

Students' Perceptions of Supplemental Instruction

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ABSTRACT

The purpose of this study was to determine students' perceptions of Supplemental Instruction (SI) for a soil science course. All students enrolled in the course for the two semesters that SI was offered completed the survey. All participants (n = 74) answered the first portion of the survey, then skip logic was utilized to tailor questions for both those who did and those who did not attend SI. The researcher developed survey data revealed that students thought SI was encouraged, well publicized and beneficial for students who wanted to perform better in the course. Students who attended SI identified understanding/reviewing material as the main reason for attending SI. Students would encourage others to attend SI. The principal barrier for those who did not attend SI was due to other obligations at the time the SI sessions were offered. Recommendations for practice are to continue offering SI sessions for Soil Science, but to offer more sessions at a variety of times to try to avoid schedule conflicts for students who want to attend.

Key Words: Supplemental Instruction, Soil Science, Retention

INTRODUCTION

Supplemental Instruction (SI) is a non-remedial approach to learning enrichment that increases student performance and retention. SI offers regularly scheduled, out-of-class review sessions to all students enrolled in a targeted course. SI study sessions are informal seminars in which students review notes, discuss readings, develop organizational tools, and prepare for examinations. Students learn how to integrate course content with reasoning and study skills (General 2018). Typically, learning centered programs, like tutoring or one-on-one with the instructor, operate on a drop-in basis which offer services primarily designed to address the needs of high-risk students. Staff devote a high percentage of time to one-on-one tutorial instruction. SI is different for two major reasons. First, the emphasis is shifted from identification of high-risk students to the identification of high-risk courses. Second, SI is designed to assist students in mastering course concepts while increasing student competency in reading, reasoning and study skills (Blanc et al. 1983). There is a wealth of existing research, which provides evidence that SI is effective in improving student performance and retention. Results typically indicate that SI

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participants have higher average course grades and lower attrition rates than non-participants (Blanc et al. 1983; Javaher 2010; Martin and Arendale 1992).

Through the Academic Assistance Resource Center (AARC), Stephen F. Austin State University (SFASU) has a system for SI already implemented for the entire university. Although the university currently offers over 20 SI sessions for introductory level core courses, the university does not have enough funds to support SI for upper level courses (AARC 2018). Soil Science (AGN 331) has been identified as a historically difficult class within the Department of Agriculture at SFASU so an SI session was assigned to it through the Department of Agriculture rather than through the AARC. For AGN 331, SI was provided in one two-hour session per week. The SI leader polled the students to see what time was best for the most students and fit in the SI leader's schedule to determine the time SI was held. The session was held at the same time each week.

The theory that guided this research was the Model of Student Development and College Impress (Pace 1979). This model theorizes that student time and effort are key constructs associated with outcomes of the college experience, and that the extent to which students exert their time and efforts in educational opportunities contribute significantly to the student's outcome at the university (Pace 1979).

This research is part of a larger study to evaluate the effectiveness and perceptions of SI for AGN 331. This piece of the research determines students' perceptions of SI for AGN 331. More specifically, the study addresses six objectives:

1. Determine students' perceptions of the accessibility of SI for AGN 331
2. Determine students' perceptions of who should attend SI
3. Identify why students attended SI
4. Determine students' perceptions of benefits from attending SI
5. Identify suggestions students had for improving SI
6. Identify students' barriers for attending SI.

MATERIALS AND METHODS

The population for this study were students enrolled in AGN 331 in Fall 2018 and Spring 2019 semesters. All students ($n = 74$) enrolled in AGN 331 these two semesters had access to SI and participated in the study. The researcher-developed survey instrument was composed of three parts: demographics, perceptions of all students and specialized questions targeted to students who attended SI and other questions to those students who did not attend SI. A panel of experts reviewed the survey for content and face validity. Instrument reliability was determined post hoc using Cronbach's alpha only on questions that contained Likert-type statements (the reliability did not include demographic questions, open-ended questions, or rating questions) and resulted in a Cronbach's alpha of 0.932. This survey was approved by the Institutional Review Board at SFASU (AY2019-1090). Individual emails were entered into Qualtrics and the students were emailed a link to the survey. They were given class time to complete this survey during the last week of the course. Open-ended questions were analyzed using open and axial coding to identify emergent themes. Other items were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25 to calculate descriptive statistics.

