

## The Evolution of Introductory Financial Accounting Labs Using Monopoly<sup>®</sup> and Excel—Is Student Performance Improved?

Susan R. Cockrell, PhD, CPA, CFE, CGMA  
Austin Peay State University

Brandon M. Di Paolo Harrison, DBA  
Austin Peay State University

Lesley Davidson, CFE  
Austin Peay State University

Pennye Brown, PhD  
Austin Peay State University

Jennifer Thayer, JD  
Austin Peay State University

Pamela Sharp Meyer, JD, CPA  
Austin Peay State University

### Abstract

This paper examines the use of Monopoly<sup>®</sup> accompanied by Microsoft Excel to assess whether an active learning activity has an impact on the DFW rates in an introductory financial accounting course. (The DFW rate is the percentage of students who earn a grade of D or F or withdraw (W) from the course.) A zero credit hour Monopoly<sup>®</sup> Lab (which physically meets one hour per week during the semester) was created to enhance introductory business students' understanding of difficult accounting concepts by providing a means to record transactions and prepare financial statements. The objective is to engage students and link together the foundational aspects of accounting in a more realistic, understandable manner. The paper examined the DFW rates of the course over a ten-year period. Results of the study revealed a consistent lower DFW rate after the introduction of Monopoly<sup>®</sup> as compared to previous labs without the use of Monopoly<sup>®</sup>.

Keywords: Financial Accounting Lab, Active Learning, Experiential Learning, Games, Pedagogy

Copyright statement: Authors retain the copyright to the manuscripts published in AABRI journals. Please see the AABRI Copyright Policy at <http://www.aabri.com/copyright.html>

## INTRODUCTION

Teaching techniques for introductory accounting courses in university business programs has long been a topic of research and discussion because students often struggle in these courses (Gray et al, 1963, Bruns, 1965, Knechel, 1989, Albrecht, 1995, Fowler, 2006, Jaijairam, 2012, Shanklin & Ehlen, 2017). According to Warren Buffett, “You have to understand accounting and you have to understand the nuances of accounting. It’s the language of business.” (Buffett & Clark, 2008) Learning accounting concepts is like learning a foreign language (Bradford & Ames, 2006). Therefore, understanding the foundational aspects of accounting, in particular the accounting equation is key to any business student’s understanding of financial data. Most students are unfamiliar with accounting due to their lack of relevant work experience causing difficulties in their understanding of the concepts. In order to grasp the underlying details of financial information, students need to learn meticulously detailed, specifically regulated, and tedious system of recording accounting transactions through repetitiveness.

Both the Accounting Education Change Commission (AECC) and the American Institute of Certified Public Accountants (AICPA) encouraged university accounting educators to adopt active learning teaching strategies that integrated the creative use of technology in the accounting curriculum (Fratto, 2011). Through active engagement in the learning process, students are more likely to retain the material, which makes active learning effective (McDonald & Derby, 2015). Prince (2004) suggests active learning has beneficial effects that enhances academic achievement, student attitudes, and student retention. There are large bodies of evidence from a number of different fields supporting the effectiveness of active learning (Michael, 2006).

This paper will examine the use of Monopoly<sup>®</sup> accompanied by Microsoft Excel to assess whether an active learning activity has an impact on the DFW rates in an introductory financial accounting course. This is a zero credit hour Monopoly<sup>®</sup> Lab (which physically meets one hour per week during the semester) created to enhance introductory business student’s understanding of difficult accounting concepts by providing a means to record transactions and prepare financial statements. The objective is to engage students and link together the foundational aspects of accounting in a realistic, understandable manner. The paper will examine the DFW rates, percentage of students who earn a D or F or withdraw (W), of the introductory accounting course over a ten-year period.

## EVOLUTION OF USE OF GAMES IN ACCOUNTING

Gamification can be defined as applying the mechanics of games in order to make learning more appealing (Apostol, et al., 2013). The use, and usefulness, of games in accounting education has a long and varied history, particularly in the introductory financial accounting course (Silva et al., 2019). Kim and Lee (2015) noted that accounting courses provided the optimal environment for effective learning through gamification. Advances in technology fostered the use of games as an active learning technique that improved upon the use of practice sets. Practice sets in introductory accounting were a means to make the accounting more realistic, tie the parts of the accounting cycle into a cohesive, understandable system, and reinforce the student’s understanding of the accrual basis of accounting. The problems with these practice sets were numerous, including, collusion among students, solutions being “shared” from one year to the next, and the situations of the practice set companies being uninteresting (Knechel, 1989).

