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**Supplemental Instruction in the
First Intermediate Accounting Course:
Investigation of an Intervention Strategy
to Improve Student Performance**

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Supplemental Instruction in the First Intermediate Accounting Course: Investigation of an Intervention Strategy to Improve Student Performance

Supplemental instruction (SI) is an academic assistance program that utilizes peer-assisted study sessions for students in targeted historically difficult courses. The SI model was developed at the University of Missouri, Kansas City (UMKC) to provide an approach to learning that targets high-risk courses rather than high-risk students (Center for Supplemental Instruction, UMKC). The UMKC SI model, followed by our university, requires the SI Leader to attend all classes and to facilitate regularly scheduled study sessions. The SI Leader is a peer tutor who has previously demonstrated superior academic achievement in the target course. In contrast to regular tutoring, SI is presented as a non-remedial, proactive, voluntary opportunity for all students to increase their study skills and understanding of course material.

Although the effectiveness of SI has been examined in prior literature for lower-division students in accounting principles courses, there is a lack of research regarding its effectiveness for upper-division accounting students. Therefore, the objective of this research is to gain insight into the use and effectiveness of SI for upper-division accounting students in the first intermediate accounting course (financial accounting and reporting I, or FAR I). This class is typically considered the “gateway” upper-division accounting course because its successful completion is a key prerequisite for the subsequent accounting curriculum, yet it is historically characterized by high student withdrawal and failure rates.

We assess the effectiveness of SI on the performance of upper-division accounting students in our FAR I course, after controlling for variables that have been shown in prior research to be determinants of student grades in the first intermediate course. Additionally, we present qualitative information regarding which students used SI, purposes for which students used SI and perceived level of help on each, perceived benefits of SI from the students’ perspective, and why some students did not use SI.

This paper is organized as follows: the next section provides background information on SI and determinants of performance in the first intermediate accounting course. The third section describes our methodology and data collection process and the fourth section discusses the data analysis and results. The last section provides a summary and conclusions.

Background and Motivation

Supplemental Instruction in Accounting Principles

Several studies have documented a link between use of supplemental instruction and improved student performance in accounting principles courses. In one of the most comprehensive studies of lower-division business students, Etter, Burmeister, and Elder (2000) collected data from 132 introductory accounting classes in 21 four-year colleges and universities. On average, SI participants earned a course grade one-third of a letter grade higher than nonparticipants. In addition, SI participants had lower levels of withdrawal and failure than nonparticipating students.

Jones and Fields (2001) examined the effect of both voluntary and mandatory SI participation on test scores in the accounting principles course at one university. SI participation was associated with increased exam performance in both voluntary and mandatory settings. In the voluntary setting, SI participants had significantly lower SAT scores than nonparticipants, but after controlling for both SAT and prior GPA, SI participation increased performance regardless of ability as reflected by SAT and GPA. While the Jones and Fields study suggested that the benefit of SI participation varied with different levels of attendance, a study in the UK by Price and Rust (1995) did not find an association between attendance level and increased performance. However, Price and Rust found a positive relationship between SI use and final grade in several introductory business modules (not limited to accounting) and significant improvement in SI participants’ performance in later modules.

Dillard-Eggers and Wooten (2003) found a positive relationship between use of a peer tutoring program and course grade in introductory financial accounting, after controlling for prior GPA. Students with lower ACT scores were more likely to use the peer tutoring sessions than students with higher ACT

scores. In addition, accounting majors and students with higher numbers of credit hours were found to have higher rates of participation in peer tutoring sessions.

Determinants of Performance in the First Intermediate Accounting Course

Multiple studies have investigated factors that may contribute to achievement in the first intermediate accounting course. A recent study (Burnett, Xu, and Kennedy, 2010) recognized that in many schools, the first intermediate course is the “weed-out” course characterized by high withdrawal and failure rates. Additionally, the course has been subject to ever-increasing additions to content, leaving both faculty and students anxious as to whether all important topics can be adequately covered. Finally, the course is often recognized as a critical foundation course for the subsequent financial reporting curriculum. In addition to covering essential content, faculty must prepare students for the increased difficulty level of the course as compared to their principles courses while also motivating student success (Burnett et al., 2010; Waples & Darayseh, 2005).

