

# **The Change of Students' Perception of Accounting Skills in Intermediate Accounting: A Guide for Accounting Education Reform**

**Royce Burnett**

University of Miami

**Mark Friedman**

University of Miami

**Ya-wen Yang**

University of Miami

## **Abstract**

This paper assesses accounting and non-accounting majors' perceptions of their accounting knowledge of material covered in the introductory accounting course before and after three weeks of class lectures and the completion of an on-line case assignment in an intermediate accounting setting. Specifically, we examine students' perceptions of their accounting knowledge in four areas: journalizing transactions, financial statement preparation, financial statement interpretation, and financial statement analysis. Our results show accounting and non-accounting majors have different learning outcomes (measured by perception of abilities) under the same learning environment. Our findings provide several classroom implications and insights for accounting education reform.

## **Introduction**

Accounting education has been criticized of many issues, especially those related to developing and improving problem-solving and critical-thinking skills (Albrecht and Sack 2000, p. 45; Needles and Powers 1990; Donelan and Reed 1992; Barskey and Catabach 2001; Albrecht and Sack 2000, p. 12; Russell et al. 2000; Bedford 1986). To date, the examination of accounting education reform has primarily focused on introductory accounting.<sup>1</sup> While informative, focusing solely on introductory accounting overlooks the fact accounting education is perpetual and the development of accounting knowledge is based on a model that assumes the content of subsequent courses draws on previous courses (Bernardi and Bean 1999). Thus, key aspects that may be missing relative to accounting education reform are the degree to which accounting curricula are linked and an analysis of the extent to which managing these links might improve the efficiency and effectiveness of the accounting education process.

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<sup>1</sup> See Schwartz and Stout (1998) for a collection of five papers pertaining to various aspects of the introductory accounting course sequence.

The purpose of this paper is to explore the perceptions incoming intermediate students possess relative to their knowledge of the accounting cycle and their ability to use the outputs of the accounting cycle in business analysis and decision making. Since students are required to complete introductory accounting before enrolling in intermediate accounting, this setting provides a rich opportunity to assess the extent to which the pedagogy related to one accounting course might affect another in a systematic format. As the focus of both the introductory accounting course and the first few weeks of intermediate accounting course are designed to explain financial accounting within the context of financial statement preparation and analysis, we are specifically interested in examining the perceptions students have about their abilities to journalize transactions, as well as to prepare, interpret, and analyse financial statements at the beginning of intermediate accounting. Because the mix of students in intermediate accounting is diverse, we are particularly interested in whether perceptions differ based on academic major.

We measure self-efficacy before and after students complete the first three weeks of the intermediate accounting course. We then examine changes in self-efficacy between the initial and subsequent evaluations for accounting and non-accounting majors and the perceptual differences within the two groups over the three-week period.

We find accounting and non-accounting majors have similar perceptions of their accounting skills at both initial and subsequent evaluations. However, over time accounting majors show significant perceptual improvement in the journal entry process, as well as financial statement preparation and interpretation.<sup>2</sup> Non-accounting majors show significant perceptual improvement in the same areas but in addition, feel they are better able to conduct financial statement analysis. Thus, it appears a review of the accounting cycle does reinforce the skills learned in previous accounting courses, is instrumental in strengthening the non-accounting majors' perceptions of their bookkeeping and financial statement analysis skills, and heightens the accounting majors' perceptions of their financial statement interpretation skills.

Using intermediate accounting to investigate the need for accounting education reform is appropriate and value added because in this class instruction setting there are distinct sets of students that come from different backgrounds and have variant objectives for taking the course. Accordingly, our findings support the view accounting and non-accounting majors can have different perceptual changes and learning outcomes under the same learning environment. Our results are not only useful for developing more effective intermediate courses, but also provide insights about how the knowledge covered in introductory accounting courses shapes the perceptions that students have about their abilities to perform well in future accounting courses. Through this study, we gain information on how to manage the accounting education reform process via the perspective of a varied and distinct set of student groups. This information can be used to direct resource allocation and curriculum design and provide guidance for accounting education reform.

The remainder of this paper is organized as follows. In the next section, we provide evidence to motivate the study. Then, we describe the methodology and analyse the results. The last section provides discussions and conclusions.

## Motivation

In recent years, accounting education reform has received considerable attention within the literature (Pincus 1997; Simmons et al 1995; Sennetti and Dittenhofer 1997; Gurganus et al 1995; Kopp and Phillips 2005; Ammons and Mills 2005). Early inquiries focused on how to teach the basic mechanical elements of accounting (Pincus 1997); how to manage the apprehension that students have about the accounting education process (Simmons et al 1995); how to identify and control the costs of change (Sennetti and Dittenhofer 1997); and how to manage the growing

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<sup>2</sup> We examine students' perceptions of their accounting knowledge in four areas: journalizing transactions, financial statement preparation, financial statement interpretation, financial statement analysis. We identified the four areas based on the structure of intermediate accounting textbooks and existing research. Table 1 lists the items presented to students.

number of subsequent professional and academic requirements that accompany the choice of accounting as a major (Gurganus et al 1995). More recent accounting education literature suggests accounting education reform efforts might also benefit from the recognition of how accounting topics integrate across business school instruction (Kopp and Phillips 2005; Ammons and Mills 2005).

