

## Redesigning Principles of Accounting to Improve Students' Performance and Retention

**Symon Manyara**

**Enoch Osei**

**Bernard McNeal**

**Augustin Ntembe**

Accounting, Finance and Economics Department

College of Business

Bowie State University

14000 Jericho Park Road, Bowie, Maryland

United States of America

### Abstract

*Principles of Accounting I is a required course for all business majors in the College of Business at Bowie State University. The course had a high failure rate, which resulted in many students migrating to other majors in the university. This problem initiated a study to improve teaching and assessment techniques. A new teaching methodology was developed from a course redesign in an effort to reduce the failure rates. The redesign model requires students to complete graded pre-lecture reading assignments to ensure advanced preparation. The new model was implemented in all Fall 2018 sections, increasing students' enrollment in each section from 25 to 30. The changes reduced the need for many adjunct faculty, which is a cost-saving for the College of Business. Course enrollment steadily decreased from 2006 to 2015 but rebounded and increased consistently after fully implementing the redesign model in Fall 2018. Furthermore, DFW rates declined from 53% in Spring 2018 to 44% in Fall 2018, 42% in Spring 2019, 45% in Fall 2019, and 27% in Spring 2020. The course redesign data showed a steady decrease in DFW rates and a steady increase in enrollment over multiple semesters. Full-time faculty are teaching all course sections to ensure consistency and accountability with the course redesign, thus maintaining the positive trend.*

Key words: Course redesign, Failure rates, Withdrawal rates, Retention

### 1. Introduction

Universities have been faced with decreased enrollment and retention rates, challenges with timely graduation, and financial difficulties leading to a heightened appeal to attract, pass, retain, and graduate the enrolled students to increase the institution's viability. The College of Business at Bowie State University was experiencing a consistent decline in enrollment and retention because of the high failure and withdrawal rates and D grades in the introductory accounting courses required of all business majors. This declining trend in enrollment was also a major concern for the accounting program to attract potential accounting majors. Therefore, it was necessary to refocus the introductory accounting courses to align with today's students' learning styles without sacrificing student learning and effective instruction. In addition, the course redesign was consistent with the education literature and similar initiatives of the National Center for Public Policy and Higher Education (NCAT 2014).

The initial introduction of accounting to a student lays the foundation to understand and interpret accounting information in later courses and future careers (Warren & Young, 2012). Unfortunately, DFW (grades D, F= failure; W= withdrawal) rates in introductory accounting courses are usually high (Froman, 2001 and Kealey et al., 2005). Accounting requires analytical thinking abilities resulting in many students struggling in the course. Students who lack a solid motivation to invest extra time to succeed in accounting are often discouraged, and they stop trying (De Lange et al., 2003 and Sargent, 2009). This experience for some students may mean forgoing a career in accounting, and for others, it may delay earning their degree or even cause them to drop out of college entirely. The Pathways Commission was formed in 2010 to "identify better ways to attract, educate, and continue to develop the human resources that accounting needs in order to fulfill the accounting profession's responsibility to protect the information needs of participants in our economy" (Black, 2012, p. 602). It is a desirable priority in the principles of accounting to emphasize the improvement of students' performance to garner interest in accounting as a career.

The authors of this paper share their experience from redesigning the accounting principles as effective learning strategies and educational pedagogy using the course content, tools, and technological enhancements to improve the declining retention, pass rates, and decrease the withdrawal rates by cultivating interest in the introductory accounting classes.

## **2. Literature Review**

Generally, many students are challenged and intimidated by math-related subjects because they believe math is complex and challenging to learn (Ashcraft & Krause, 2007; Eccles & Midgley, 1990; Gottfried, Marcoulides, Gottfried, Oliver & Guerin, 2007). This perceived difficulty results in poor grades, which lowers self-confidence in math-related tasks (math self-efficacy) (Pajares & Miller, 1994), creates math anxiety (Hembree, 1990), and results in the students avoiding math tasks (Boekaerts, 1997; Hackett, 1985). Approximately 22 percent of newcomers in college take remedial math courses, and about half of college algebra students fail (Thiel, Peterman, & Brown, 2008). Students who fear failure in math-related courses bring this perceived thinking into the introductory accounting courses.

Students' use of digital media provides convenient platforms for remediation, individualization, and reteaching, which are now available in modern textbooks as supplemental learning aids. Although various supplemental study assistance is available for students that need help outside the classroom, the literature shows that participation is exceptionally low (R. A. Blanc, L. E. DeBuhr & D. C. Martin, 1983), and the few that attend are the more motivated students (Etter et al., 2000). For example, studies of introductory accounting classes show that the average participation rate is 26.79 percent (Etter et al., 2000).