The typical goal of this research stream is to improve student performance by identifying support systems and/or intervention strategies for students, particularly those who are at risk of failure (Burnett et al., 2010; Eikner & Montondon, 2001). Research has documented correlations between GPA in past courses (a proxy for ability) and performance in intermediate accounting (Burdick & Schwartz, 1982; Burnett et al., 2010; Hicks & Richardson, 1984; Turner, Holmes, & Wiggins, 1997; Waples & Darayseh, 2005). In these studies, overall GPA and/or GPA in accounting principles classes were found to be associated with some measure of success in intermediate accounting. Burdick and Schwartz (1982) identified completion of the majority of lower-division work at a four-year institution versus a community college as a contributor to success in intermediate accounting. Turner et al. (1997) similarly found that where the introductory accounting course was taken (four-year college/university or community college) was a predictor of success in intermediate accounting even when results were controlled for ability.

Other variables that have been found to be related to performance include age (Eikner & Montondon, 2001; Frakes, 1977) and expectations regarding grade (Burnett et al., 2010). Score on a diagnostic test given early in the semester (another proxy for ability) was found to be associated with performance by Hicks and Richardson (1984) and Turner et al. (1997). Gender has also been examined as a predictor of success in accounting coursework, with mixed results. An early study (Mutchler, Turner, & Williams, 1987) reported a performance advantage by females, but subsequent research that controlled for some measure of ability (Eikner & Montondon, 2001; Turner et al., 1997) found no such relationship. A recent study of managerial accounting students by Fogarty and Goldwater (2010) argued that some results with respect to the effect of gender on student performance are confounded by the fact that course design often rewards effort by assigning points to homework, or effort-based activities. Fogarty and Goldwater conclude that while female students exert more effort, performance is not related to gender if effort is not a contributor to the performance score. In a comprehensive study that examined multiple variables including major, location of principles courses, GPA, grade in the first accounting principles course, race, gender, course load, grade expectation, age, and pretest score, Eikner and Montondon (2001) found only college grade point average, grade in the first principles course, and age were significantly associated with success in the first intermediate accounting class.

In a study more related to curriculum design than demographics, Lindquist and Olsen (2007) examined intermediate accounting student performance, satisfaction, and frustration, depending on the degree of homework assistance provided. Students who were provided some form of assistance (check figures or completed solutions) were more satisfied with homework aid and less frustrated with doing homework than students who were provided no assistance. However, the degree of homework assistance provided had no effect on student performance measured as the difference between a pre- and post-test. Another study, Sanders and Willis (2009), reported results from an intermediate accounting entrance exam where a comprehensive set of remedial study aids was provided to students preparing for the exam. This study described a set of remedial tools, but did not report the effect of the use of the tools on course performance.

The first intermediate course is recognized as a difficult but critical component of accounting student success. Given the demographic factors that contribute to success in intermediate accounting, some authors recommend recruiting and retaining the best students as a method to ensure success (Eikner & Montondon, 2001). In contrast, other authors focus on the usefulness of providing effective systems to support those students who have a desire for a degree in accounting, but lack the good foundation courses, study skills, or motivation that are necessary for success (Lindquist & Olsen, 2007; Sanders & Willis, 2009).

Waples and Darayseh (2005) suggest that SI may improve success for students who are motivated but lack necessary study skills. Our study focuses on the usefulness of SI as an intervention strategy to increase student success in the first intermediate accounting course. While prior research has documented the association between SI in the principles courses and student success, the potential for SI to be used to increase student success in the first intermediate course has not been studied. Students enrolled in upper-division accounting courses are primarily accounting majors, whereas students enrolled in lower-division accounting courses come from a wide diversity of majors, both business and nonbusiness. The difference in major and maturity may impact the students' motivation to succeed in a particular course, the usefulness of SI sessions, and the pattern of use of SI sessions.

Research Questions and Methodology

The primary research question addressed by this study is to assess whether SI attendance has an impact upon upper-division accounting student performance in the FAR I course, after controlling for factors previously shown to contribute to such performance. Secondary research questions relate to what characteristics and qualitative information gathered from students who used SI for the course are important. Specifically, we examine characteristics of which students used SI, and elicit information regarding purposes for which students used SI and perceived level of help on each, perceived benefits of SI from the students' perspective, and reasons why some students did not use SI.