To date, most of the research in accounting education reform has focused on the introductory course (Canatach et al 2000; Dow and Feldman 1997). We believe it is worthwhile to focus our investigation on intermediate accounting for several reasons. First, intermediate accounting is one of the most important classes for accounting majors and is often viewed as establishing the tone for future academic study (Stone et al 1996). In fact, it has been suggested the academic outcome (i.e., grade assignment) of this course plays a pivotal role in obtaining a desired accounting or finance position (Turner et al 1997). Second, the initial part of the course is designed to review the journal entry process and financial statement analysis material covered in introductory accounting (Catanach et al 2000; Russell et al 2000) and serves as a transition between introductory and intermediate accounting courses (Catanach et al 2000; Jennings 1998). Thus, in intermediate accounting, the link between previous and subsequent courses is readily apparent.

Third, as the complexity of business transactions has grown, many fear the magnitude of material covered in intermediate accounting has reached the point of "information overload" (Anderson and Boynton 1992; Canatach et al 2000). Therefore, assessing students' perceptions of their understanding of the accounting cycle in the early part of intermediate accounting may provide a forum to determine if it is appropriate to eliminate possible redundant or "less value adding" instruction. For instance, Catanach et al (2000) and Jennings (1998) suggest while information about the accounting cycle is important they indicate the focus of teaching in an intermediate class is to augment business decision making and analysis. Similarly, Anderson et al (1992) observe while understanding the application of the rules of the accounting cycle is important, an intermediate accounting student should be able to learn and/or review that material independent of the class. Such insight could prove useful in responding to the call for a need to understand the objectives and parameters of intermediate instruction in order to guide accounting education towards meeting the growing needs of the profession (Dow and Feldman 1997).

Fourth, the mix of students in intermediate accounting courses is changing; e.g., a growing number of business students such as finance majors choose to minor in accounting (Albrecht and Sack 2000) to enhance their job prospects at graduation (Barsky et al 2003). However, as many undergraduate finance classes introduce accounting topics such as financial statement preparation and financial reporting, there is a real possibility of redundancy for these students who take intermediate accounting (Barsky et al 2001). Therefore, it is conceivable implementing changes to both the intermediate course content and instruction may, to some extent, depend on the characteristics of the students, the knowledge they bring with them, and the expectations these students have relative to the outcomes of the process (Frederickson and Pratt 1995).

Moreover, because perceptions and demographic factors affect students' selection of a major, it is reasonable to assume students with different majors may expect and could actually experience different learning outcomes under the same learning environment (Barsky and Catanach 2001). Thus, the type and amount of material covered in intermediate accounting, and the way the class is taught, may depend on the mix of the students in the class. Additionally, differences in characteristics may also impact how a student perceives he/she will perform in accounting. Stone et al. (1996) suggest perceptions about the ability to accomplish accounting related tasks (i.e., accounting related self-efficacy) are an important tool that can be used to guide the accounting education process.

Finally, examining the perceptions of accounting as well as non-accounting majors in intermediate accounting might provide insights into how both future preparers (accounting majors) and users (non-accounting majors) view the decision usefulness of accounting information. For the accounting major, there is concern traditional intermediate accounting instruction often leaves students with a rule-oriented perspective, which makes it difficult to appreciate the degree to which accounting practitioners are required to exercise judgement (Jennings 1998). As such, current pedagogy has been criticized for providing accounting students with little insight on how to address the growing

number of financial measurement and reporting topics (Catanach et al 2000). Non-accounting majors may face similar issues. Specifically, when included in an upper level accounting class, non-accounting majors may be forced to focus too much on the technical aspect of the discipline and are left with little insight as to how to interpret and apply accounting information within business decision making (Koehn and Hallam 1999).

## Methodology

### *Instrument*

The instrument used to assess students' general perceptions of their accounting skills was a self-report, paper and pencil questionnaire administered twice during the first three weeks of the first intermediate accounting course. The questionnaire contained 18 statements regarding students' perception of their accounting knowledge obtained from the introductory accounting course taken in college. Table 1 provides the list of items presented to students. Specifically, we examine students' perceptions of their accounting knowledge in four areas: *Journalizing Transactions, Financial Statement Preparation, Financial Statement Interpretation, and Financial Statement Analysis*. These areas were chosen because existing research proposes an effective approach for teaching intermediate accounting relies on developing a stronger understanding of financial statement preparation (Bernardi and Bean 1999; Jennings 1998) and accounting fundamentals (Turner et al 1997), while simultaneously improving analytical skills (Catanach et al 2000). Thus, measuring students' perceptions in these four categories addresses the extent to which students are comfortable with both the accounting cycle and the outputs it produces and how prior accounting courses prepare students for the challenges of intermediate.

Students were asked to respond to the same instrument at two separate times: at the first day of class (initial) and after three weeks of class meetings and outside exercises, including the completion of an on-line case assignment (subsequent). The first administration of the instrument also collected demographic data such as age, gender, major, college classification, accounting work experience, and the grades earned in introductory accounting. Students responded to the 18 perception statements on a five-point Likert scale ranging from strongly disagree ("1") to strongly agree ("5").

### *The First Three Weeks Instructional Setting*

Our study was conducted during the first three weeks of class. The purpose of the first three weeks' class lectures is to integrate students' accounting knowledge obtained from introductory accounting and prepare them for the rest of the intermediate accounting course (Anderson and Boyton 1992, Bernardi and Bean 1999). In general, the material covered include a review of the accounting standard setting environment and the financial accounting standards, the conceptual accounting framework, and how the accounting reporting structure is formulated. Together, this review is designed to provide a concise yet thorough review of the accounting cycle taught in introductory accounting that is the base for intermediate accounting.