Accounting is complex and taxing with the short-term memory of novices or low achievers who have not systematically linked ideas together or know a large body of facts (Smith, diSessa, & Roschelle, 1993). However, as cited in one study of accounting principles, complicated material could be simplified by walking students through example problems before asking them to complete problems themselves (Ayles, 2006). This approach has been effective in many other accounting studies (Halabi, Tuovinen, & Farley, 2005). The course redesign team in the College of Business at Bowie State University accomplished this objective by creating "In-Class Activities/Problems" to be worked on in class with the professor before assigning "Homework Problems" done by the students at home.

## **3. Transforming Principles of Accounting**

The course redesign targeted the entire introductory course rather than one section because various sections were taught by adjunct faculty or new professors resulting in a lack of consistency. Therefore, it was necessary to standardize the materials and the technological tools across sections to curtail effort duplication and minimize faculty dissimilarities to allow each instructor to exploit strengths and shroud weaknesses (Twigg, 2005). A major objective of the course is to motivate business majors to remain engaged in learning accounting issues as they relate to business. As cited by the Accounting Education Change Commission (AECC) that was formed to improve the academic preparation for accountants, "the primary objective of the first course in accounting is for students to learn about accounting as an information development and communication function that supports economic decision-making" affording students an overview or "introduction" to accounting (Accounting Education Change Commission, 1992, pp. 1-2).

Because not all faculty members would have sufficient technological experience, Smith, and Robinson (2003) suggested sharing technology leadership to minimize the development time and costs. The few that are trained will influence others, as has been incorporated by the College of Business at Bowie State University. Textbook publishers provide automated grading systems of assigned work, including low-stakes quizzes through online homework management software, which has become increasingly popular by providing instant feedback and reducing the grading time for instructors (Humphrey & Beard, 2014). The instant feedback is appreciated by students when doing homework because they also receive guided solutions for incorrect answers (Wooten & Dillar-Eggers, 2013). Further, technology offers instructors an opportunity to monitor students' progress and performance, track time on task, and intervene individually (De Lange et al., 2003 and Gaffney et al., 2010). These tools can be easily supplemented using other textbook materials available on the internet, such as videos and guided examples provided by McGraw-Hill Connect Systems.

## **4. Low Motivation for Success**

As confirmed by empirical research, most of the accounting instructors know from their experience that motivation is more valuable in predicting the students' success in introductory courses than their ability (Kruck & Lending, 2003), and students taking principles of accounting courses can improve their low aptitude by increasing their effort (Wooten, 1996). Therefore, instructors' motivational efforts may be one of the key issues to encourage non-business majors who may have a minimal level of interest, especially for the less confident students. Some of the proposed techniques to motivate introductory accounting students may include novel ways to learn with immediate feedback (De Lange, Suwardy & Mavondo, 2003). However, it has been shown in some studies that students will not complete extra work voluntarily without significant course credit (Elikai & Baker, 1998). In the College of Business at Bowie State University, it was found that when Interactive Videos/LearnSmart were assigned, very

few students did the work until some points were assigned. This approach is supported by Gee's (2003) principles for maximizing learning through interactive video settings.

### 5. Improving Learning

This section provides information on how the targeted course objectives were addressed as they relate to the critical learning outcomes that are assessed for ACBSP accreditation. Two course redesign objectives were identified for the Principles of Accounting I course in the College of Business. The first outcome was to reduce the DFW rates that necessitated students to repeat the course. The second outcome was to improve the students' understanding of and the application of accounting cycle concepts as the foundation for success in later accounting courses. This section provides information on how the targeted course objectives were addressed.

#### 5.1 Course Outcome 1: Improve understanding and application of the accounting cycle

This outcome involves the accounting processes required to prepare financial reports to communicate the business performance results with decision-makers. The accounting processes begin with the initial identification of required business documents such as receipts, the recording process by preparing journal entries and adjusting journal entries resulting in the preparation of financial statements as a means of communication with the decision-makers. Understanding the accounting cycle is integral to a successful progression to later courses in accounting. Because the accounting cycle is critical to understanding accounting, the concept is tested throughout the semester in all sections to improve knowledge retention and success as students transition into the Principles of Accounting II course.

To better understand the application of the accounting cycle, the course work is designed to follow the steps in the order provided, and each assignment has a designated due date for all students to ensure timely completion:

- Interactive Videos (reading): The students must complete this graded reading assignment before the chapter discussion with the professor.
- Class Discussions: The professor discusses each chapter material after the students have completed the interactive videos assignment.
- In-Class-Activities (problem-solving): The students are required to complete this graded problem-solving assignment in class with the professor's assistance.
- Homework Problems (problem-solving): The students are required to complete this graded problem-solving assignment on their own at home after practicing the In-Class Activities.
- Pop Quizzes: The students must take a pop quiz during class time after completing all the preceding assignments.