In 1963, Gray, et al., published their work outlining the introduction of a game in introductory accounting—specifically managerial accounting. Based on Avalon-Hill's game "Management", the students, grouped into teams, complete a simulation through six quarterly management decisions for each of three accounting-focused tasks of purchasing, production, and selling. A student who is chosen as the group's company's president assigns management duties. The students take an active part in all decisions, while the professor is passive, but watchful. The simulation starts with information being provided about raw materials—availability, minimum and maximum bid prices, and sales demand. Through the bidding process, the students learn the interconnectivity of bidding for raw materials, planning production, finished goods demand and inventory costs, sales, and availability of cash. The process is repeated through six quarters of their company—with raw materials prices, market supply and demand, and cash availability varying each quarter. All of the data becomes the basis for the preparation of financial statements.

Following Gray, Bruns, Jr. (1965) developed a general management simulation game at Yale, *Drillrite Corporation*, for their "one-year introductory-intermediate" accounting course. In groups, students assume the roles of managers of the company, which produces and sells two products that are in competition with other student group's companies. Similar to Gray, the focus is on the production cycle and selling. Budgets are prepared using estimates of demand and material and labor costs. No information is provided regarding the structure of data, statement formats, or choice of methods of depreciation or inventory valuation. Students must make all decisions. Two main areas were discovered that provided improvements to the method of teaching accounting. First, we, as accounting professors, "inadvertently fail to teach students to work with unstructured data." (Bruens, page 652) Second, the game forces students to consider how choices between accounting methods can affect the financial statements. The use of active learning pedagogies, such as, the Monopoly® Lab have demonstrated the ability to improve conceptual learning of accounting principles (Warren & Young, 2012). Thus, better preparing students for subsequent accounting courses.

The popular quiz competition game, Jeopardy, has been adapted in accounting education (Cook, 1997, Bee & Hayes, 2005, Murphy, 2005). Jeopardy uses a reversed format for which contestants have clues in the form of answers, and must phrase their responses in the form of questions. Fratto (2011) employed a PowerPoint game called Twenty-Questions in a managerial accounting course to enhance active learning.

### **Monopoly®**

Before Parker Brothers began distribution of Monopoly® in 1935, it had been in play—conceived by professors and students of economics to explain the theories of taxation—for over thirty years. The original "game" was a version of the "real" business world, which modeled capitalism at its most ruthless (Alexrod, 2002). The time period of its distribution, 1935, was a time of economic depression and businesses were just returning to normal operating procedures. Monopoly® offered a release from the trying times and allowed the players to live in a world where they received a salary each time they rounded the board, could buy and sell property, collect and pay rent, and make and lose money. Anyone could win the game—while all other players would go bankrupt. However, if you were one of the bankrupt players, there was always a next time when you would be the beneficiary of Monopoly®'s free-flowing capitalism.

Monopoly<sup>®</sup>'s long history of replicating the real world of business makes it the perfect vehicle for explaining business to first- or second-year business students. In addition, like a Spanish immersion class, learning the language of business can be heightened by playing this game of business. The language of accounting consists of assets, liabilities, equities, revenues, and expenses instead of verbs, nouns, adjectives and adverbs. However, like languages take their parts and create sentences, paragraphs, and books, the elements of accounting create journal entries, ledgers, and financial statements. Putting nouns and verbs together with adverbs and adjectives to create sentences can seem repetitive and strictly rules-based. The same is true for the accounting language. Using games to make this repetitive task fun while students are learning has a long history.

