Impact of Supplemental Instruction Participation on College Freshman Retention

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Abstract

Supplemental Instruction (SI), a higher-education academic support program, targets challenging college courses and uses peer-led review sessions to develop academic skills, improve grades, influence persistence, and ultimately increase student retention (Arendale, 2001). The goals of this study were twofold: to determine if differences existed in prior academic performance of freshman students attending SI sessions while determining whether SI attendance improved retention to the sophomore year. Using quantitative analysis, the researchers found that freshman students with a higher high school GPA were more likely to be retained regardless of SI session attendance. Additionally, freshman students with a lower high school GPA were significantly more likely to be retained if participating in SI sessions. The researchers conclude that SI is an effective program to develop academic skills and yield increased retention. Implications for the profession include a renewed emphasis on increasing SI attendance rate of college freshman students, particularly at-risk students with lower college entrance credentials.

Keywords: supplemental instruction, collaborative learning, cooperative learning, retention, academic support, learning assistance, peer support, persistence, quantitative analysis, at-risk, higher education

Impact of Supplemental Instruction Participation on College Freshman Retention

Supplemental Instruction (SI) is a powerful form of learning assistance that helps students develop academic skills, increase grades, and positively influences retention. The SI model was developed by Dr. Deanna Martin at University of Missouri-Kansas City (UMKC) in 1973 to increase student retention and grades of students in college courses (Hurley, Jacobs, & Gilbert, 2006). The goals of SI programs are to increase graduation rates, reduce attrition rates, and improve grades (Arendale, 2001). The SI sessions merge content delivery with a battery of skills and strategies to improve college student academic performance (Hurley, Jacobs, & Gilbert, 2006). SI sessions provide collaborative learning experiences with peers. These experiences help students learn how to work with others and become independent learners through collaboration (Bruffee, 1993). SI leaders are successful students with numerous responsibilities, including attending class again, taking notes, and planning and delivering multiple weekly collaborative review sessions. The role of the SI leader is to guide and support students in their learning and development by utilizing effective learning strategies and engaging activities; they are not a substitute professor (Arendale, 2001; Hurley, Jacobs, & Gilbert, 2006). SI leaders are hired by a supervisor who trains, selects, monitors, and evaluates their effectiveness (Arendale, 2001).

Iterations of SI models have been adopted at hundreds of higher education institutions internationally, and validated by the U.S. Department of Education as an effective intervention strategy which improves student grades and success rates in historically challenging courses and improves persistence (Arendale, 2001). This research will use theoretical frameworks to view SI through these theory-based lenses: student retention, collaborative learning, and cooperative learning. The researchers also reviewed related literature from investigations of SI models and their impact on student grades and retention.

Components of Student Retention in Supplemental Instruction

Higher education institutions are increasingly held accountable for student retention and graduation by policies such as competitive performance funding as part of state and federal accountability. Many factors influence student persistence and retention. Students are more likely to be successful if held to high expectations, provided support, given assessments and timely feedback, and are engaged (Tinto, 2012). SI sessions influence each of these elements. In particular, SI sessions provide support for high expectations and involve students in a community of learners (Bruffee, 1993). Involvement is a critical component of student learning, growth, and retention (Astin, 1999). Student involvement in SI sessions helps students achieve greater success in the classroom.

Good grades are one of the best predictors of persistence and completion (Pascarella & Terenzini, 2005). One SI program goal is to improve student grades. SI impacts grades and thus influences persistence and retention. Moreover, good grades in the first year of university are important for future collegiate success (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007). If students attend SI sessions, their grades are likely to increase and they are, consequently, more likely to persist. While SI session activities can improve student learning and grades, peer influence in these activities also plays an important role in persistence.