In addition to class meetings, during this three week period students were asked to complete an on-line case assignment outside class. The case provides a chart of accounts and a series of transactions covering a one-month accounting cycle including adjustments. Using this information, students are required to journalize the transactions and prepare the basic financial statements. Students download the case from a website, work at their own pace, and upload their answers in order to receive feedback, which includes a preliminary grade. The case assignment offers students an opportunity to practice their accounting skills with instant and unlimited feedback. Finally, when the student is satisfied with the results, a final grade is awarded.

### *Participants*

Participants in this study were students enrolled in the first intermediate accounting course offered during the spring semester at a medium-sized private university in the United States. Based on Bernardi and Bean (1999), in order to eliminate bias because of teaching style, all students participating in the study were taught by the same instructor. Participation in the study is voluntary. The participation rate at the initial evaluation is 100% even though no monetary incentive or extra credits were provided. Of the 68 students that voluntarily participated in the initial

evaluation, six did not participate in the subsequent evaluation. In order to assess changes in perceptions, students not responding to the instrument during both the initial and subsequent administrations were eliminated. This resulted in 62 students (92 %) who properly completed both instruments. The demographics of the six students not responding to the subsequent survey administration (not reported here) are not significantly different from the respondents.

Table 2 presents demographic data for the 62 participants. Analysis reveals participants include 42 accounting and 20 non-accounting majors. A further review of the non-accounting major group shows 18 of the 20 students are finance majors. Table 2 also reflects whether any statistically significant differences between the characteristics of accounting and non-accounting majors exist. It appears accounting majors are more likely to have accounting-related work experience than non-accounting majors and non-accounting majors tend to take intermediate accounting later in their college years than their accounting major counterparts.

### ***Empirical Tests***

Our study examines two issues: 1) whether the perceptions about accounting self-efficacy differ *between* accounting and non-accounting majors, both before and after the class lectures and case assignment; and 2) the extent to which *within-group* perceptions change after the class lectures and case assignment. Information about between-group differences allows us to assess the extent to which each group is comfortable with the accounting cycle. Two-tailed t-tests are adopted to address between-group differences. We examine within-group perception change because it provides guidance as to whether reviewed information impacts the belief students have in their abilities to perform the tasks they will encounter in intermediate accounting. An improvement in self-efficacy after reviewing the information would, at a minimum, indicate students found the review during the three-week period to be of value. We hypothesize within-group perception improves at the end of the three-week period. One-tailed t-tests are adopted to address within-group differences.

## **Results**

### ***Perceptions by Individual Statements***

Tables 3-6 present a summary of mean responses to the perception items regarding journalizing transactions, preparing, interpreting, and analysing financial statement for both accounting and non-accounting students. Responses collected at the beginning of the semester are reflected in the "Initial" column and those collected three weeks into the semester are placed in the "Subsequent" column. We report t-tests of differences in means within each group using the initial and subsequent self-efficacy mean responses. Likewise, t-tests of differences in mean responses between groups at the initial and subsequent evaluations are reported.

Table 3 reports the mean responses of students' perceptions on their abilities to manage the journal entry process. An examination of students' responses at the beginning of the semester shows the overall mean responses of both accounting and non-accounting majors are above the neutral points of 3.0. The results suggest both accounting and non-accounting majors hold favourable initial perceptions of their capacity to construct journal entries. Comparing the t-statistics of the between-group tests at the beginning of the semester, we find the only perceptual difference is accounting majors appear to be more comfortable making adjusting entries than non-accounting majors. Between-groups tests at the subsequent period post no significant differences.

The within-group tests in Table 3 show significant improvement in accounting majors' perceptions of their abilities in three of the five statements regarding journalizing transactions. Interestingly, the within-group tests show significant improvement in non-accounting majors' perceptions of their abilities in all five statements. Together, these results suggest the class lectures and case assignment help improve students' perceptions of their abilities to journalize transactions, and that this effect is reflected more for non-accounting majors.

Table 4 reports the mean responses of students' perceptions of their abilities to prepare financial statements. Overall, students had a favourable initial perception of their knowledge of financial statement preparation, except the non-accounting majors' average initial perception pertaining to preparing a statement of retained earnings is slightly below the neutral point of 3.0. The between-group tests at the beginning of the semester indicate a significant perceptual difference between accounting and non-accounting majors in preparing a statement of retained earnings. No between groups differences are posted for the subsequent period.

The within-group tests in Table 4 indicate both accounting and non-accounting majors perceive significant improvement in their abilities to perform three of the four activities associated with financial statement preparation. Interestingly, the within-group tests also reveal neither group posted a statistically significant improvement in its perception of the capacity to prepare a statement of cash flows, even after the three-week review. One possible reason for this may be that while preparing a statement of cash flows using direct and indirect methods is part of the curriculum in intermediate accounting, students' perceptions might not significantly change until their knowledge and skills in this subject area are improved later in the semester after the lecture dedicated to how to handle and account for a statement of cash flows is presented.