Using Monopoly<sup>®</sup> as a method of reinforcing the repetitive tasks that underlie the financial statements—as a replacement for the traditional practice set—was introduced in the literature in the 1980s (Knechel, 1989). Knechel's initial method of incorporating Monopoly<sup>®</sup> was to MBA students as an out-of-class assignment and, in general, followed the standard Monopoly<sup>®</sup> rules. Knechel introduces four modifications to force accrual accounting into the accounting exercise: (1) depreciation for houses and hotels, (2) accrued salary based on board position at turn 40, (3) converting interest on mortgaged property from a ten percent fixed fee to ten percent per "year" of 40 turns, and (4) an income tax of ten percent based on earnings that all players must pay. In addition, students are not allowed to go bankrupt and stop playing the game. To give students an incentive to play well, Knechel awards a prize for the player with the largest total earnings in the class. In 1995, Albrecht introduced the transaction log as an important addition. The transaction log simplified grading for the instructor, increases accuracy of the journal entries because students are instructed not to do the accounting during the play of the game, and less time is required for the play of the game (Albrecht, 1995). Tanner & Lindquist (1998) and Kober & Tarca (2000) also used Monopoly<sup>®</sup> to teach accounting. In addition to an increased understanding and application of financial concepts, these studies reported an improvement in students' interpersonal skills (Prince, 2004).

## **BACKGROUND—WHAT IS THE PROBLEM?**

Accounting professors who have been in the classroom for many years will state, unequivocally, that the accounting principles course has always had, and always will have, one of the highest rates of D and F grades and withdrawals, the DFW rate. Moreover, often, this is proven to be the case when "administrators" send down the edict for the DFW rate in the principles of accounting classes to be lowered. To understand the issue, the problem must be viewed from multiple perspectives.

Firstly, from the perspective of administrators, the problem becomes a decline in retention when students earn Ds or Fs or withdraw during their sophomore year. The overwhelming task of having to retake a course increases the chances that students will not return for the next semester—or ever.

Secondly, students who must retake a course face financial complications, particularly with the tightening of Federal Financial Aid. Students may lose scholarships. Because of the sequencing of prerequisites for most Colleges of Business, students will fall behind and may have to exceed the four-year plan. Many students may find it demoralizing to fail or have to withdraw. Even if students "stick it out" and retake the class, that failure may tarnish their academic career—even if only in their minds. Additionally, there are several documented

reasons for students' low performance in these "gatekeeper" courses: lack of confidence, intimidating subject matter, low aptitude, and inadequate motivation, (Sargent et al., 2011).

Thirdly, the principles of accounting course contains the foundational knowledge to understanding business. According to Du (2011), the structure of the principles of accounting course provides a basic understanding of accounting and its function and application in business. Understanding of these concepts is vital for students to succeed in accounting.

Finally, from the accounting faculty point of view, the knowledge, skills, and abilities derived from the principles of accounting course is paramount to a successful career in business. Faculty do not want to have students fail—regardless of what students may think.

All of these events, issues, and concerns fell into place one fine fall day in 2009, and the task of "fixing the problem" became our challenge. The DFW rate in the Principles of Accounting I (financial) course had hit the top five list for the university at a whopping 41%. The task, in our minds at least, became not "fixing a problem" but "improving learning."

### **CREATION OF THE ACCOUNTING MONOPOLY® LAB—THE SOLUTION TO THE PROBLEM?**

In order to incorporate the Monopoly® Lab into the Principles of Accounting I course, the method of playing the game would need to be standardized, the rules of Monopoly® would need to be modified, and forms would need to be created. In addition, the inclusion of Excel in the compilation of the accounting data would need to be established.

#### **Method of Gameplay**

The students in the Monopoly® Labs would meet once a week for 55 minutes for 15 weeks. The Lab would be limited to 25 students each and students could choose which Lab to enroll in—the Lab enrollment did not match the enrollment in the lecture sections. (Lecture sections generally are larger than 25 students.)

Journal entries were recorded by month—with each class period being one month. During the class, the students would record in their journal each transaction they incurred. (Often, particularly at the beginning of the semester, the students would "record" each transaction with brief explanations on separate paper. This allowed them to review how to make the debit/credit entry in their actual journal.) Between class periods, students would post their journal entries to the T-accounts.

#### **Rules Modifications**

"The rules of Monopoly® are the product of a thirty-year process of invention, evolution, and refinement." Axelrod (2002)

The rules of Monopoly®, as written when Parker Brothers first distributed it in 1935, were based on the rules developed over the previous thirty years. Since its inception, many players have altered the rules slightly, and other players have fallen back on the "that is the way my family has always played" rules.

For the purpose of the Lab, the true Monopoly® rules were adhered to, with some obviously necessary broad adjustments.



