate external material without adequate contextualization or explanation; and display haphazard formatting. Clearly, although knowing how to gather, analyze, and present information are considered crucial skills in a variety of disciplines, and ultimately, in a number of professions, undergraduate students struggle mightily with learning and applying these skills. If business communication instructors are to help students achieve real information literacy, we need to re-think the extent, timing, and content of research-related instruction.

One framework for re-visioning the teaching of information literacy and research-related skills can be found in the work of Vygotsky and later educational theorists. In the language of Vygotsky, the report assignment as described above is outside many students' Zone of Proximal Development (ZPD), " the distance between the actual development level . . . and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). In other words, it is the space between what learners can do without assistance and what they cannot do, even with help or guidance. The ZPD represents a "stretch" for learners; while they cannot learn content or skills located in the ZPD on their own, they may do so with appropriate assistance from a teacher or another more experienced person.

The goal of teaching is to help learners expand their ZPD. Expecting learners to progress too far past the zone of what they already know will not be effective and will only lead to frustration on the part of students and teachers alike. One approach to helping students progress is *scaffolding*, first proposed by Jerome Bruner in the 1950s (Shanker, & Bakhurst, 2001). Scaffolding is meant to build on learners' existing knowledge and skills bit by bit, helping them to gradually acquire more knowledge and skills at a manageable rate. Scaffolding has three main features: (1) It is collaborative, involving interaction between the learner and a more knowledgeable person, (2) It occurs in the ZPD, where the expert provides supports to guide the student to expand their knowledge and skills (and thus their ZPD), and (3) As the learner increases his or her knowledge and/or skill, the supports are gradually removed, and according to Vygotsky (1987), "[w]hat the [learner] is able to do in collaboration today he will be able to do independently tomorrow" (p. 211).

A crucial part of scaffolding is *modeling*, or showing students how to complete specific research or writing tasks prior to asking them to complete those same tasks. As Harris states, modeling is "illustrating what we mean by doing it" (1983, p. 77). By showing students the outcomes of a learning activity (e.g., the correct answer, or an exceptional product) as well as the process for getting to that outcome, they can more easily recognize and enact the steps needed to reach the desired learning goal. While models can be provided by the instructor, another effective source of modeling is other students. By seeing how and what their classmates are doing, students can apply those behaviors to their own assignments. By applying a scaffolding approach to the traditional assignment of the business research report, we aimed to help students achieve mastery of the building blocks of information literacy most relevant to real-life business practice.

Methodology

This project was implemented in the Fall 2018 and Spring 2019 semesters in five sections of a junior-level business communication course in a college of business at a regional university in the Southwest; approximately 160 students participated in the study. Three course sections were online, while two were face-to-face. The university serves a growing number of first generation, part-time, and transfer students—currently, 49%, 25% and 12% of the student body, respectively (citation hidden to avoid uncovering the name of the university).

Pre-Assessment

To start, it was important to identify the students' ZPDs: in other words, their knowledge and skills as they relate to tasks 1-10 above. This identification was achieved using an objective, multiple-choice pre-test covering the content in these tasks. Once we fully understood the extent of the students' knowledge and skills, the next step was to identify the limited set of activities from tasks 1-10 that were most important in moving students toward true information literacy; these activities formed the foundation of three scaffolded assignments, each intended to expand the students' ZPDs. The remaining activities from Tasks 1-10 were replaced with supports provided to students by the instructor.

The results of the APA pre-test showed that students lacked meaningful knowledge of nearly every aspect of the research process, from identifying valid questions to writing effective sentences and paragraphs. As we have seen above, however, expecting students to learn and perform all of these skills in a single unit leads to poor outcomes, so the authors chose to focus on previously described Tasks 4, 5, 6, and 7 for this project (thereby, focusing the instruction on effectively selecting, incorporating, and citing information from sources). In other words, these

were the tasks that students would be asked to practice in the assignments and activities. Because Tasks 1-3 (related to defining the research problem and finding credible sources) are foundational to 4-7, the authors chose to provide supports for those tasks—essentially, performing them for the students, at least initially. This scaffolding would enable students to concentrate on the targeted skills. Tasks 8-10 (related to organizing, formatting, and editing the final document) were omitted from the project altogether, to reduce the amount of content students were expected to master. The results, the authors hoped, would be a more manageable set of projects that would enable students to achieve and feel success.