Study Setting

Our study was set in a large public university in the southwest that serves a diverse group of students. SI is widely used at our university, with courses supported in accounting, economics, finance, health sciences, psychology, biology, chemistry, engineering, astronomy, physics, and mathematics. The program has been in place for over a decade at our university, begun initially for the introductory science courses, and subsequently expanded to support other lower-division courses, including both the financial and managerial accounting principles courses. Internal information reported by our university's SI program indicated that students who attended three or more SI sessions ("participants") earned fewer Ds and Fs than expected and more As and Bs than expected, with an improvement in course GPA of .42 for participants.

Due to the positive impact of SI on student success, our university has continued to expand the program. Although most of the SI support is in the lower-division courses, the accounting department successfully lobbied for support in FAR I on the basis that it has been an historically difficult upper-division course that is considered the gateway course for the accounting major curriculum. Additionally, students must earn a C or better in FAR I as a prerequisite for FAR II.

At the end of their sophomore year, students apply to our business professional program. Although there are no capacity limits for each major, acceptance is based on student performance in the prebusiness coursework, including both accounting principles courses, and requires both an overall minimum GPA and a grade of C or better in each course. The accounting principles courses at our university are coordinated which provides common coverage of material across all instructors, along with common exams and projects which account for 90 percent of the course grade. Almost all students who enroll in FAR I are accounting majors in their first semester of their junior year.

Sample and Data Collection

Our study sample consisted of 161 students who were enrolled in FAR I over a three-semester period. Students who received a grade of W (formal withdrawal from the course, which occurs after the 9th week of classes) were included in the study since they had been enrolled for the majority of the semester. Most students who withdrew were earning grades of D or F at the time of withdrawal. Students who dropped the course prior to this deadline were excluded from the study.

All students enrolled in FAR I were taught by the same instructor, used the same textbook, and had the same course requirements. Two different SI Leaders, both senior-level accounting majors, provided support for the class. Class size per section ranged from 29 to 38, with an average of 33 students. Course grades were determined primarily based on mid-term exams and a common non-disclosed final exam. Exams comprised approximately 75 percent of total course points, with the remaining course points based on homework, team quizzes, projects, and professional development activities. Students were not awarded points for participating in SI sessions. Average course GPAs varied by only .05 over the three semesters. Since any potential bias caused by different instructors, teaching styles, textbooks, course content, delivery, and grading was mitigated over the study period, we combined students from all three semesters for analysis.

The main question of our study relates to whether SI participation improved the performance of students enrolled in FAR I. SI participation was obtained from the sheets that students were required to sign for each SI session attended. There were 98 students (61 percent) who attended at least one SI session versus 63 (39 percent) who did not attend. After examining the frequency of SI session attendance, we decided to divide participation for our analysis into levels with high attendance (three or more sessions) and low attendance (one or two sessions). The dividing point between low and high attendance fit well with natural breaks, as it split the students into relatively equal groupings of 43 for high (27 percent) and 55 for low (34 percent). Additionally, as previously discussed, defining high attendance as three or more sessions is consistent with the level of attendance required for effectiveness as determined in analyses performed by our institution's SI Program.

As prior research on grade determinants in the first intermediate accounting course has demonstrated, multiple factors have been shown to significantly affect grade outcome. Thus, in addition to collecting each student's final course grade and SI participation, we also collected, from available university records, each student's incoming cumulative GPA (manually calculated for transfer students), grade in the financial accounting principles course, and whether the principles class was taken at a university or community college.

Table 1 presents a breakdown of the FAR I grade distribution by each of the explanatory variables we used in our model. A review of the grade distribution and incoming characteristics yields the following preliminary observations:

- Students who attended three or more SI sessions tended to earn higher grades than those who did not attend. This result is most obvious in the B and C grades, with 67 percent of students who were high level SI participants earning Bs and Cs versus 49 percent of nonparticipants, and in the F/W grades, with only 7 percent of high level SI participants earning Fs or W versus 25 percent of nonparticipants.
- Overall academic ability, as measured by cumulative incoming GPA, appears to have a strong relationship with grades earned in the course, with higher FAR I course grades earned by students who have higher mean GPAs.
- An adequate foundation in financial accounting principles, as measured by students' grades in the course, had a strong relationship with grades earned in FAR I. Eighty percent of students who earned an A in the principles course earned an A or B in FAR I versus only 18 percent if the principles grade was a C. Conversely, 52 percent of students who earned a C in the principles course earned a grade of D/F/W in FAR I versus only 10 percent for students who earned an A in

the principles course. (Since a grade of C or better in the principles course is required for admittance to our business professional program, there were no students who earned D/F grades).