1. A student could not claim bankruptcy and stop playing. Clearly, this would be a quick way for a student to not have to attend the Lab any more. Therefore, if a student runs out of money, houses/hotels and property cannot be sold or traded. Students must get a loan. The loans not only keep the student in the game, it offers them the opportunity to learn how interest works.
2. Houses and hotels can be purchased without having a Monopoly®. While this flies in the face of the name of the game, the gameplay had to be speeded-up to fit within the limited time the students had to play.
3. Any property landed on must be purchased. No bank auctions were allowed.
4. No hanging-out in jail. Students must pay to get out of jail if doubles are not immediately rolled. This provides the students another opportunity to record a journal entry and continue with the game.

### **Creation of Forms, etc.**

Since the purpose of the Lab is to learn the repetitive journal entries and ledgers (T-accounts), paper journal pages and blank T-accounts were created. The students were asked to purchase a Lab packet (for \$5 to cover cost of printing) that contained all the rules, Chart of Accounts, how to record Chance and Community Chest events, and FAQs, as well as blank journal pages by month, blank T-accounts, and blank pages for Trial Balances and Financial Statements.

Starting in 2016, another component was added—Excel templates. The students would still record everything on paper while playing and complete everything by hand in the Lab packet. However, they were also given an Excel file that contained worksheets with templates for the T-accounts, Trial Balance, and Financial Statements. The students transferred their journal entries into the T-accounts in Excel. Some formulas were given as examples so the students could see how to link their T-account totals to the correct cell on the Trial Balance, and then to the financial statements.

Students submit their packets to the respective graduate teaching assistant (GTA) throughout the semester for evaluation and grading. This provides students with the opportunity to receive feedback and remediate any lack of understanding of the concepts being reinforced through the lab. This also provides additional opportunities for the students to improve their concept retention for the lecture based course.

### **METHODOLOGY**

The question posed, “whether an active learning activity has an impact on the DFW rates in an introductory financial accounting course” was answered via the methodology outlined below. The original DFW rate was calculated by dividing the sum of Ds, Fs, and Ws taken in the course by the total students enrolled in Accounting 2010, the first Principles of Accounting course. This percentage was our baseline of where the DFW rate was at the implementation of the new Monopoly® Accounting Lab. It should be noted due to only offering the Monopoly® Accounting Lab to on-ground, in-person students, we used only the grades from those students, and excluded all online sections of the course in our data. Each subsequent academic year, we totaled all the Ds, Fs, and Ws received in the Accounting 2010 course. We kept the data individually for each D, F, and W and a summed DFW count. For each academic year we

divided the total of each D, F, W, and summed DFW by the total number of on-ground, in-person students enrolled in the course. These calculations provided the percentage rates for Ds, Fs, Ws, and summed DFWs for the academic year. Upon calculating the percentage rates, we were able to create both a table and line graph for visual representation of the results. To ensure consistency across course sections, all graduate teaching assistants are trained in a like manner and provided with uniform assignments and templates. Implementation of a standardized gradebook and allocation of points also leads to reliability in the grading across all sections.

## **RESULTS OF ADDITION OF THE MONOPOLY® LAB**

As can be seen from Table 1 (Appendix), Figure 1 (Appendix), and Figure 2 (Appendix), the percentage of DFWs decreased after the introduction of the Lab and has stayed well below the high rate before the Lab. It is evident that a significant decrease in the DFW rate can be seen from academic year 2009-2010 through 2019-2020. We believe 17-18 was a bit of an anomaly and outside of that on year, we have seen a continuous decline for the majority of the years.

We have seen the most significant drop in the number of Ds and Ws. The number of Ds has dropped to 5% from 10% and reaching as high as 14% at times. It should be noted that the students at our university must earn a C or better to move onto the next accounting course. The number of withdrawals (W's) has also dropped dramatically from 14% to 3%. This is also encouraging. We hope that this means that we are retaining more business majors and that students are not withdrawing from the class (or possibly the program/university all together) due to this challenging course. The percentage of students earning a true F has fallen but not as significantly.

We recognize that the introductory accounting courses are often the first business courses that is taken by business majors, so it is critical that students learn, understand, and feel engaged with the rigorous concepts.

Online sections were not included in the results of this even though those students are required to enroll in a lab course as well. The online students did not participate in the monopoly lab but rather completed additional accounting activities more closely aligned with traditional learning.