The individual assignments are described below:

Assignment 1: APA In-Text Citation

In this assignment, students were given two articles on a single topic. One article had a named author, but the other did not. They were also given a paragraph template with a topic sentence and summary sentence composed by the instructor. The students were asked to choose one appropriate piece of information from each article to fill in the middle sentences of the paragraph. Then, they were asked to provide a proper in-text citation for each source. The model paragraph can be seen in Figure 1 below:

Increasingly, research indicates that sitting for long periods has serious health risks. [Here's where you insert the information you find in the articles. At least two sentences with two different facts or sets of facts. Use in-text citations! Proofread your paragraph so that it's free of grammatical errors and typos.] Therefore, for many modern employees—who sit at a desk for hours at a stretch—work can be hazardous to their health.

Figure 1. Model Paragraph for Assignment 1

To learn about APA in-text citation format, students were provided with videos created by the University of Maryland Writing Center and other reputable authors (e.g., Cohn, 2016; University of Maryland, 2015). In completing Assignment 1, students identified specific relevant information from a source and identified a portion of the correct citation information (Tasks 4 and 7). Even though students were not specifically instructed to paraphrase or summarize from the source (Task 5), they had the opportunity to practice that skill depending on how they completed the assignment. By providing the sources for the assignment, the instructors completed Tasks 1 and 2 for the students. The students were exposed to proper paragraph format (Task 6) as well as the selection of valid sources (Task 3), both of which modeled skills which they would be asked to apply in a later assignment.

Although the students submitted their paragraphs through Turnitin and received a match score, they were not evaluated on—and did not receive feedback regarding—the degree to which they paraphrased (or plagiarized) the sentences they composed. They also did not receive

feedback on any grammatical or stylistic errors. They were only graded on the in-text citations. No comments were made on the individual assignments; instead, the instructor assigned individual points, then created and shared a video that demonstrated several correct ways in which the in-text citations for these sources could be formatted.

Assignment 2: APA In-Text Citation + Paraphrasing

For this assignment, students were asked to build on the skills addressed in Assignment 1. To start, they were given two articles. These articles were on the same topic as Assignment 1, but they were not the same articles. They were also shown a model paragraph that included plagiarized content from the two articles. To show the extent of plagiarism, the paragraph had been submitted to Turnitin with highlighting indicating an 87% match rate. Also, incorrect in-text citations for both sources were included. Figure 2 shows the assignment:

Increasingly, research indicates that sitting for long periods has serious health risks. One research study found moderate evidence for an association between sedentary behaviour and diabetes and strong evidence for a relationship between sedentary behaviour and cardiovascular and all-cause mortality (Wilmot, Diabetologia, 2012). Another one found that sedentary lifestyles may promote cell aging, rapid cell death, and inflammation, which lead to chronic health problems such as diabetes and dementia (Ann Regina Lurati, p. 286, 2017). Therefore, for many modern employees—who sit at a desk for hours at a stretch—work can be hazardous to their health.

Instructions

The paragraph above has borrowed a lot of text from other sources--87%, in fact! The different colors indicate different sources. You can see the match report on the following page.

For this assignment, your job is to reduce the amount of colored highlights to 20% or less. This means you need to put the material in the colored sections into your own words.

Be creative. Use a thesaurus or dictionary if you want!

Figure 2. Model Paragraph and Instructions for Assignment 2.

To complete this assignment, students were provided with the videos for Assignment 1, plus an additional video on paraphrasing (Nimsakont, 2008). Students were asked to rewrite the paragraph using paraphrased information from both sources. The resulting paragraph could have no more than a 20% match when run through the Turnitin system. They were also asked to correct the in-text citations. Students could submit their work to Turnitin as many times as necessary to achieve the desired match. Once they submitted their final version, they were asked to post their paragraph on an all-class discussion board. By reviewing examples of classmates'

work on the discussion board, students could see a multitude of models for completing this assignment, and they could double-check their own understanding of the concepts by applying—or questioning—what they saw on the board. Overall, Assignment 2 provided students practice with skills related primarily to Task 5, summarizing and paraphrasing information from a source, and students repeated their practice of skills related to Task 7, correctly citing sources. Again, Tasks 1, 2, 3, and 6 were performed by the instructor.