Research on the influence of SI leader-peers on student development and retention are well documented. Interaction with peers outside the classroom produces cognitive growth and positive gains in writing and thinking. Interaction also improves academic success in the sciences when peer interactions were course-related (Whitt, Edison, Pascarella, Nora, & Terenzini, 1999). Kuh, Kinzie, Buckley, Bridges, and Hayek (2007) assert that involvement with peers positively increases time spent on task which often increases student learning. Moreover, the influence of peers with higher aspirations has a positive effect on retention and persistence (Pascarella & Terenzini, 2005). In addition, first year student attendance in SI sessions results in greater social integration for first-year students, leading to greater persistence (Pascarella & Terenzini, 2005). SI sessions create positive peer influences while maximizing

student development, growth, and persistence through a peer-to-peer cooperative environment.

Collaborative and Cooperative Learning

Collaborative and cooperative learning techniques assist college students in the development of academic skills and content knowledge. Collaborative learning has many benefits, including boosting critical thinking development (Kilgo, Ezell Sheets, & Pascarella, 2015). It also increases cognitive outcomes such as deepened analytical skills and appreciation for fine arts (Cabrera, Nora, Crissman, Terenzini, Bernal, & Pascarella, 2002). Collaborative learning helps students be more involved and apply concepts they are learning (Kuh, Kinzie, Buckley, Bridges & Hayek, 2007). Light (2001) suggests that students who study in groups are more active learners. The collaborative nature of SI sessions may aid in increasing student retention as increased grades and learning are predictors of persistence. Furthermore, team learning integrated into a classroom reduces course drop rates while helping students learn how to work together (Kreie, Headrick, & Steiner, 2007).

Collaborative and cooperative learning should be used to supplement or enhance traditional instruction methods. Gubera and Arugete (2013) advised that collaborative and cooperative methods should accompany, not replace, traditional methods. Kreie, Headrick, and Steiner (2007) found that team learning approaches did not increase student grades, but did decrease course withdrawal rates. They suggested an optimized approach would include cooperative and collaborative approaches blended with varied teaching strategies. SI provides this blended model.

Effectiveness of Supplemental Instruction

Impact on Student Grades

SI has a well-documented, salubrious impact on student grades. SI attendance is positively related to higher grades in variety of courses (Arendale, 2001; Ashwin, 2003; Congos, 2005; Etter, Burmeister, & Elder, 2001; Gattis, 2000; Hensen & Shelley, 2003; Lindsay, Carlsen-Landy, Boaz, & Marshall, 2017; Malm, Bryngfors, Mörner, 2011). Students who attended SI sessions at least three times

had better final exam scores when controlling for a predicted GPA based on their prior academic performance (Kochenour et al., 1997). SI attendance also positively influences performance in future courses if the content and style of the course are similar (Gattis, 2000). Additionally, SI session attendance has been shown to be related to a greater cumulative and term GPA (Oja, 2012). As better grades relate to persistence (Pascarella & Terenzini, 2005), SI attendance influences persistence and consequently, retention, by increasing the grades of college students who attend SI sessions. SI attendance has positively impacted conditionally-admitted or at-risk students, who arrive at universities with learning gaps affecting their readiness to succeed in challenging college courses (Ogden, Thompson, Russell, & Simons, 2003). SI sessions, however, have not always been related to greater course grades. Ogden, Thompson, Russell, and Simons (2003) found no significant impact on traditionally-admitted students attending SI sessions.

Impact on College Student Retention

The impact of SI attendance on retention and persistence is promising. Wilson and Arendale (2011) note that SI focuses not just on at-risk students, but on historically difficult courses. Yet a review of the history of SI provides support that SI can influence at-risk college students. In a study of the impact of a policy requiring SI attendance for conditionally-admitted students, Ramirez (1997) found that at-risk students who attended SI sessions had the highest persistence rates of any admittance group, including both conditionally-admitted and traditionally-admitted college students. Blanc, DeBuhr, and Martin (1983) found that students who attended SI sessions re-enrolled at higher rates for two subsequent semesters. Kochenour et al. (1997) found that students who attended SI sessions were less likely to withdraw from courses. Gattis (2000) found that DFW rates decreased when SI was used as an intervention, and Etter, Burmeister, and Elder (2001) determined that attrition rates were lower for accounting courses following SI implementation. Grillo and Leist (2013) found that use of academic support services including tutoring and SI sessions was related to higher graduation rates. Finally, Bowles, McCoy, and Bates (2008) found SI session attendance increased the probability of graduating when controlling for high

school GPA. The evidence of the impact of SI sessions on retention and graduation is not as clear.