- While prior research with respect to where the financial accounting principles course was taken has somewhat mixed results, this appears to have an impact on students' grades at our university. Students who took financial accounting principles at a community college earned fewer As and Bs (25 percent) in FAR I and more D/F/W grades (40 percent) compared to students who took the course at a four-year institution, with 58 percent earning A/B grades and 18 percent earning D/F/W grades. Possible anecdotal explanations include differences in rigor, coordination of the principles course, and/or simply the adjustment to the large university setting.
- A combination of the above observations suggests that the student who was most likely to earn a grade of D/F/W in FAR I: (a) had a lower than average cumulative GPA, (b) earned a low grade in financial accounting principles, (c) took the principles course at a community college, and (d) did not take advantage of the SI program.

Table 1: FAR I Grade Distributions by Explanatory Variables

	Course Grade in FAR I				
	A	B	C	D	F/W
Overall Distribution (n = 161)	14.9%	34.8%	26.7%	7.5%	16.1%
SI Sessions Attendance:					
High, 3+ times (n = 43)	16.3%	39.5%	27.9%	9.3%	7.0%
Low, 1-2 times (n = 55)	12.7%	36.4%	34.5%	3.6%	12.7%
None (n = 63)	15.9%	30.2%	19.0%	9.5%	25.4%
Cumulative Incoming GPA:					
Mean	3.67	3.31	2.93	2.68	2.77
Std. Dev.	0.29	0.43	0.37	0.51	0.41
Financial Principles Grade:					
A (n = 61)	32.8%	45.9%	11.5%	6.6%	3.3%
B (n = 67)	6.0%	32.8%	38.8%	4.5%	17.9%
C (n = 33)	0.0%	18.2%	30.3%	15.2%	36.4%
Where Principles Taken:					
University (n = 121)	18.2%	39.7%	24.0%	6.6%	11.6%
Community College (n = 40)	5.0%	20.0%	35.0%	10.0%	30.0%

Analysis and Results

Impact of SI Attendance

Analysis of covariance (ANCOVA) is an appropriate method for assessing the impact of SI attendance level on student performance, as measured by the FAR I course grade, considering the influence of other variables on the course grade. In general terms, ANCOVA involves a hierarchical regression analysis in which the dependent variable (FAR I course grade) is the outcome and the covariates (incoming cumulative GPA, financial principles grade, and where the financial principles course was taken) are entered in the first block. In the second block, the experimental manipulation (SI attendance level) is entered. Thus, the ANCOVA model tests the hypothesis that no significant difference

exists in FAR I grades (adjusted for the effects of the covariates) between SI attendance levels. Measures for each of the variables in the ANCOVA model were as follows:

FAR I GRADE	=	Grade earned in FAR I (A=4, B=3, C=2, D=1, F/W=0)
CUMGPA	=	Incoming cumulative GPA, based on a 4.0 scale
PRINGRADE	=	Grade earned in financial principles course (A=4, B=3, C=2)
PRINTAKEN	=	Indicator variable for where the financial accounting principles course was taken (community college=1, university=0)
SIATTEND	=	Level of SI attendance (high=2, low=1, none=0)

Table 2 presents the results of the ANCOVA which indicates that incoming cumulative GPA, financial principles grade, and where the financial principles course was taken were all significant factors ($p = .000$, $.000$, and $.002$, respectively) in explaining the FAR I course grade. These results were expected and are consistent with prior research. Of more importance to our study, there was a significant difference ($p = .017$) in FAR I course grades for the between-subjects effects of SI participation.