Table 5 reports the mean responses of students' perceptions of their abilities to interpret financial statements. Results of between-group tests indicate there are no significant perceptual differences between accounting and non-accounting majors at the initial or subsequent evaluation. Close analysis reveals students in both groups feel unprepared for describing the nonrecurring items (i.e., discontinued operations and extraordinary items) on income statement at the beginning of the semester, as evident by mean responses of perception below 3.0 (mean = 2.93 (2.50)) for accounting (non-accounting) majors). However, the first three weeks' lecture and case assignment helped students overcome this weakness (mean = 3.95 (4.00)) for accounting (non-accounting) majors at the subsequent evaluation.

According to the within-group tests in Table 5, there are statistical differences in mean responses between the initial and subsequent evaluations in five (three) of the six statements pertaining to financial statement interpretation for accounting (non-accounting) majors. Neither the accounting nor non-accounting group has perceptual changes in the ability to identify the use of cash flows and the types of cash flow activities. As discussed earlier, this result may be due to the fact that a statement of cash flows is not introduced to students in depth until later in the course. In addition, there are no statistical differences between the initial and subsequent evaluations for non-accounting majors relative to describing the nature of current and long-term assets and liabilities or reading the supplemental disclosures (i.e., footnotes, cross references, and supporting schedules) of financial statements. These results suggest that a conscious effort should be made to help enhance non-accounting majors' financial statement interpretation skills, particularly in classifying balance sheet items by its nature and discussing the topics that are included in the supplemental disclosures.

Table 6 reports the mean responses of students' perceptions on their financial statements analysis skills. Similar to previous tests, the results of between-group tests indicate there are no significant perceptual differences between accounting and non-accounting majors at the initial or subsequent evaluation. However, as the overall mean responses of both accounting and non-accounting majors are above the neutral points of 3.0, there is evidence suggesting all students have a positive perception of their financial statement analysis skills.

The within-group tests in Table 6 show statistical differences in mean responses between the initial and subsequent evaluations in none (two) of the three statements pertaining to financial statement analysis for the accounting (non-accounting) group. These results suggest accounting majors' perceptions about the skills needed in financial statement analysis did not improve after the first three weeks' lecture and the completion of the online case assignment. However, non-accounting majors' perceptions about assessing the solvency and profitability of a business based on financial statement information were significantly improved. Finally, neither accounting nor non-accounting major group had perceptual changes in evaluating a company's financial situation and comparing it with other firms in the industry, indicating a need for emphasizing how to compare or value a company against its peers in the industry using accounting data.



### ***Overall Skill Framework Assessment***

Overall, test results in Tables 3 – 6 indicate that, for between-group comparisons, there are only two statistically significant differences in the 18 statements at the initial evaluation. A possible interpretation of these results may be that both accounting and non-accounting majors are starting from similar perceptual points of view. Moreover, because none of the 18 statements post statistically significantly differences between the two groups at the subsequent evaluation, it might be appropriate to suggest the class lectures and case assignment designed to reinforce prior introductory accounting concepts might have helped the two groups' perceptions to converge.

Table 7 provides a review of the within-group results. As denoted, the accounting group posted statistically significant improvement (one-tailed p-value = 0.10 or better) on 11 statements while the non-accounting majors improved on 13. Further analysis reveals that nine of the statements reflecting improvement by each group are the same. Neither group posted a statistically significant improvement in three of the 18 statements: preparing a statement of cash flows, identifying the use of cash flows and the types of cash flow activities, and evaluating a company's financial situation and comparing it with other firms in the industry.

In review, our findings suggest a positive effect of class lectures and case assignment on students' perception of their accounting skills and a need for furthering developing students' knowledge in the statement of cash flows and financial statement analysis in intermediate accounting class. However, close examinations of the survey results indicate the class lectures and case assignment may have helped enhance non-accounting majors' but not accounting majors' perceptions in determining whether an account is affected by a business transaction, whether each increase or decrease should be recorded as a debit or a credit (statements regarding journalizing transactions), and assessing the solvency and profitability of a business based on financial statement information (statements regarding financial statement analysis). The class lectures and case assignment helped improve accounting majors' but not non-accounting major's perception in describing the nature of current and long-term assets and liabilities and reading the supplemental disclosures (statements regarding financial statement interpretation).

Overall, the composite results presented in Table 7 suggest the class lectures and case assignment may affect accounting and non-accounting majors in a slightly different manner. For instance, accounting majors, who have traditionally focused on the rigour and importance of the mechanics of the accounting process, may view the three-week review as a refresher that makes them aware of what is to be expected in the class and the framework under which these expectations will be formulated. Thus, it is not surprising for accounting majors to show improvement in the mechanical aspects of the accounting cycle such as journalizing entries. In addition, accounting majors alone show improvements in describing the nature of current and long term assets, and reading supplemental disclosures and footnotes. These improvements suggest a better understanding of the importance of the reporting cycle and its elements as this group of future accountants begins to focus on how all of the elements fit together and the role they will play.

For non-accounting majors, it appears after the first three weeks, they become more comfortable with the accounting process and its outputs. For instance, they demonstrate improvements with understanding how to classify a transaction as a balance sheet or income statement item. It also appears non-accounting majors may employ the review information to support those skills that will be used more consistently in financial analysis. Specifically, results suggest this group uses the three-week review as a basis for improving their capacity to assess both the solvency and profitability of a business. We offer two possible reasons for these findings. First, non-accounting majors may not have fully appreciated the mechanics of the accounting process. However, the review acts as a way for these students to focus on how accounting works. Second, as they may learn more about the accounting cycle, they begin to gain insights about how the inputs, processes and outputs of the cycle might contribute to a better understanding of financial statement analysis.