We believe these results clearly reflect our continuous effort to (help/teach) our students difficult concepts in a more engaging way. A review of the Student Evaluations of Teaching (SETs) over the same period show that the average score on the question, "The course as a whole was" was a 5 out of 6, or "Very Good."

It should also be noted that similar outcomes are noted for the lecture-based course. The lab assist students in understanding and mastery of the concepts covered in the course. This is evidenced by improved participation and grades, which are obtain by the students in the lecture-based portion of the Principles of Accounting I course.

In addition to the improved performance in the class, the Monopoly® Lab provided the mechanism for students to create study groups that benefit them through the next two years of their undergraduate program. This extra benefit of team building and networking was unforeseen but welcomed. Students, even those with different majors, maintained these relationships though to graduation, and even beyond.

## LIMITATIONS

Some could argue, rightly so, that the addition of one extra hour per week of accounting in any capacity would provide the same results. This is probably why some institutions have the Principles of Accounting courses at 4 semester hours. However, we believe the students are learning, as evidenced by their improved performance.

It could also be argued that students are more highly motivated to do well in both the lecture and lab portions of the course because they must earn a passing grade in both or they will have to repeat both. For example, if a student does well in the lab but does not earn at least a C in the lecture portion of the course, then he or she must retake both the lecture and lab portions.

Lastly, a limitation of this study is that it only contains data from one university's accounting program. However, the results identified are comparable to those determined with extant research, if not, improved. Therefore, the results were determined to be relevant and significant.

## CONCLUSION

Based on the results of this study, in addition to extant research on the topic, it is evident that the inclusion of the Monopoly<sup>®</sup> Lab improves student performance for this course. This can be determined by the reduction in the DFW rates, as well as the improvement in overall grades in the lecture-based course. Additionally, the inclusion of the Excel workbook provides the students the opportunity to transfer the experience obtain through gamification into practical accounting transactions. Thus, creating an opportunity of practical application through recording journal entries, posting entries to the ledger (T accounts), and then creating financial statements based on the outcome of the game. Simply put, the use of games and practice sets in Principles of Accounting I courses adheres to a *best practices* model within accounting higher education, (Warren & Young, 2012).



## References

- Albrecht, W.D. (1995). A financial accounting and investment simulation game. *Issues in Accounting Education*, 10(1), 127-141.
- Apostol, S., Zaharescu, L., & Aleze, I. (2013). Gamification of learning and educational games. *9<sup>th</sup> International Scientific Conference eLearning and Software for Education*, Bucharest, April 25-26, 2013.
- Axelrod, A. (2002). *Everything I Know About Business I Learned from Monopoly®*. Philadelphia, PA: Running Press.
- Bee, S., & Hayes, D.C. (2005). Using the Jeopardy game to enhance student learning of accounting information systems (AIS) exam material. *The Review of Business Information Systems*, 9(1), 69-78.
- Bradford, C.S., & Ames, G.A. (2006). *Basic accounting principles for lawyers: With present value and expected value*. Newark, NJ: LexisNexis.
- Bruns, Jr., W.J. (1965). Business games in accounting instruction. *Accounting Review*, July, 650-653.
- Buffett, M., & Clark, D. (2008). *Warren Buffett and the Interpretation of Financial Statements*. New York, NY: Scribner.
- Cook, E.D. (1997). An innovative method of classroom presentation: What is "Jeopardy?" *Journal of Accounting Education*, 15(1), 123-131.
- da Silva, R.J.R., Rodrigues, R.C., & Leal, C.T.P. (2019). Gamification in management education: A systematic literature review. *Brazilian Administration Review*, 16(2), 1-31.
- da Silva, R., Rodrigues, R., & Leal, C. (2019). Play it again: How game-based learning improves flow in accounting and marketing education. *Accounting Education*, 28(5), 484-507.
- Du, C. (2011). A comparison of traditional and blended learning in introductory principles of accounting course. *American Journal of Business Education*, 4(9), 1-10.
- Fowler, L. (2006). Active learning: An empirical study of the use of simulation games in the introductory financial accounting class. *Academy of Educational Leadership Journal*, 10(3): 93-103.
- Fratto, V. (2011). Enhance student learning with PowerPoint games: Using Twenty Questions to promote active learning in managerial accounting. *International Journal of Information and Communication Technology*, 7(2), 13-20.
- Gray, J., Willingham, J., & Johnston, K. (1963). A business game for the introductory course in accounting. *Accounting Review*, April, 336-346.
- Jaijairam, P. (2012). Engaging accounting students: How to teach principles of accounting in creative and exciting ways. *American Journal of Business Education*, 5(1): 75-78.
- Kim, J.T., & Lee, W. (2015). Dynamical model for gamification of learning. *Multimedia Tools and Applications*, 74(19), 8483-8493.
- Knechel, W.R. (1989). Using a business simulation game as a substitute for a practice set. *Issues in Accounting Education*, 4(2), 411-424.
- Kober, R., & Tarca, A. (2000). For fun or profit? An evaluation of an accounting simulation game for university students. *Accounting Research Journal*, 15, 98-111.
- McDonald, R.E., & Derby, J.M. (2015) Active learning to improve presentation skills: The use of Pecha Kucha in undergraduate sales management classes. *Marketing Education Review*, 25(1), 21-25.