Table 2: ANCOVA Results

Source	Mean Square	F	Sig. Level (p value)
Covariates:			
CUMGPA	20.06	21.39	.000
PRINGRADE	12.40	12.40	.000
PRINTAKEN	9.02	9.62	.002
SIATTEND	7.89	3.95	.017
Residual	0.94		

Overall model F value = 24.04 ($p < .000$)

$R^2 = .437$ (Adjusted $R^2 = .419$)

Table 3 presents further contrast analysis of mean FAR I course grades based on SI attendance levels, after adjustment for cumulative GPA, financial principles course grade, and where the financial principles course was taken. Results indicate that participation in three or more SI sessions significantly improved grades by .57 letter grade (from 2.00 to 2.57) over no participation ($p = .004$). Even low SI attendance (one or two sessions) resulted in a modest .27 letter grade improvement over no participation, although the difference was not statistically significant.

Table 3: Contrasts Between Adjusted Mean FAR I GPAs for SI Attendance Levels

SI Attendance Level	Number	Adjusted Mean FAR I GPA	Std. Dev.	Contrast with No Attendance		Sig. Level (p value)
				Contrast Difference	Std. Error	
High (3+ times)	43	2.57	0.15	0.57	0.20	0.004
Low (1-2 times)	55	2.27	0.13	0.27	0.18	0.135
None	63	2.00	0.12	–	–	–

Insights into SI Participation

Student Characteristics and SI Usage

Table 4 presents descriptive information for SI participation based on students' characteristics. For this table, we divided incoming cumulative GPAs into three categories: high (3.5 and above), medium (3.0 – 3.49), and low (below 3.0). With respect to incoming cumulative GPA, students with high GPAs tended to use SI to a lesser extent, and students with low GPAs (the target group) also used SI to a lesser extent. Students who earned grades of A or B in the financial principles course had similar SI attendance levels, whereas the C students used SI to a greater extent. Although similar proportions of students who took the financial principles course at a university versus community college did not attend any SI sessions, a higher proportion of community college transfers attended three or more SI sessions.

Table 4: SI Participation by Students' Characteristics

Student Characteristics	SI Attendance Level		
	High, 3+	Low, 1-2	None
Incoming cumulative GPA:			
High, > 3.5 (n=49)	22%	33%	45%
Medium, 3.0 – 3.4 (n=53)	36%	36%	28%
Low, < 3.0 (n=59)	22%	34%	44%
Financial principles grade:			
A (n=61)	21%	38%	41%
B (n=67)	25%	33%	42%
C (n=33)	39%	30%	30%
Where financial principles taken:			
University (n=121)	25%	36%	40%
Community college (n=40)	33%	30%	38%

Student Survey on Participation

To gain insights into the use of SI for upper-division accounting students, one of the study's coauthors (who was not the course instructor) administered a brief survey at the end of each semester to the students who attended class that day (see Appendix A). For students who attended at least one SI session, we collected information regarding the level of help students received related to different purposes, students' perceived benefits of SI, and what they liked best and least about the SI sessions. For students who did not attend any SI sessions, we collected information regarding why they did not attend. Of the 161 students included in this study, 12 had withdrawn before the survey was administered and 128 completed the survey, resulting in an 86 percent overall response rate for the remaining students. Of the 128 students who completed the survey, 88 students attended at least one SI session, and 40 did not attend any SI sessions.

Table 5 presents information regarding the specific purposes for which students used SI and their evaluations of the level of help received in those areas. The most common use of SI was for exam preparation and review, with 83 percent of students who attended at least one SI session attending for this purpose. This was followed by usage of 72 percent for specific questions on concepts, 51 percent for homework, and 44 percent for projects. Students rated the level of help in SI sessions as the highest for specific questions on concepts, with 78 percent indicating SI was very/moderately helpful. Students evaluated SI sessions for the remaining purposes as being very/moderately helpful at 71 percent for projects, 70 percent for homework, and 60 percent for exam preparation/review.

Table 5: Purpose for Use and Level of Help in SI Sessions

SI Purpose (% of students using)	Level of Help*			
	Very helpful	Moderately helpful	Slightly helpful	Not at all helpful
Exam preparation/ review (83%)	23%	37%	30%	10%
Specific questions on concepts (72%)	34%	44%	15%	7%
Homework (51%)	33%	37%	26%	5%
Projects (44%)	18%	53%	21%	8%

* Percentages are based on the number of students who used SI for each specific purpose.