Some researchers have found minimal effects of SI attendance on retention and persistence rates. Using binary logistic regression, Oja (2012) found that persistence rates were similar regardless of SI attendance status for those with a GPA of 1.0 or higher. Additionally, Bowles and Jones (2004) concluded that SI attendance was not a significant predictor of retention when using a model accounting for prior academic performance. Ramirez (1997) found that traditionally-admitted students persisted and were retained regardless of the SI attendance. These studies demonstrate that the effect of SI attendance on retention is mixed. Gattis (2000) states that those who criticize the efficacy of SI claim that improved grades and retention, purported to be related to SI session attendance, may be the result of an undetermined characteristic of the attendee. Some possible explanations for these characteristics relate to prior academic performance or motivation.

Characteristics of Students Attending SI Sessions

SI session attendees might be marginally more motivated, but this characteristic does not explain all grade or retention differences. Blanc, DeBuhr, and Martin (1983) and Arendale (2001) examined the impact of motivation on attendance and performance in an SI program. They controlled for differences in motivation of students by identifying a group of students indicating interest in attending SI sessions at the beginning of the term, but did not attend SI sessions. Blanc, DeBuhr, and Martin (1983) found that motivation to attend sessions did not solely account for grade differences, re-enrollment differences, or differences in term GPA. Malm, Bryngfors, and Mörner (2011) found that SI attendees in a Calculus class were slightly more motivated than non-SI-attendees, were from families with less higher education, and were more comfortable seeking help.

There is discrepancy in the research on the differences in prior academic performance of SI attendees and non-attendees. Bowles and Jones (2004) found significant differences between high school GPA and ACT scores of those attending SI sessions and non-attenders. Bowles and Jones (2004) found that students with greater high school GPAs and those with lower ACT composite

scores attend SI sessions more often. Another study found that SI participants had lower ACT composite scores than non-SI participants (Hensen & Shelley, 2003). Congos (2005) also found that SAT scores were lower for SI attendees, but the students who attended SI sessions still performed better in the course than their peers that did not attend SI sessions. However, an SI model in the UK found that there were no differences in prior academic achievement of students attending sessions and those who did not (Ashwin, 2003). This analysis of related research suggests that the characteristics of students who attend SI sessions may vary by institution. There is a lack of research on SI attendance and college freshmen retention.

Compelling Need for this Study

While the research consistently suggests that SI attendance positively relates to GPA, the relationship between SI attendance and retention and persistence is less evident (Blanc, DeBuhr, & Martin, 1983; Bowles & Jones, 2004; Etter, Burmeister, & Elder, 2001; Kochenour et al., 1997; Ramirez, 1997; Oja, 2012). Additionally, the literature indicates clear differences in SI session-attending students' backgrounds and motivation. This suggests two gaps: how SI session attendance impacts retention and the characteristics of students utilizing SI. This research used quantitative analysis to explore the impact of SI on retention, in particular, freshman retention for the subsequent year. This study also investigated differences in prior academic performance of freshman students attending SI sessions when compared to those who do not.

Research Questions

The researchers investigated two principal research questions:
RQ1. Is there a difference in ACT composite and sub-scores and high school GPA for first-time freshman students when comparing the students who attended SI sessions and those who did not?
RQ2. Is there a difference in subsequent-year retention of first-time freshman students who attend SI sessions and those who do not?

These research questions provide more information on the relationship between SI attendance and student retention and differences between the prior academic achievement of students

given their attendance to SI sessions. These findings may inform the field by providing evidence of the impact of the SI program on student retention.