### ***Additional Analysis: Perceptions by Topical Areas***

To evaluate the contribution of the three weeks of instruction, it might be of interest to assess how each of the four topical areas fit. To do so, we examine and compare the self-efficacy of accounting and non-accounting majors by topical areas based on students' responses at the beginning of the semester. These additional analyses involve the application of statistical tests to determine if significant differences exist between students' perceptions by topical area.

Table 8 reports the summary statistics of the students' perceptions of the four areas we have used as a framework to develop our analysis of the accounting skills used in the accounting cycle. The result of a Kruskal-Wallis one-way analysis of variance (ANOVA) by ranks indicates a significant difference in the perceived abilities of the four accounting skills. We perform Bonferroni t-tests to determine which pairs of mean ranks differ and use alphabetic designations to group skills with similar student perceptions and to distinguish those that differ. Thus, mean ranks with the same letter are not significantly different.

As seen in Table 8, the mean rank of *Journalizing Transactions* is not significantly different from the mean rank of *Financial Statement Preparation*, but it is significantly different from *Financial Statement Interpretation* and *Financial Statement Analysis*. The A Posteriori multiple-comparison tests show both accounting and non-accounting majors are more confident with their abilities in journalizing transactions and preparing financial statements than interpreting or analysing financial statements. These results suggest a need to emphasize financial statement interpretation and analysis in the intermediate accounting curriculum.

Next, we assess the association of the students' perceptions of each accounting skill relative to others. Specifically, Table 9 presents Pearson correlations for students' perceived abilities of the four areas.<sup>3</sup> All correlation coefficients are statistically significant ( $p < 0.01$ ), indicating the perceived abilities of the four accounting skills are highly inter-correlated. However, compared with accounting majors, non-accounting majors tend to have higher correlations between their perceived abilities in journalizing transactions and perceived abilities in each of the other three accounting skills, including preparing, interpreting, and analysing financial statements. The results suggest improving students' perception of basic bookkeeping abilities helps improving students' perceptions of abilities in other areas; and it is more so for non-accounting than accounting majors.

## **Discussion and Conclusion**

Overall, our study indicates both accounting and non-accounting students' perceptions of their abilities increased after the class lectures and case assignment, suggesting it may be appropriate to include a review of some aspects of the accounting cycle in intermediate accounting. However, comparing accounting and non-accounting majors reveals students with different majors have different learning outcomes (measured by perception of abilities) under the same learning environment. This is possibly because the two groups of students have a conceptually different grasp of the accounting cycle from introductory accounting courses, and view decision usefulness of the information along different paths. Even more explicit, these differences may merely reflect different learning styles. Thus, the relationship among prior accounting knowledge, choice of majors, learning styles, and self-efficacy in accounting settings is complex and our study is only a first step in understanding this relationship.

Our findings provide several classroom implications and insights for accounting education reform. We find that, overall, both accounting and non-accounting majors were more confident in making journal entries and preparing financial statements than interpreting and analysing financial statements. Accounting and non-accounting majors

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<sup>3</sup> The students' perceptions of their abilities in each skill group are based on a composite of mean responses of several items – see Table 1 for these groupings. To ensure reliability of items included in the four skill groups, a Cronbach alpha coefficient was computed for each skill group. Results show that all coefficients are above 0.70, indicating a satisfactory internal reliability for the scale (Nunnally 1967).

showed improvement in perceived ability for different items listed on the questionnaire after three weeks of class meetings and completion of an on-line case assignment. Specifically, non-accounting majors showed improvement in all four areas (especially in journalizing transactions), while accounting majors did not improve their perception of abilities in financial statement analysis. While our results suggest there is some benefit to providing some re-familiarization of certain aspects of the accounting cycle to non-accounting students in intermediate, they also reveal that accounting and non-accounting majors differ with respect to how they might react to re-familiarization. Moreover, others find the current structure of intermediate accounting instruction may not facilitate the learning styles or needs of finance majors (Kohen and Hallam 1999) and as such, developing a holistic approach to teaching both groups may be an issue.

Thus, when our results are considered in conjunction with the current body of literature, the exact role of accounting education to promote a curriculum that can cross departmental lines may be unclear. As a result, there is no one option available, and, depending on the circumstances, several paths may become available. For instance, one way to accommodate the accounting and non-accounting majors' different learning style is, if resources are available, to enroll accounting and non-accounting majors in different classes/sections to allow different instructional emphasis: analytical skills for accounting majors and bookkeeping and accounting basics for non-accounting majors. If having separate classes/sections for accounting and non-accounting majors for intermediate accounting courses is not feasible, we suggest instructors could modify the current intermediate accounting curriculum to accommodate different needs of accounting and non-accounting majors. In addition, instructors could provide opportunities for group assignments and include both accounting and non-accounting majors in each group to promote learning from peers with different strengths.

Our study is not without limitations. As our survey covers only two intermediate accounting classes taught by one instructor at a medium-sized private university in the United States, the results may not extend fully to other settings or other universities. In addition, our objective was to capture the change in self-efficacy relative to the accounting cycle after a three week review of the conceptual accounting framework. We did so through the use of self-reported improvements. As such, our study relies on the perception of changes based on the subjective view and experience of the respondents. Admittedly, it could be the case that students may perceive they have improved when, in fact, they have not. One way to address this would be to associate the change in perception to some objective measure of performance; e.g., a numerical performance on an exam subsequent to the three week period. However, our objective was to gain insight into how students feel about the review of the accounting cycle at the start of intermediate as a way to add more insight about accounting education reform. As such, we feel we have accomplished this objective, and leave further evaluation as a future research query.