#### 5.2 Course Outcome 2: Reduce DFW rates in redesigned courses by 10 percent during the first year of implementation

Eleven to twelve sections are offered yearly for the Principles of Accounting I in the College of Business, on average about 330 students. The same professor taught two sections during Fall 2017 and Spring 2018 to measure outcome 1. One of the course sections was taught using the traditional teaching format (control section), while the second section (pilot section) used the Redesigned Model. The Supplemental Model described by the NCAT was used for the pilot section during the two semesters, while the control section continued using the traditional format. Face-to-face class sessions were used in both sections to facilitate topic reviews, discussions, and problem-solving learning activities.

**Table 1**  
**FALL 2017 DFW RATES FOR PILOT, CONTROL, AND OTHER SECTIONS USING TRADITIONAL METHODS**

Course Section	Total # Enrolled	Total # DFW	DFW Percentage
Pilot (1)	25	4	16%
Control (1)	14	6	43%
All Sections (5)	105	53	50%

As shown in Table 1 above, in Fall 2017, the first semester of the redesign process, the students in the pilot course section performed better than those in the control section. The pilot section DFW rate was 16 percent compared to 43 percent for the control section. When the pilot section is compared to all sections that used the traditional teaching method, the students in the pilot section performed better by more than 30 percentage points in reducing the DFW rates (16 percent compared to 50 percent).

Course Section	Total # Enrolled	Total # DFW	DFW Percentage
Pilot (1)	31	9	29%
Control (1)	29	19	66%
All Sections (5)	124	66	53%

As shown in Table 2 above (second semester of redesign study), the DFW rate for the pilot section compared to the control section that used the traditional teaching method decreased by more than 30 percentage points and by more than 20 percentage points compared to all sections. However, such a wide range in the decrease of DFW rates may not be consistent each semester because of differences in the college-level preparedness of the enrolled students. It was expected that at least a 10-percentage point decrease in DFW rates would be experienced in the Principles of Accounting I course when the redesigned model was fully implemented, beginning Fall 2018. Consistent with the goal for the course redesign, enrollment has increased from 105 students in Fall 2017 to 179 students in Fall 2018.

Semester Offered	Course Section	Total # Enrolled	Total # DFW	DFW Percentage
FALL 2018	All Sections (6)	179	78	44%
SPRING 2019	All Sections (5)	147	62	42%
FALL 2019	All Sections (6)	163	73	45%
SPRING 2020*	All Sections (5)	149	40	27%
FALL 2020**	All Sections (6)	134	68	51%

\*Spring 2020 reflects the transition from f2f to Synchronous learning due to COVID-19 and lack of “Proctoring Software” for exams and quizzes.

\*\* Fall 2020 experienced high withdrawal rates due to COVID-19 and use of proctoring software.

All course sections are now taught by full-time faculty to ensure consistency in applying the adopted course redesign procedures. The faculty anticipated a reduction in the DFW rate of 10 percentage points. The results reflect a decrease in the DFW rate from 53% to about 45%. The goal is to continue monitoring key metrics within the course and make modifications as necessary to further reduce the DFW rates.

## 6. Conclusion

Because the accounting cycle concept is tested throughout the semester, the students performed better on the final examination than the traditional methods. After the full implementation in Fall 2018, the DFW rates had declined from 53% in Spring 2018 to about 45% in Fall 2019, and 27% in Spring 2020 with the Fall 2020 increasing to 51%. The accounting faculty will continue to apply the lessons learned from the course redesign initiative to ensure students' success in the two accounting principles courses and incorporate some of the concepts learned in the upper-division accounting courses.

In the future, several more years of data will be collected to determine the overall success of the accounting course redesign initiative with a closer examination of the specific student learning outcomes within the ACCT 211 course. The analysis of student performance on the specific accounting cycle steps may provide valuable insight for improving student learning. The faculty anticipates that Spring 2021 through Fall 2022 may present some anomalies within the data sets because of the COVID-19 pandemic and pivot to strictly online learning; however, the initial course redesign to reduce DFW rates shows promising results. A more detailed study results paper will be published in the future.

## References

- Accounting Education Change Commission (1992). *The first course in accounting: Position statement number two*. Torrance, CA: Author.
- Ashcraft, M. H., and J. A. Krause, 2007. Working memory, math performance, and math anxiety. *Psychonomic Bulletin & Review* 14 (2): 243-248.
- Ayres, P. 2006. Impact of reducing intrinsic cognitive load on learning in a mathematical domain. *Applied Cognitive Psychology* 20: 298-298.
- Black, W. (2012). The activities of the Pathways Commission and the historical context for changes in accounting education. *Issues in Accounting Education*, 27 (3), 601-625.