Methodology

Institutional Characteristics

SI session data were collected at a moderately selective, public, four-year institution in the Midwest with approximately 6,800 enrolled students. At the institution studied, the SI program has been in continuous operation since 1986. The data were gathered in fall of 2013, and attendance at SI sessions was recorded. Grades for all students enrolled in an SI course are requested from the registrar each term and paired with each student's SI attendance. The researchers removed students enrolled in SI courses in which SI attendance was incentivized in some manner such as extra credit. This lessens the possibility of external incentives as the primary motivation for SI attendance. The remaining data set was given to the institutional research (IR) office to connect SI attendees with prior academic characteristics. The following variables were requested for each student: high school GPA; ACT composite score; ACT English, Reading, Math and Science sub-scores; gender, ethnicity and race; student status (first-time freshman or continuing student); and yes/no retention to fall of 2014. Retention for the fall of 2014 was measured by whether a student was re-enrolled on census date of that term. First-time freshman are students with no higher education credits except for credits brought in from high school. Additionally, IR removed minors and part-time students from the data set, and stripped all personally-identifying information, giving each student a unique ID. The researchers removed all students except first-time freshman, as well as freshman students enrolled in two or more SI courses. The remaining data was first-time, full-time freshman students enrolled in a single SI course.

Participants

Four hundred thirty-three first-time freshmen students were included in the study from courses in multiple disciplines, including agriculture, history, political science, biology, humanities, and music. Session attendance is defined as attending at least one SI session

throughout the fall, 2013 term. See Table 1 for descriptive statistics related to participants' ACT composite and sub-scores, high school GPA, race, ethnicity, and gender. The *N*s vary from 387 to 433 due to some missing data points, usually ACT sub-scores.

Table 1

Descriptive Statistics of the Freshman Students Enrolled in a Single SI-Supported Course

		SI Session Attendance			
Variable	***N***	**Attended**	**Did Not Attend**	***M***	***SD***
High School GPA	426	221	205	3.37	0.45
ACT Composite	428	224	204	22.69	3.36
ACT English	410	214	196	21.49	4.46
ACT Mathematics	410	214	196	21.19	3.90
ACT Reading	410	214	196	22.29	4.61
ACT Science	387	205	182	20.51	3.25
Ethnicity					
American Indian/Alaska Native	1	0	1		
Asian	3	2	1		
Black, Non-Hispanic	27	10	17		
Hispanic	16	9	7		
Multi-race	12	6	6		
Non-Resident Alien	2	2	0		
Unknown	3	1	2		
White, Non-Hispanic	369	196	173		
Gender					
Female	260	145	115		
Male	173	81	92		

Data Analysis

To answer RQ1, the researchers used null hypothesis significance testing and independent samples t-tests to compare group mean high school GPA, ACT composite scores, and ACT sub-scores for students attending SI sessions with those who did not attend SI sessions. If the indicated data point was missing for students, they were removed from the analysis. To determine the presence of significant relationships between SI attendance and retention in the fall, a chi-squared analysis was used.

Findings

Differences in Prior Academic Performance

The first research question sought to determine if there was a difference between the mean high school GPA, ACT composite scores, and ACT sub-scores of students attending and the not attending SI sessions. The results of the independent samples t-tests are shown in Table 2. Students attending SI had significantly different high school GPA and ACT math sub-scores at $\alpha = 0.05$, with $p = 0.000$ and $p = 0.044$ respectively, than students who did not attend sessions. To gain more information, Field (2009) recommends calculating Pearson's correlation r to determine the effect size of the difference for both high school GPA and ACT math sub-scores. The effect size of the difference between the mean high school GPA of the SI session attendees and non-attendees was $r = 0.214$. Field (2009) defines this a low to medium effect, and a statistically significant finding. Additionally, the effect size r was calculated as 0.0997 for the difference in ACT math sub-scores, a low effect (Field, 2009). The researchers failed to reject the null hypothesis that there is no difference in high school GPA and ACT math sub-scores of first-time freshman students when comparing the students attending and not attending SI sessions.