Our paper also offers other queries for future research. For instance, it might be of interest to assess which characteristics lead to different learning outcomes between accounting and non-accounting majors. Moreover, our study focused on intermediate accounting. However, it is widely believed that once a student is successful in intermediate accounting, their capacity to grasp, understand and apply the concepts in the remaining accounting curriculum is enhanced. Thus, it might be of interest to investigate the impact intermediate accounting has on the learning experiences in other upper level accounting courses. This could be conducted for both accounting and non-accounting majors.

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**Table 1**  
**Perception Item <sup>a</sup>**

Perception Item	Topical Area 1	Topical Area 2	Topical Area 3	Topical Area 4
Determining whether an asset, liability, owner's equity, revenue, or expense account is affected by a transaction	X			
Determining whether the account increases or decreases for each account affected by the transaction	X			
Determining whether each increase or decrease should be recorded as a debit or a credit	X			
Making adjusting entries	X			
Using a T-account to determine the ending balance of each financial statement item	X			
Preparing an income statement		X		
Preparing a statement of retained earnings		X		
Preparing a balance sheet		X		
Preparing a statement of cash flows		X		
Describing the nature of current and long-term assets and liabilities			X	
Describing the source of capital and the classes of stock			X	
Describing the nonrecurring items (i.e., discontinued operation and extraordinary items) on income statement			X	
Computing and interpreting earnings per share			X	
Identifying the use of cash flows and the types of cash flow activities			X	
Reading the supplemental disclosures, such as footnote, cross reference, and supporting schedules, of financial statements			X	
Assessing the solvency of a business based on financial statement information				X
Assessing the profitability of a business based on financial statement information				X
Evaluating a company's financial situation and comparing it with other firms in the industry				X

<sup>a</sup> This table lists the eighteen perception items asked at both time intervals (initial and subsequent). While not identified as such on the actual survey instrument, for analysis purposes the perception items are grouped in the following manner:

Topical Area 1 = Journalizing Transactions

Topical Area 2 = Preparing Financial Statements

Topical Area 3 = Interpreting Financial Statements

Topical Area 4 = Financial Statement Analysis

**Table 2**  
**Students Demographic and Profile Data <sup>a</sup>**

<b>Variable</b>	<b>Accounting Major</b>		<b>Non Accounting Major</b>	
	<b>N=42</b>		<b>N=20</b>	
<i>Average Age</i>	20.32		21.00	
<i>Gender</i>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Male	19	45%	12	60%
Female	23	55%	8	40%
<i>High School Exposure:</i>				
High School Course	4	10%	3	15%
No High School Course	38	90%	17	85%
<i>Work Experience: ***</i>				
Has Accounting Work Experience	19	45%	2	10%
Has No Accounting Work Experience	23	55%	18	90%
<i>Classification: ***</i>				
Freshman	0	0%	0	0%
Sophomore	16	38%	2	10%
Junior	23	55%	9	45%
Senior	2	5%	8	40%
Graduate/Other	1	2%	1	5%
<i>Introductory Accounting Grade:</i>				
A	30	71%	13	65%
B	11	26%	7	35%
C	1	2%	-	
D	-		-	
F	-		-	
<i>Management Accounting Grade:</i>				
A	27	64%	17	85%
B	13	31%	3	15%
C	2	5%	-	
D	-		-	
F	-		-	

<sup>a</sup> This table reports selected demographic information for the accounting and non-accounting students. A review of the non-accounting major group reveals that 18 of these students (90 percent) have declared finance as their major. We use t-tests to test the differences in mean Age between the two groups and chi-square tests to determine whether there is a significant association between Major and each of the categorical variables (Gender, High School Exposure, Work Experience, Classification, and Introductory Accounting Grade). \*\*\*, \*\*, and \* represent p-value for chi-square (or two-tailed t-tests) at the 1%, 5% and 10% levels, respectively.

The variable definitions are as follows:

Average Age:	Average student age.
Gender:	Male or female
High School Exposure:	Completed accounting course in high school
Work Experience:	Has relevant accounting work experience
Classification:	Classification of student
Introductory Accounting Grade:	Distribution of grades received in Introductory Accounting

**Table 3**  
**Students' Mean Perceptions on Journalizing Transactions <sup>a</sup>**  
**Response Comparisons**

Item Description	Accounting Major N=42			Non Accounting Major N=20			Initial Evaluation	Subsequent Evaluation
	Within-Group Test			Within-Group Test			Between-Group	Between-Group
<b>Statement:</b> "I am comfortable with..."	Initial	Sub- sequent	t-stat. of diff.	Initial	Sub- sequent	t-stat. of diff.	t-stat of difference	t-stat of difference
Determining whether an asset, liability, owner's equity, revenue, or expense account is affected by a transaction	4.17 (0.66)	4.38 (0.85)	1.32	4.00 (0.73)	4.35 (0.49)	2.33 **	0.90	0.18
Determining whether the account increases or decreases for each account affected by the transaction	4.12 (0.71)	4.38 (0.88)	1.81 **	4.10 (0.72)	4.35 (0.49)	2.52 **	0.10	0.18
Determining whether each increase or decrease should be recorded as a debit or a credit	4.07 (0.84)	4.24 (0.89)	1.07	3.90 (0.55)	4.45 (0.51)	4.07 ***	0.96	-1.15
Making adjusting entries	3.48 (0.89)	4.12 (0.92)	4.04 ***	3.05 (0.89)	3.85 (0.81)	3.24 ***	1.76 *	1.12
Using a T-account to determine the ending balance of each financial statement item	4.00 (0.91)	4.24 (0.88)	1.38 *	3.90 (1.17)	4.40 (0.82)	2.24 **	0.37	-0.69