- Michael, J. (2006). Where's the evidence that active learning works? *Advances in Physiology Education*, 30(4): 159-167.
- Murphy, E.A. (2005). Enhancing student learning with governmental accounting Jeopardy! *Journal of Public Budgeting, Accounting & Financial Management*, 17(2), 223-248.
- Prince, M. (2004) Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3): 223-231.
- Sargent, C.S., Borthick, A.F., & Lederberg, A.R. (2011). Improving retention for principles of accounting students: Ultra-short online tutorials for motivating effort and improving performance. *Issues in Accounting Education*, 26(4), 657-679.
- Shanklin, S.B., & Ehlen, C.R. (2007a). Using the Monopoly® board game as an efficient tool in introductory financial accounting instruction. *Journal of Business Case Studies*, 3(3), 17-22.
- Shanklin, S.B., & Ehlen, C.R. (2007b). Using the Monopoly® board game as an in-class economic simulation in the introductory financial accounting course. *Journal of College Teaching & Learning*, 4(11), 65-71.
- Shanklin, S.B., & Ehlen, C.R. (2017). Extending the use and effectiveness of the Monopoly® board game as an in-class economic simulation in the introductory financial accounting course. *American Journal of Business Education* 10(2): 75-80.
- Simkin, M.G. (2013). Playing Jeopardy in the classroom: An empirical study. *Journal of Information Systems Education*, 24(3): 203-210.
- Tanner, M.M., & Lindquist, TM. (1998). Using Monopoly® and Teams-Games-Tournaments in accounting education: A co-operative learning teaching resource. *Accounting Education*, 7(2), 139-162.
- Warren, D.L., & Young, M.N. (2012). Integrated accounting principles: A best practices course for introductory accounting. *Issues in Accounting Education*, 27(1), 247-266.

**Appendix**

**Table 1**  
**Percentage Ds, Fs, and Ws and Total DFW Percentage**  
**(Without online sections)**

<b>AY</b>	<b>n</b>	<b>D</b>	<b>F</b>	<b>W</b>	<b>DFW</b>
09-10	364	10%	17%	14%	41%
10-11	335	14%	19%	11%	44%
11-12	356	11%	11%	14%	36%
12-13	309	13%	9%	11%	34%
13-14	314	10%	11%	8%	29%
14-15	304	11%	11%	6%	28%
15-16	264	6%	11%	9%	26%
16-17	268	8%	13%	7%	28%
17-18	292	9%	19%	5%	33%
18-19	294	6%	18%	3%	27%
19-20	265	5%	14%	3%	23%
	3365	10%	14%	9%	32%