Table 2

Means of High School GPA, ACT Composite Scores and ACT Sub-Scores for Students that Attended SI Sessions and those that Did Not Attend SI Sessions

	Attended			Did Not Attend			
Variable	***N***	***M***	***SD***	***N***	***M***	***SD***	***t*-score**
High School GPA	221	3.52	0.40	205	3.33	0.48	4.52**
ACT Composite	224	23.00	3.24	204	22.91	3.50	0.27
ACT English	214	22.79	4.48	196	22.59	4.45	0.46
ACT Mathematics	214	22.75	3.92	196	21.97	3.85	2.02*
ACT Reading	214	23.30	4.39	196	23.81	4.84	1.10
ACT Science	205	22.96	3.06	182	22.95	3.46	0.03

Note. $*p < 0.05$, $**p < 0.001$

Due to the significant difference between the high school GPA of the SI session attendees and non-attendees, the researchers chose to split the participants into two high school GPA bands, a "High GPA" and "Low GPA" group. This split acts as a partial control for the significant difference in high school GPA between the SI attendees and non-attendees. This approach is similar to Ogden et al.'s (2003) examination of the impact of SI on conditionally-admitted students compared to traditional students as two separate groups and Arendale's (2001) method of breaking up students enrolled in SI courses into quartiles based on prior academic performance and subsequent comparison of the impact of SI attendance on grades in each quartile. The split between the High GPA group and Low GPA group was based on the median high school GPA score of 3.55. Students without high school GPA data were left out of the analysis. As suggested by Field (2009), independent samples t-tests were separately conducted on mean

high school GPA in each group. The results of the t-tests showed no statistically significant differences ($\alpha = 0.05$) in high school GPA between SI attendees and non-attendees in either the High GPA ($p = 0.82$) or Low GPA groups ($p = 0.07$). The results are summarized in Table 3. The difference in ACT math sub-scores, although significant, revealed a minor effect size and was ignored in the analysis.

Table 3

Independent t-Tests on the High School GPA between the SI Attendees and Non-Attendees in the High GPA and Low GPA Groups

			High School GPA		
High School GPA Group	**Attendance to SI sessions in the Fall of 2013**	***N***	***M***	***SD***	***p*-value**
High GPA	Attended	133	3.789	0.14	0.82
	Did not attend	80	3.794	0.15	
Low GPA	Attended	88	3.120	0.33	0.07
	Did not attend	125	3.033	0.36	

Impact of SI Session Attendance on Freshman Retention

Pearson's Chi-Squared analysis was then performed separately on both the High GPA and Low GPA groups to determine proportional retention differences of SI attendance in the fall of 2013 and retention to the fall of 2014. For the High GPA group, Pearson's Chi-Square analysis was not statistically significant at the alpha level of 0.05 between SI attendance in the fall of 2013 and the retention of the students in the fall of 2014, X^2 (1) = 1.081, p = 0.298. For the high GPA group, the researchers failed to reject the null hypothesis that there is no difference in retention for SI attendees and non-attendees. The frequency table of SI attendance for the High GPA group is located in Table 4.

For the Low GPA group, Pearson's Chi-squared analysis resulted in a statistically significant proportional retention differences between the SI attendance in the fall of 2013 and retention to the fall of 2014 at $\alpha = 0.05$, X^2 (1) = 7.924, $p = 0.005$. For the Low GPA group, the researchers reject the null hypothesis in favor of the alternative: there is a statistically significant difference in retention

rates between students who attended SI sessions and those who did not. Additionally, the odds ratio was calculated as 2.273. This indicates that the odds of a student being retained in the Low GPA group are over two times greater if they attend SI than if they do not. A frequency table of the Low GPA group and their SI attendance is located in Table 4. Figure 1 displays a bar graph with retention percentages of High and Low GPA groups.