One interesting example of scaffolding occurred with the topic and summary sentences for the paragraph. While students were not told to revise these sentences, which were composed by the instructor, they often had to do so in order to achieve the desired level of match, since these sentences would show up as plagiarized in Turnitin. Thus students had practice with composing introductory and concluding sentences, without specific instructions to do so. This practice provided students an opportunity to develop their skills with Task 6: organizing external material and their contextualization of external materials into coherent paragraphs. For this assignment, the students were evaluated on three items: the in-text citation, the degree of match, and sentence-level grammar (only egregious errors were corrected; as long as meaning was clear, no comments were made). Comments were made on individual assignments, and a rubric was used to show the point value. Once again, the instructor made a video to show the correct ways that the in-text citations could be formatted.

With this assignment, students were also able to participate in an extra-credit activity. Many teachers have observed that students do not go far enough when paraphrasing; in other words, the students' words are too close to the original. The goal of the extra-credit assignment was to push the students past these self-imposed linguistic limits. To achieve this, the students were invited to enter contests with their paragraphs, one for the best rhyme and one for the best

alliteration. The process of applying rhyme or alliteration forced students to really think about the meaning they were trying to get across in their paragraph; then they had to push beyond their usual vocabulary to find words to convey both that meaning and the required sound features. The results were delightful and included raps, 30-word alliteration strings, and multi-stanza poems. The alliteration and rhyme contests were optional; to give all students a chance for extra credit, two all-class contests were developed: Most Businesslike and Student Favorite. The winners of all four contests were determined by a confidential class vote (set up as a quiz in our LMS). The instructor tallied the results and reported them back to the class.

Assignment 3: APA In-Text Citation + Paraphrasing + Unity and Coherence

For this final assignment, the threads from the previous assignments were continued, with additional scaffolding. This assignment added the components of unity (i.e., each paragraph has only one main idea) and coherence (i.e., the ideas in a piece of writing are logically linked). While students had been provided with model paragraphs in the first two assignments, they were asked to compose their own paragraphs in this one. To help with this process, one instructor created a video explanation of the PEEL paragraph strategy (Point, Evidence, Explanation, and Link). The PEEL strategy is commonly used for incorporating external evidence into a student's own assertion or argument. The assignment instructions can be seen below in Figure 3:

Figure 3. Video and Instructions for Assignment 3

Additionally, instead of being provided with specific articles, students were asked to use their textbook as the source of external evidence. This requirement caused them to decide on a specific topic, then search for information on that topic, albeit in a more limited way than, for example, in a library database. This requirement also provided some structured exposure to the skills needed in Tasks 4 and 5.

Students were paired to complete this activity and were asked to compose their paragraphs on the learning management system's wiki tool. The students decided between themselves how they would divide up the work; most pairs chose to have each partner write one

paragraph. Even though the students may have composed separate sections, they had to tie the sections together with the appropriate unity and coherence markers—providing practice with skills related to Task 6, which focuses on the organization of original and external material. Students also had further practice with Task 7, as they were required to include in-text citations and a reference. Once the assignment was submitted on the wiki, one student was responsible for submitting the entire piece to the Turnitin system. The assignments were evaluated based on the following criteria:

- correctness of APA in-text citation format
- unity and coherence
- paragraph structure
- signal phrases
- paraphrasing
- degree of participation (determined by wiki history)

Results

This project was implemented in the Fall 2018 and Spring 2019 semesters. The effectiveness of this project was evaluated in two ways: first, in an objective, multiple-choice assessment (called the APA Quiz) administered as a pre-test during the first week of classes and as a post-test during the last weeks of the semester; secondly, by student performance on the business research report, which was assigned as the product of the scaffolded activities. In the pre- and post-test assessment process, the APA quiz was given to the students in the studied classes before receiving instruction on APA referencing and citation or completing the three assignments; the post-test was given to the same students after they had completed all three assignments. The students' responses on the two tests were compared to see what, if any,

improvement had occurred. The McNemar Paired Nominal Test was used to find the significance between the pre-test and post-test quiz answers. The results of this review can be seen below in Figure 4:

Question #	APA Quiz Questions	p-value
1	Before you choose sources to use in your paper, which questions do you need to ask yourself?	**0.000****
2	What information is generally included in a signal or introductory phrase for an APA in-text citation?	**0.000****
3	Which of the following shows a correct APA in-text citation at the end of a sentence?	**0.026***
4	Which of the following shows the correct usage of APA in-text citation for the summary below?	**0.000****
5	In APA style, what is the relationship between the in-text citation of a source and its associated entry in the reference list?	**0.026***
6	In a reference, APA capitalizes the following in article or book titles.	**0.000****
7	A good rule of thumb when deciding whether or not to cite a source is: "When in doubt, cite."	**0.012****[1]
8	What is plagiarism?	0.134
9	In which scenario would it make more sense to quote directly from a source, rather than paraphrase?	0.324
10	Which of the following is a correctly formatted APA reference?	**0.000****
11	Which of the following shows a correctly formatted APA reference for a journal article without an author?	**0.000****

12	When you paraphrase a section from a source, you (Click all that apply):	**0.003****
13	DOI is an acronym for what?	1.000[1]
14	When using a direct quotation in your paper, which items must you include in your in-text citation?	**0.022***
15	What is APA position regarding what to include in the in-text citation of a paraphrased or summarized section?	**0.001****
16	When you are writing a research paper, using outside sources can help you do which of the following? Click all that apply.	**0.000****

*The significance level is **.0** **The significance level is **.01**

[1]Exact significance is displayed for this question

Figure 4. APA Quiz Questions with McNemar Paired Nominal Test Results

The findings indicate a significant difference between the pre- and post-quiz scores on 13 out of the 16 questions. Questions 1, 2, 4, 6, 10, 11, 12, 15 and 16 were significant at .01 level, which indicates that the students had learned more of the content covered in the test after they received instruction and completed Assignments 1-3. For questions 3, 5, 7 and 14, the significance level was .05. Thus significant increases in the scores on questions related to the topics below indicated that students increased their knowledge of these areas (relevant tasks indicated in parentheses):

- Paraphrasing source material (5)
- Determining validity of sources (3 and 4)
- Writing signal and citation phrases (6 and 7)
- Formatting references (7)

- Creating and formatting in-text citations (7)
- Creating signal phrases for source material (7)

Finally, some broader improvements were noted in the participating students' work from the semester. For example, signal phrases are a crucial part of integrating external information into an author's assertion or argument. In the past, students showed a lack of utility with this tool; many students would simply begin a sentence with a quotation from the source. Because of this observation, the plan was to include instruction on signal phrases with Assignment 3, which was the final assignment of the semester. However, in Assignment 2 and in their research reports, students had begun to use signal phrases nearly every time they integrated outside information into their own language. Since no formal instruction was provided on this topic, the authors deduced that the students learned how to use signal phrases from the models provided in the sample paragraphs, and by observing their use among their classmates' work in Assignments 2 and 3. This result illustrates the power of modeling touted by Harris (1983), and the ability of students to learn informally from each other.

Implications for Business Communication

These targeted assignment groups, like the one presented in this study, also provide another opportunity for instructors to identify and articulate their instructional goals and learning objectives, which can lead to more positive outcomes for both students and instructors. When creating scaffolded assignments, instructors must be conscious of specific—and limited—learning outcomes in order to meet students in their ZPD. When instructors pause to articulate the objectives, students are better able to understand what is expected of them; moreover, when instructors provide scaffolding and modeling exercises, students are able to perform required tasks more effectively. In addition, rather than being overwhelmed with their instructors'

critiques of “everything,” students can benefit from feedback targeted to the specific knowledge and skills addressed in the assignment. As a result, the cognitive load for both students and instructors is lessened.

Information literacy skills are often part of what is known as the “hidden curriculum.” As defined by Sambell and McDowell (1998), the hidden curriculum includes skills and experiences that are “implicit and embedded in educational experiences in contrast with the formal statements about curricula and the surface features of educational interaction” (pp. 391-2). In other words, students are expected to know and apply certain skill sets without being taught how—and often without even knowing that they need these skills (Wray & Montgomery, 2019). The hidden curriculum negatively impacts non-traditional (working-class, first-generation, and transfer) students most of all; with the growing population of non-traditional students at institutions of higher education around the U.S., unmasking the hidden curriculum takes on more urgency than ever. Consequently, re-visioning the traditional curriculum to insure that it is student-centered with the instructor as a facilitator, rather than as the traditional professor/authority, may be the best approach for equipping students with the business communication skills that are so necessary for their academic, personal, and career success.

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