<sup>a</sup> This table reports the mean responses of the perceptions of accounting and non-accounting students in intermediate accounting relative to their abilities to manage the journal entry process both before and after receiving some review and background instruction, including a comprehensive electronic practice set. Responses are based on a Likert scale where 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly Agree. Standard deviations of the responses are in the parenthesis. All p- values of the within-group and between-group tests are based on one-tailed and two-tailed t-tests, respectively. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5% and 10% levels respectively.

**Table 4**  
**Students' Mean Perceptions on Financial Statement Preparation <sup>a</sup>**  
**Response Comparisons**

Item Description	Accounting Major N=42			Non Accounting Major N=20			Initial Evaluation	Subsequent Evaluation
	Within-Group Test			Within-Group Test			Between-Group	Between-Group
<b>Statement:</b> "I am comfortable with..."	Initial	Sub- sequent	t-stat. of diff.	Initial	Sub- sequent	t-stat. of diff.	t-stat of difference	t-stat of difference
Preparing an income statement	3.83 (0.88)	4.17 (0.76)	2.10 **	3.70 (1.08)	4.10 (0.55)	1.90 **	0.52	0.35
Preparing a statement of retained earnings	3.60 (0.94)	4.07 (0.81)	2.90 ***	2.95 (0.94)	4.00 (0.73)	4.97 ***	2.53 **	0.34
Preparing a balance sheet	3.90 (0.98)	4.17 (0.79)	1.48 *	3.90 (0.64)	4.30 (0.47)	3.56 ***	0.02	-0.83
Preparing a statement of cash flows	3.38 (0.99)	3.57 (0.97)	1.24	3.10 (0.79)	3.25 (0.91)	0.83	1.11	1.25

This table reports the mean responses of the perceptions of accounting and non-accounting students in intermediate accounting relative to their abilities to prepare financial statements both before and after receiving some review and background instruction, including a comprehensive electronic practice set. Responses are based on a Likert scale where 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly Agree. Responses are based on a Likert scale where 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly Agree. Standard deviations of the responses are in the parenthesis. All p- values of the within-group and between-group tests are based on one-tailed and two-tailed t-tests, respectively. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5% and 10% levels respectively.

**Table 5**  
**Students' Mean Perceptions on Financial Statement Interpretation <sup>a</sup>**  
**Response Comparisons**

Item Description	Accounting Major N=42			Non Accounting Major N=20			Initial Evaluation	Subsequent Evaluation
	Within-Group Test			Within-Group Test			Between-Group	Between-Group
<b>Statement:</b> "I am comfortable with..."	Initial	Sub- sequent	t-stat. of diff.	Initial	Sub- sequent	t-stat. of diff.	t-stat of difference	t-stat of difference
Describing the nature of current and long-term assets and liabilities	3.57 (0.74)	3.88 (0.80)	2.39 **	3.70 (0.73)	3.90 (0.85)	1.00	-0.64	-0.09
Describing the source of capital and the classes of stock	3.02 (1.00)	3.40 (1.01)	2.01 **	3.25 (1.02)	3.60 (0.94)	1.38 *	-0.83	-0.73
Describing the nonrecurring items (i.e., discontinued operations and extraordinary items) on income statement	2.93 (1.00)	3.95 (0.79)	4.97 ***	2.50 (0.89)	4.00 (0.65)	5.43 ***	1.64	-0.23
Computing and interpreting earnings per share	3.48 (0.97)	4.02 (0.95)	2.50 ***	3.60 (0.94)	4.32 (0.67)	3.24 ***	-0.47	-1.21
Identifying the use of cash flows and the types of cash flow activities	3.33 (1.00)	3.45 (0.92)	0.65	3.25 (0.79)	3.30 (0.73)	0.27	0.33	0.65
Reading the supplemental disclosures (i.e., footnotes, cross references, and supporting schedules) of financial statements	3.29 (1.09)	3.64 (1.10)	1.78 **	3.10 (1.02)	3.35 (0.99)	1.04	0.64	1.01

<sup>a</sup> This table reports the mean responses of the perceptions of accounting and non-accounting students in intermediate accounting relative to their abilities to interpret financial statements both before and after receiving some review and background instruction, including a comprehensive electronic practice set. Responses are based on a Likert scale where 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly Agree. Standard deviations of the responses are in the parenthesis. All p- values of the within-group and between-group tests are based on one-tailed and two-tailed t-tests, respectively. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5% and 10% levels respectively.