Table 6 identifies the students' perspectives of the benefits of SI sessions. Students who attended at least one SI session most commonly identified "improved knowledge and understanding of the course material" (74 percent). The other top benefits identified by students were "better exam preparation" (51 percent) and "increased confidence" (45 percent).

Table 6: Students' Perceived Benefits of SI Sessions

Benefits	% of students*
Improved knowledge & understanding of the course material	74%
Better exam preparation	51%
Increased confidence	45%
Improved homework preparation	32%
Improved study skills	30%
Less stress about the class	30%
Met other students to study with	24%
Improved grades	22%
Other	6%

* Percentage is based on the 88 students who attended at least one SI session and completed the survey.

Our survey also elicited opinions regarding what the students liked best and least about the SI sessions in an open-ended question format. We developed descriptive attributes for similar responses within each question. The most often-mentioned aspects that students liked best were the comfort level in meeting with a peer in an atmosphere that was more casual than the classroom setting (23 percent), the opportunity for targeted help and individual attention (20 percent), the availability of SI sessions outside of class (19 percent), and getting a different view on the course material (11 percent). Virtually all of the comments regarding what students liked least fell into two categories: complaints regarding structure (43 percent) and class or work schedule conflicts (31 percent). The majority of students mentioning issues regarding the SI session structure indicated they were not as organized as they wished, although a few students thought some SI sessions were too structured and did not allow for coverage of specific topics or problems over which they had concerns.

Our final table (Table 7) provides insights as to why some students did not attend any SI sessions. The most common reasons identified by students were that they preferred to study on their own (80 percent) or had schedule conflicts with the SI sessions (68 percent). An additional 35 percent were confident that they knew the material or did not have time to attend even if they had no schedule conflicts.

Table 7: Reasons for Not Attending Any SI Sessions

Reason	% of students*
Prefer to study on my own	80%
Had schedule conflicts with the SI sessions	68%
Was confident that I know the material	35%
Did not have time to attend even if I had no schedule conflicts	35%
Was uncomfortable with the SI leader	10%
Other	10%

* Percentage is based on the 40 students who did not attend any SI sessions and completed the survey.

Summary and Conclusions

Institutions that desire to improve student success in the first intermediate course need to be cognizant of the demographic variables that have been shown to be predictors of course performance. Given the issues of limited resources as well as the limited ability of many public institutions to screen students out of admittance to the accounting program, it becomes increasingly important to identify effective intervention strategies, such as supplemental instruction, to improve student performance.

Our results suggest that SI participation has a significant influence on the first intermediate (FAR I) course grade after controlling for variables suggested by prior research as having an effect on the course grade (cumulative grade point average, course grade in financial principles, and whether the principles course was taken at a university or community college). Further analysis indicates that students who attended three or more SI sessions had a course GPA that was higher by .57 letter grade over no SI participation, and even low SI attendance (1-2 sessions attended) showed a modest .27 letter grade improvement over no participation.

The results of this study suggest that overall level of academic ability (measured by incoming cumulative GPA), a suitable foundation in financial accounting principles, and where the principles course was taken are all important indicators of success in the first intermediate course. Using this information as a filter assessment to identify students at risk may help improve the potential for their success if academic advisors and course instructors strongly encourage these students throughout the semester to participate in SI.

While this study's results suggest SI is a successful intervention strategy, it was conducted at one institution. Consequently, generalization of the results may be limited, particularly for institutions with different student demographics.

In addition, given that students were allowed to self-select into SI participation, it is possible that students who chose to participate were more motivated and generally chose to expend more effort overall on the course. Finally, while SI participation was compared to no SI participation, it was not compared to alternative supplemental strategies such as recitation sections or individual tutoring. Additional research at dissimilar institutions, comparing SI to alternative intervention strategies would help institutions allocate scarce resources among the most effective programs. In addition, the effect of SI participation could be examined with respect to graduation rates, success in subsequent related courses and student satisfaction with the accounting program.