Table 4

Frequency Table of Fall 2013 Freshman Students who were Retained in the Fall of 2014 and their Fall 2013, SI Session Attendance

		Attendance to SI sessions in Fall 2013	
GPA Group	**Retention to Fall 2014**	**Attended**	**Did not attend**
High GPA	No	15	13
	Yes	118	67
Low GPA	No	26	61
	Yes	62	64

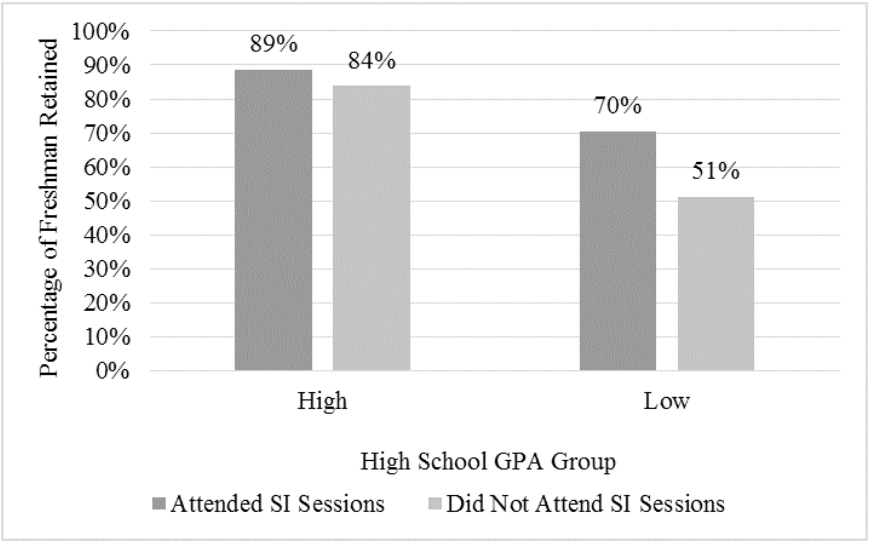

Figure 1. Percentage of Freshman retained by SI attendance status and high school GPA, 2013-2014 (N=426)

Analysis

The significant results of the *t*-test for the difference in mean high school GPA between students who attend SI sessions and those who do not is intriguing. As high school GPA for SI attendees is higher, this might suggest that the academic ability of the SI attendees is, on average, better. By implication, such students would likely succeed and be retained with or without SI sessions. This result is similar to Bowles and Jones's (2004) results that students with high GPAs attended SI sessions. The lack of significant differences in ACT composite scores between the SI session attendees and non-attendees in our study, however, suggests no difference in student academic ability for SI attendees and those not participating in SI. This dichotomy implies that high school GPA may involve some other characteristic other than academic ability. Future researchers may wish to account for the phenomenon of grade inflation in their methodology.

The researchers hypothesize that GPA differences may be attributable to student motivation, as it seems likely high school GPA success is related to effort and motivation, both of which would be predictive of SI attendance. While the researchers did not perform a grade analysis, this finding runs contrary to Blanc, DeBuhr, and Martin's (1983) findings that motivation is not solely attributable for differences in course grades between SI attendees and non-attendees. However, this is in line with Malm, Bryngfors, and Mörner's (2011) conclusions that SI attendees are more motivated.

The Chi-Squared analysis resulted in impactful findings. The Chi-Squared statistic does not indicate a statistically significant difference for the fall 2014 retention of the High GPA freshman students who went to SI and those who did not. Tentatively, these results indicate that students who have a greater high school GPA are likely to be successful and persist with or without attending SI sessions. This result agrees with Bowles and Jones's (2004) findings that SI attendance does not influence retention and mirrors Oja's (2012) findings that students with GPA higher than 1.0 (the vast majority of students at most Universities) would be successful with or without SI. The influence of GPA as a factor in this study differs from Oja's (2012) findings, as our results indicate that freshman

students with a high school GPA greater than 3.55 would likely be successful with or without SI if they are enrolled in a single SI course.