**Figure 1**  
**Percentage Ds, Fs, and Ws**  
**(Without online sections)**

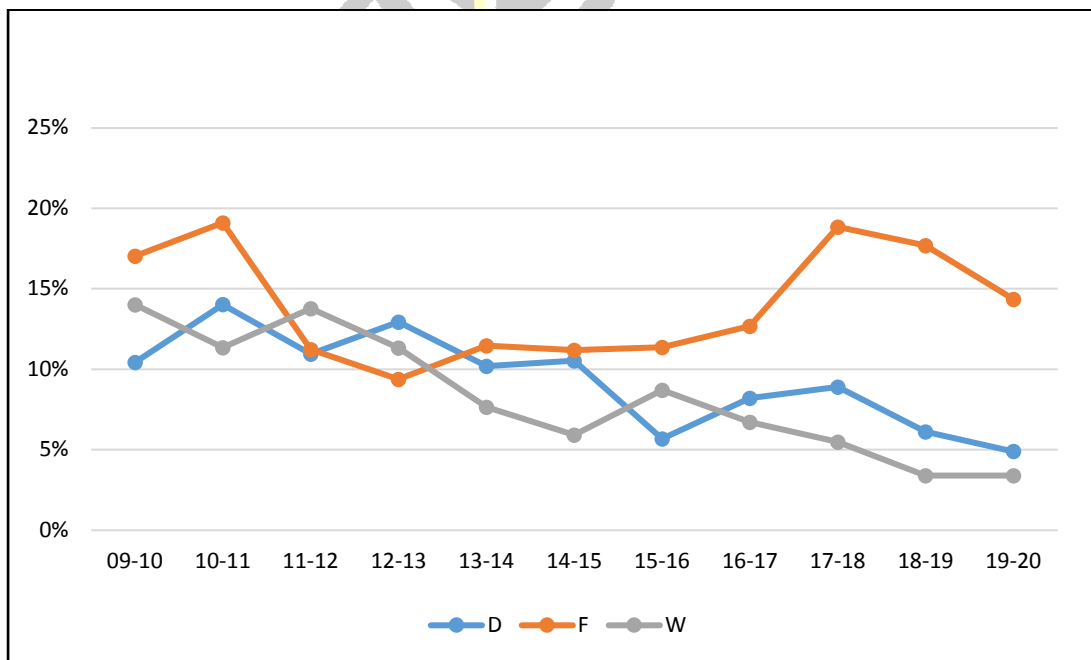
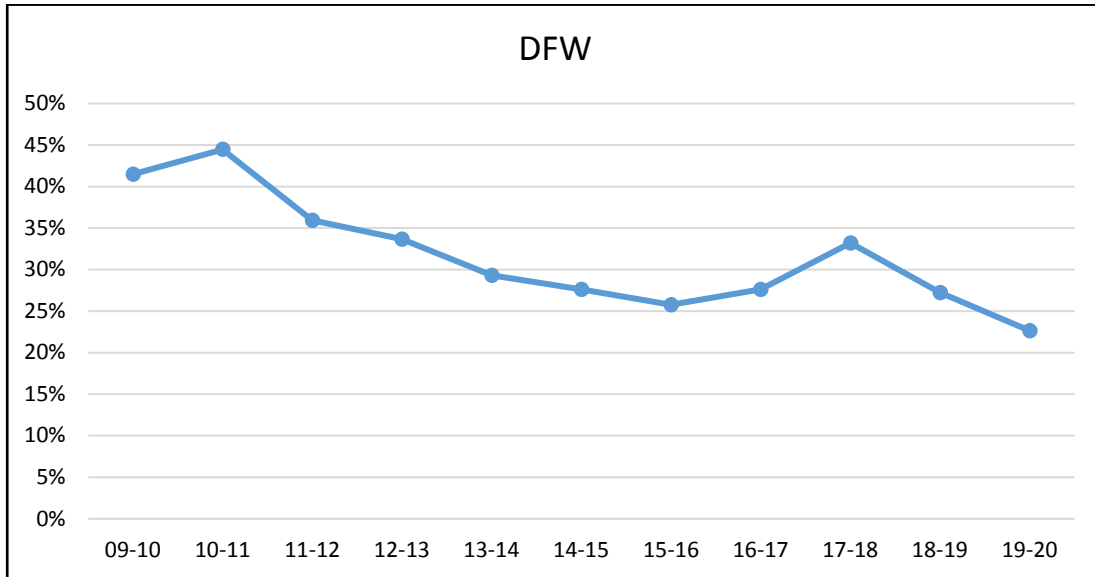


Figure 2  
Percentage DFWs  
(Without online sections)



### Acknowledgements

The authors wish to thank the Graduate Teaching Assistants (GTAs) who manage the Monopoly<sup>®</sup> Labs and work closely with the students. The GTAs were in the Master of Science in Management program at APSU, and were alumni of our undergraduate business program—and had been through the Monopoly<sup>®</sup> Labs as students. Their insights helped us develop and improve the Monopoly<sup>®</sup> Labs through the years.