References

- Burdick, R., & Schwartz, B. N. (1982). Predicting grade performance for intermediate accounting. *Delta Pi Epsilon Journal*, 24(3), 117-127.
- Burnett, R. D., Xu, L., & Kennedy, S. (2010). Student self efficacy in intermediate accounting: A tool to improve performance and address accounting change. *The Accounting Educators' Journal*, 20, 109-134.
- Center for Supplemental Instruction, *Overview of Supplemental Instruction*, The University of Missouri, Kansas City. Retrieved June 2011 at <http://www.umkc.edu/cad/si/>.
- Dillard-Eggers, J., & Wooten, T. C. (2003). The use of peer tutors in introductory financial accounting. *Advances in Accounting Education: Teaching and Curriculum Innovations*, 5, 55-80.
- Eikner, A. E., & Montondon, L. (2001). Evidence on factors associated with success in intermediate accounting I. *Accounting Educators' Journal*, 13, 1-17.
- Etter, E. R., Burmeister, S. L., & Elder, R. J. (2000). Improving student performance and retention via supplemental instruction. *Journal of Accounting Education*, 18(4), 355-368.
- Fogarty, T. J., & Goldwater, P. M. (2010). Beyond just desserts: The gendered nature of the connection between effort and achievement for accounting students. *Journal of Accounting Education*, 28(1), 1-12.
- Frakes, A. H. (1977). Introductory accounting objectives and intermediate accounting performance. *The Accounting Review*, 52(1), 200-210.
- Hicks, D. W., & Richardson, F. M. (1984). Predicting early success in intermediate accounting: The influence of entry examination and GPA. *Issues in Accounting Education*, 2, 61-67.
- Jones, J. P., & Fields, K. T. (2001). The role of supplemental instruction in the first accounting course. *Issues in Accounting Education*, 16(4), 531-547.
- Lindquist, T. M., & Olsen, L. M. (2007). How much help, is too much help? An experimental investigation of the use of check figures and completed solutions in teaching intermediate accounting. *Journal of Accounting Education*, 25(3), 103-117.
- Mutchler, J. F., Turner, J. H., & Williams, D. D. (1987). The performance of female versus male accounting students. *Issues in Accounting Education*, 2(1), 103-111.
- Price, M., & Rust, C. (1995). Laying firm foundations: The long-term benefits of supplemental instruction for students on large introductory courses. *Innovations in Education and Teaching International*, 32(2), 123-130.
- Sanders, D. E., & Willis, V. F. (2009). Setting the P.A.C.E. for student success in intermediate accounting. *Issues in Accounting Education*, 24(3), 319-337.
- Turner, J. L., Holmes, S. A., & Wiggins, C.E. (1997). Factors associated with grades in intermediate accounting. *Journal of Accounting Education*, 15(2), 269-288.
- Waples, E., & Darayseh, M. (2005). Determinants of students' performance in intermediate accounting. *Journal of College Teaching and Learning*, 2(12), 87-91.

APPENDIX A**Supplemental Instruction (SI) Survey**

- 1. Skip this question if you attended at least one SI session. If you did not attend any SI sessions, check all reasons that apply below and skip the remaining questions on the survey.**

I did not attend any SI sessions because I:

- was confident that I knew the material
- prefer to study on my own
- had schedule conflicts with the SI sessions
- did not have time to attend even if I had no schedule conflicts
- was uncomfortable with the SI leader
- was uncomfortable with the other students that might attend sessions
- Other. Please describe _____

- 2. If you attended at least one SI session, what were the benefits? Check all that apply:**

- Improved study skills
- Improved homework preparation
- Improved knowledge and understanding of the course material
- Increased confidence
- Less stress about the class
- Improved grades
- Better exam preparation
- Met other students to study with
- Other. Please describe _____

3. Evaluate the level of help you received in the SI sessions by placing the appropriate number from the following scale in the blank by each reason listed below for attending SI sessions (please evaluate all reasons):

Scale:

1. Did not use SI sessions for this purpose
2. Not at all helpful
3. Slightly helpful
4. Moderately helpful
5. Very helpful

_____ Homework

_____ Projects

_____ Exam preparation/review

_____ Specific questions about concepts

_____ Other. Please describe _____

4. What did you like best about the SI sessions? Please write your comments below.

5. What did you like least about the SI sessions? Please write your comments below.