**Table 6**  
**Students' Mean Perceptions on Financial Statement Analysis <sup>a</sup>**  
**Response Comparisons**

Item Description	Accounting Major N=42			Non Accounting Major N=20			Initial Evaluation	Subsequent Evaluation
	Within-Group Test			Within-Group Test			Between-Group	Between-Group
<b>Statement:</b> "I am comfortable with..."	Initial	Sub- sequent	t-stat. of diff.	Initial	Sub- sequent	t-stat. of diff.	t-stat of difference	t-stat of difference
Assessing the solvency of a business based on financial statement information	3.17 (0.99)	3.38 (1.01)	1.12	3.25 (1.02)	3.75 (0.91)	2.52 **	-0.31	-0.17
Assessing the profitability of a business based on financial statement information	3.69 (0.87)	3.67 (0.90)	-0.15	3.55 (1.05)	3.90 (0.64)	1.58 *	0.56	-0.30
Evaluating a company's financial situation and comparing it with other firms in the industry	3.62 (0.83)	3.67 (0.85)	0.26	3.70 (0.73)	3.85 (0.75)	0.90	-0.37	-0.41

<sup>a</sup> This table reports the mean responses of the perceptions of accounting and non-accounting students in intermediate accounting relative to their abilities to analyse financial statements both before and after receiving some review and background instruction, including a comprehensive electronic practice set. Responses are based on a Likert scale where 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly Agree. Standard deviations of the responses are in the parenthesis. All p- values of the within-group and between-group tests are based on one-tailed and two-tailed t-tests, respectively. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5% and 10% levels respectively.

**Table 7**  
**Perception Item Improvement <sup>a</sup>**  
**By Major**

Perception Item	Within Group Improvement	
	Accounting Major	Non-Accounting Major
Determining whether an asset, liability, owner's equity, revenue, or expense account is affected by a transaction		Y
Determining whether the account increases or decreases for each account affected by the transaction	Y	Y
Determining whether each increase or decrease should be recorded as a debit or a credit		Y
Making adjusting entries	Y	Y
Using a T-account to determine the ending balance of each financial statement item	Y	Y
Preparing an income statement	Y	Y
Preparing a statement of retained earnings	Y	Y
Preparing a balance sheet	Y	Y
Preparing a statement of cash flows		
Describing the nature of current and long-term assets and liabilities	Y	
Describing the source of capital and the classes of stock	Y	Y
Describing the nonrecurring items (i.e., discontinued operation and extraordinary items) on income statement	Y	Y
Computing and interpreting earnings per share	Y	Y
Identifying the use of cash flows and the types of cash flow activities		
Reading the supplemental disclosures, such as footnote, cross reference, and supporting schedules, of financial statements	Y	
Assessing the solvency of a business based on financial statement information		Y
Assessing the profitability of a business based on financial statement information		Y
Evaluating a company's financial situation and comparing it with other firms in the industry		

<sup>a</sup> This table summarizes the comparison of the statistical tests reflected in Tables 4 – 7 where “Y” designates that a statistically significant within-group improvement was posted.

**Table 8**  
**Students' Perceptions on Their Accounting Skills <sup>a</sup>**

Skills	ALL			Accounting Major			Non Accounting Major		
	A Posteriori Multiple Comparisons	Mean Response	Std Dev	A Posteriori Multiple Comparisons	Mean Response	Std Dev	A Posteriori Multiple Comparisons	Mean Response	Std Dev
Journalizing Transactions	A	19.55	3.08	A	19.83	2.96	A	19.40	3.30
Financial Statement Preparation	A	19.55	3.57	A	19.62	3.45	A	18.95	2.89
Financial Statement Interpretation	B	14.37	3.30	B	14.71	3.71	B	13.65	3.36
Financial Statement Analysis	C	10.48	2.39	C	10.48	2.34	C	10.50	2.56

<sup>a</sup> This table provides an analysis of the relationship between the framework skill categories based on students' responses at the beginning of the semester. Students gave their perception of their accounting skills by answering five, four, six and three questions in journalizing transactions, financial statement preparation, financial statement interpretation, and financial statement analysis, respectively. Items appear in decreasing order of their relative rankings by the respondents. The Kruskal-Wallis one-way ANOVA by ranks test indicates a significant difference in students' perception of their framework skills listed above ( $p < 0.001$ ). We perform Bonferroni t-tests to determine which pairs of mean ranks differ and use alphabetic designations to group skills with similar student perceptions and to distinguish those that differ. Thus, mean ranks with the same letter are not significantly different. For example, the mean rank of Journalizing Transactions is not significantly different from the mean rank of Financial Statement Preparation, but it is significantly different from Financial Statement Interpretation and Financial Statement Analysis. All pair-wise comparisons were tested at  $\alpha = 0.05$ .

**Table 9**  
**Correlation Matrix for Students' Perception of the Four Topical Areas <sup>a</sup>**

Skills		All				Accounting Majors				Non Accounting Major			
		A	B	C	D	A	B	C	D	A	B	C	D
Journalizing Transactions	A	1				1				1			
Financial Statement Preparation	B	0.65	1			0.63	1			0.70	1		
Financial Statement Interpretation	C	0.39	0.62	1		0.31	0.64	1		0.58	0.59	1	
Financial Statement Analysis	D	0.40	0.50	0.70	1	0.37	0.50	0.67	1	0.45	0.53	0.78	1
Cronbach Alpha		0.82	0.75	0.76	0.79	0.82	0.71	0.75	0.77	0.84	0.82	0.79	0.83

<sup>a</sup> This table provides the correlation matrix between the accounting skills framework. All correlation coefficients are statistically significant ( $p < 0.01$ ). The Cronbach alpha coefficients (Cronbach 1951) are above 0.70, which indicate satisfactory internal reliability for the scale (Nunnally 1967).