The results of the Chi-Squared analysis for the fall 2014 retention of freshman students with lower than a 3.545 high school GPA were statistically significant. Students with low high school GPA who attended SI sessions were more likely to be retained. By dividing the students into two high school GPA groups, high and low GPA, the prior academic performance and perhaps even the motivation of the students is controlled in this model. These results allow the researchers to conclude that SI session attendance plays a significant impact on freshman student retention for students with a high school GPA less than 3.55. This finding supports Ramirez's (1997) and Ogden, Thompson, Russell, and Simons's (2003) research that SI positively impacts conditionally-admitted, at-risk students who often have a lower GPA coming into college. This study also builds upon Kochenour et al.'s (1997) finding that students with a lower predicted GPA made significant improvement with SI when compared to students with higher predicted GPA. Additionally, the researchers surmise that SI attendance can improve retention across institution types, and may be especially promising for those institutions serving a high percentage of under-represented students from minority backgrounds and/or those from lower socio-economic backgrounds or with first-generation status. This assertion about the efficacy of SI draws upon the literature, especially Kochenour et al. (1997) and Ogden et al (2003).

The results of this study are especially promising when evaluating the impact of SI because the findings are based on a very conservative statistical model. This study involves only freshman students enrolled in one SI course. It does not include students enrolled in two or more SI courses. Our study defines SI attendance as attending one or more SI sessions; it is likely that attending more sessions would yield a far greater impact. These results suggest several additional areas for investigation.

Recommendations for Future Study

There are several potential areas for additional research. If motivation or effort impacts SI attendance and therefore retention,

more rigorous research needs to be performed on the impact of motivation on SI attendance and how that motivation might influence academic performance. Additionally, more research is needed on factors influencing retention among the High GPA group. Specifically, the field would benefit from research examining student characteristics most influential on persistence and retention while investigating differences in student retention among students in different GPA bands when receiving SI. This study only considered freshman participants, and it is likely that SI attendance benefits upper-class students as well. Future researchers might consider identifying the impact of SI attendance on the retention of non-freshman college students. Ramirez (1997) demonstrates that requiring SI attendance for some students has been beneficial, so additional research might investigate the impact of both requiring and incentivizing SI attendance. Our analysis defines SI attendance as attending one session or more; it is unknown what the impact of attending the full complement of SI sessions and its subsequent effect on retention. Finally, future studies investigating Supplemental Instruction may disaggregate the impact of SI attendance by content area, to determine differential impacts which may yield insight into how various majors respond to SI.

Conclusions

Based on the results of this study, SI is a powerful learning assistance strategy for universities to employ to support freshman students' academic skill development and improve retention in traditionally challenging courses. The results of this study support Arendale's (2001) findings that students attending SI sessions have higher high school GPA, while increasing likelihood of retention for lower-GPA university students attending SI sessions.

Special efforts by the administration and faculty should be made to market the benefits of attending SI to the students with lower high school GPA, as they will likely receive substantial academic benefits from attending. As SI is an effective program which retains and helps students develop, it should be expanded to other traditionally challenging courses at the institution studied. The state in which the institution is located has competitive performance

funding based on retention, development, and placement of college students. SI provides an impactful method to improve student retention. SI is also cost-effective, as it uses labor (students) which can be significantly less costly to acquire than full or part-time faculty. Additionally, better retention significantly benefits institutions in the competitive performance funding climate; SI adds value.

Overall, SI programs are effective learning support systems which help college freshman students persist to be retained to the sophomore year. By implication, SI programs should be expanded to help institutions by improving performance on metrics used to evaluate institution retention rate and similar accountability measures used to allot state funds. SI program expansion would likely benefit college students with lower entrance qualifications. Since at-risk students most often attend open-enrollment or moderately-selective institutions, college administrators may consider expanding SI session offerings to target and support at-risk students by encouraging their participation in SI.

In a competitive and rapidly-changing higher education environment, student retention is increasingly significant. This study indicates that well-designed Supplemental Instruction programs provide an avenue for improved college student outcomes, specifically for at-risk students. Learning assistance and support professionals should strongly consider implementing SI programs, which augment retention while developing college student learning and collaboration.

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