RESULTS

Objective one sought to determine students' perceptions of the accessibility of SI for AGN 331. All participants rated the statements from "Strongly Disagree" (1) to "Strongly Agree" (6) (See Table 1). The statements with the highest means were "My professor encouraged students to attend SI" ($m = 5.46$, $SD = 0.996$) and "SI was well publicized in my class" ($m = 5.46$, $SD = 1.075$). The statement with the lowest reported mean addressed student accessibility and was "SI sessions were scheduled at times I could attend" ($m = 4.11$, $SD = 1.621$).

Table 1. Accessibility of SI in AGN 331. (N = 74)

Statements	Mean	Standard Deviation
SI was well publicized in my class	5.64	0.980
My professor encouraged students to attend SI	5.51	0.702
I was informed in advance when changes were made to the SI schedule (e.g. cancelled, postponed)	5.46	0.657
SI sessions were held in a convenient location	5.26	0.817
SI sessions were scheduled at times I could attend	3.80	1.641

Note. The scale went from "Strongly Disagree" (1) to "Strongly Agree" (6).

Objective two was to determine students' perceptions of who should attend SI. The Likert-type scale remained the same, "Strongly Disagree" (1) to "Strongly Agree" (6) (See Table 2). The highest reported mean ($m = 5.22$) was for the statement "SI is for students who want to learn all they can to do well in the class" ($SD = 1.024$). The lowest reported mean ($m = 2.23$) was "SI is not beneficial for a student who is already doing well" ($SD = 1.200$).

Table 2. Who is SI for? (N = 74)

Statements	Mean	Standard Deviation
The SI leader does not know the material ^a	5.44	0.939
SI is for students who want to learn all they can to do well in the class	4.89	1.237
SI is not beneficial for a student who is already doing well [†]	4.72	1.031
SI sessions are not beneficial to me ^a	4.44	1.340
SI is for students who are not good at math and science	4.06	1.433

Note. The scale went from "Strongly Disagree" (1) to "Strongly Agree" (6)

^a indicates a reverse coded statement

Skip logic was used to ask a set of questions to students based on their attendance in SI sessions for AGN 331 to gather data for the remaining objectives.

Objective three used an open-ended question to identify why students attended SI. The five major themes that emerged were: to get help understanding material/review material; to get help with assignments/math calculations; to improve grades; the students had problems learning from the professor or the class setting; and to review for tests/exams.

Objective four sought to determine students' perceptions of the benefits of attending SI. The objective was accomplished using two Likert-type sections and an open-ended question. The first Likert-type section consisted of 11 items and the scale ranged from "Strongly Disagree" (1) to "Strongly Agree" (6). The statement with the highest reported mean ($m = 5.63$) was "I would recommend the AGN 331 SI session to other students" ($SD = 0.757$) (See Table 3). The statement with the second highest mean was "I would use SI again in the future" (Mean = 5.47, $SD = 0.882$).

Table 3. Self-Efficacy of Students Skills after Attending SI Sessions. (N = 43)

Statements	Mean	Standard Deviation
I would recommend the AGN 331 SI session to other students	5.53	1.007
I would use SI again in the future	5.24	1.147
SI sessions have helped me focus on important aspects of the course material	5.00	0.707
SI sessions have helped me to understand course material	4.82	0.728
SI sessions have helped me to organize my course material	4.35	1.169
SI sessions have made me a better problem solver	4.18	1.425
SI sessions have improved my study habits	4.12	1.269
SI sessions have helped me to become a better student now than I was in the beginning of the semester	4.06	1.478
SI sessions have improved my note taking skills	4.00	1.118
SI sessions have improved my grade in the course	3.94	1.478
SI sessions have made me more confident about doing well in my other courses than I was at the beginning of the course	3.88	1.654

Note. The scale went from "Strongly Disagree" (1) to "Strongly Agree" (6)

Regarding skills the students learned over the course of attending SI, the highest mean reported was 5.33 for the statement "SI sessions have helped me focus on important aspects of the course material" ($SD = 0.680$) (See Table 4). The second highest skill "SI sessions have helped me to understand course material" had a mean of 5.12 ($SD = 0.762$). The lowest reported mean ($m = 4.35$) was "SI sessions have improved my note taking skills" ($SD = 1.232$).