- Boekaerts, M. 1997. Capacity, inclination, and sensitivity for mathematics. *Anxiety, Stress, and Coping*. 10: 5-33.
- Byrn, M., and B. Flood. 2005. A study of accounting students' motives, expectations, and preparedness for higher education. *Journal of Further and Higher Education* 29 (2): 111-124.
- De Lange, P., T. Suwardy, and F. Mavondo. 2003. Integrating a virtual learning environment into an introductory accounting course: determinants of student motivation. *Accounting Education* 12 (1): 1-14.
- Eccles, J. S., and C. Midgley, 1990. Changes in academic motivation and self-perception during early adolescence. *In From childhood to adolescence*, edited by R. Montemayor, G. R. Adams, and T. P. Gullotta. Thousand Oaks, CA: Sage Publications, Inc.
- Elikai, F., and J. Baker. 1998. Empirical evidence on the effectiveness of quizzes as a motivational technique. *Issues in Accounting Education* 3 (2): 248-254.
- Etter, E. R., S. L. Burrmeister, and R. J. Elder. 2000. Improving student performance and retention via supplemental instruction. *Journal of Accounting Education* 18: 355-368.
- Froman, A. J. (200). Understanding the students' experiences in the first accounting course (Ph.D. dissertation). Colorado State University.
- Gee, J. P. 2003. *What Video Games Have to Teach Us About Learning and Literacy*. New York: Palgrave Macmillan.
- Gottfried, A. E., G. A. Marcoulides, A. W. Gottfried, P.H. Oliver, and D. W. Guerin. 2007. Multivariate latent change modeling of developmental decline in academic intrinsic math motivation and achievement: Childhood through adolescence. *International Journal of Behavioral Development* 31 (4): 317-327.
- Gracia, L., and E. Jenkins. 2002. An exploration of student failure on an undergraduate accounting programme of study. *Accounting Education* 11 (1): 93-107.
- Hackett, G. 1985. Role of mathematics self-efficacy in the choice of math-related majors of college women and men: A path analysis. *Journal of Counseling Psychology* 32 (1): 47-56.
- Halabi, A. K., J. E. Tuovinen, and A. A. Farley. 2005. Empirical evidence on the relative efficacy of worked examples versus problem-solving exercises in accounting principles instruction. *Issues in Accounting Education* 20 (1): 21-32.
- Hembree, R. 1990. The nature, effects, and relief of mathematics anxiety. *Journal for Research in Mathematics Education* 21 (1): 33-46.
- Kealey, B. T., Holland, J. & Watson, M. (2005). Preliminary evidence on the association between critical thinking and performance in principles of accounting. *Issues in Accounting Education*, 20, 33-49.
- Kruck, S. E., and D. Lending. 2003. Predicting academic performance in an introductory college-level IS course. *Information Technology, Learning and Performance Journal* 21 (2): 9-15.
- National Center for Academic Transformation (2014). *How to Redesign a College Course Using NCAT's Methodology*.
- Pajares, F., and D. Miller. 1994. Role of Self-Efficacy and Self-Concept Beliefs in Mathematical Problem Solving: A Path Analysis. *Journal of Educational Psychology* 86 (2): 193-203.
- Sargent, C. S. (2009). Improving retention for principles of accounting and elementary statistics students: Ultra-short tutorials designed to motivate effort and improve performance (Ph.D. dissertation). Georgia State University.
- Smith, J. P. I., A. A. diSessa, and J. Roschelle. 1993. Misconceptions reconceived: A constructivist analysis of knowledge in transition. *Journal of the learning sciences* 3 (2): 115-163.
- Thiel, T., S. Peterman, and M. Brown. 2008. Addressing the crisis in college mathematics: Designing courses for student success. *Change* July/August 2008: 44-49.
- Twigg, C. A. (2005). Course redesign improves learning and reduces cost. Policy alert. National Center for Public Policy and Higher Education. <http://files.eric.ed.gov/fulltext/ED518668.pdf>.
- Warren, D. L. & Young M. N. (2012). Integrated accounting principles: A best practices course for introductory accounting. *Issues in Accounting Education*. 27 (1): 247-265.
- Wooten, T. C. 1996. Factors influencing student learning in introductory accounting classes: A comparison of traditional and nontraditional students. *Issues in Accounting Education* 13 (2): 357-373.
- Wooten, T. & Dillar-Eggers, J. (2013). An investigation of online homework: Required or not required? *Contemporary Issues in Education Research Second Quarter*, 6 (2), 189-198.