Table 4. Services Provided by Attending SI Sessions. (N = 43)

Statements	Mean	Standard Deviation
Understanding the material	4.31	1.493
Keeping up with the course material	4.25	1.390
Motivation to do well in class	4.06	1.181
Meeting other students	4.06	1.237
Study strategies	3.56	1.209

Note. The scale went from 1 “Absolutely did not help” to 6 being “Absolutely Helped”

The last Likert-type item answered by students who did attend SI rated the services provided by attending SI sessions. In this construct, students were asked to use a six-point scale very similar to the previous Likert-type items. This scale ranged from “Absolutely did not help” (1) to “Absolutely helped” (6). The statement with the highest mean of 4.72 was “Understanding the material” (SD = 1.350), the second highest reported mean of 4.67 was “Keeping up with course material” (SD = 1.267), and the lowest reported mean was 3.78 for the statement “Meeting other students” (SD = 1.405).

The open-ended question designed for objective four had the students briefly describe what other benefits students felt SI provided them. The four major themes that emerged were: help focus on key elements/study for test; simplify/clarify/understand material; get help with math or assignments/get answers to my questions; and learn study strategies.

Objective five was to identify suggestions for improving SI from students who attended SI. This open-ended question asked students to briefly describe what they might improve about the SI sessions. The four major themes that emerged were: increase the number/variety of times for SI sessions; no suggestions/SI is fine how it is; focus only on material that will be tested; and give students materials and have a variety of activities planned.

Lastly, objective six was to identify students’ barriers for attending SI. This was accomplished by asking students who did not attend SI an open-ended question and ranking a set of pre-identified barriers. The major theme that emerged regarding barriers as to why students did not attend SI sessions, was that students had other obligations (work, class, and other time interferences) when SI was offered. This data gathered from the open-ended question was supported by the ranking of barriers. Participants who did not attend SI were given a list of 10 options, one of those being an “other/text entry” option if the student did not see their biggest barrier on the list. The students were asked to rank their biggest barrier #1 to the smallest barrier #10, if it was not applicable, the student responded with a zero, which was later coded as an 11. The most prominent barrier to students (m = 4.39, SD = 4.012) was “I had class schedule conflicts.” (See Table 5). The second biggest barrier was work schedule conflicts (m = 4.64, SD = 3.832). The barrier that did not apply to them or was least likely their barrier was “I did not like the SI leader” (Mean = 9.39, SD = 3.157).

Table 5. Ranking of Barriers by Non-SI Attending Students. (N = 31)

Barrier Options	Mean	Standard Deviation	Range
I did not like the SI leader	10.82	0.39	0-10
I did not like the content of the sessions	9.55	2.97	0-9
I did not find the sessions helpful	9.19	3.04	0-6
I did not understand how the program worked	9.00	3.05	0-8
I felt unprepared or was too far behind to join	9.00	3.34	0-10
I was not interested	7.77	4.23	0-6
Other ^a	7.67	4.71	0-1
I did not need the help	7.00	4.16	0-9
I had work schedule conflicts	4.85	4.42	0-9
I had class schedule conflicts	4.50	4.58	0-9

Note. Ranking of barriers went from 1 (biggest barrier) to 10 (smallest barrier). If it did not apply students put a 0 in the ranking box (0 was later coded to an 11)

^a indicates a text entry option. Entries included: lived too far away to come late in the day, and I was just lazy.

CONCLUSION AND DISCUSSION

All students enrolled in AGN 331 in the Fall 2018 and Spring 2019 semesters perceived that SI attendance was encouraged and SI sessions were well publicized. The students thought SI was for all enrolled students who wanted to learn, so all students could perform well in the course. Those participants who attended SI attended to get help understanding/review material, to get help with assignments or calculations, to improve their grade, to learn from the SI leader because the students had a hard time learning from the professor or learning in a traditional class setting, and students wanted to review for the test/exam. Students who attended SI would recommend others to attend and would use SI again themselves. The students felt SI helped them focus on important aspects of the course and to understand course material. To improve the SI sessions, participating students suggested increasing the number and variety of times SI is offered and to only focus on material that will be included on a test/exam. Students who did not attend SI identified class and work conflicts as the biggest barrier of attending SI.

Recommendations for practice are to continue SI for AGN 331, but to offer SI in two hourlong sessions per week instead of one hourlong session. One of those sessions should be scheduled later in the evening after most classes have ended. Multiple SI sessions should allow enrolled students who have time conflicts to attend. The professor should also provide the SI leader some indication of material that will be tested so the SI leader can make sure to review that material with the students who attend SI. The SI leader should prepare a variety of activities for SI sessions and provide those who attend with additional resources to use when studying on their own.

Recommendations for research are to continue to monitor the SI sessions for AGN 331 by collecting students' perceptions through surveys and analyzing its effectiveness using test/exam scores and final grades in the course. Additional research on other courses offering SI should be conducted at SFASU and other universities.

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