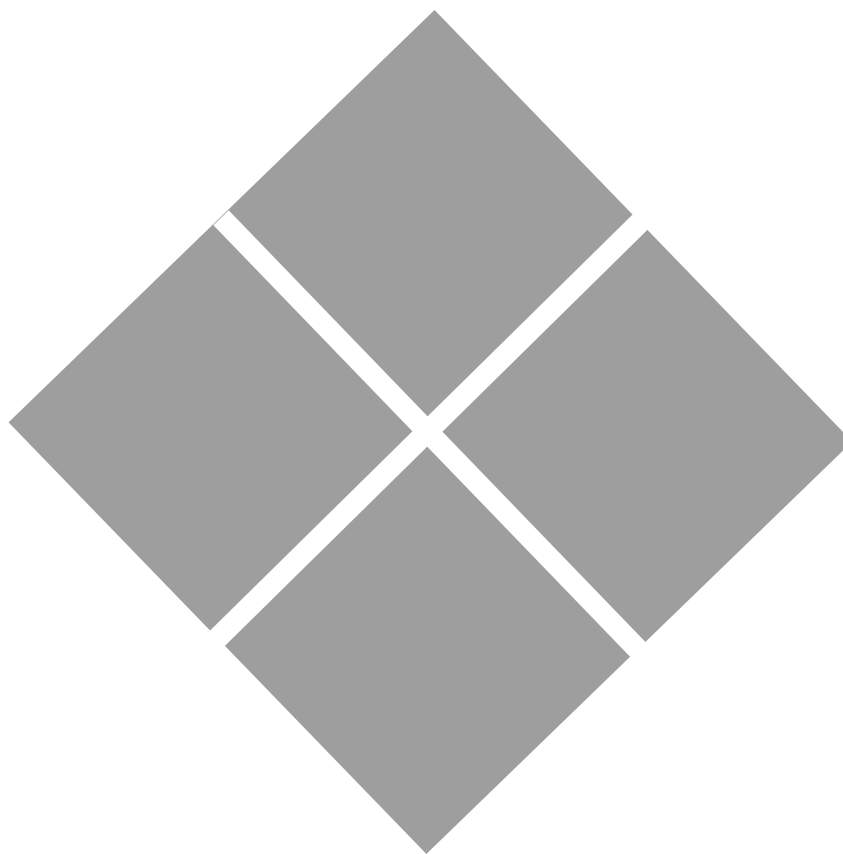


siJ

**The Official Journal of the
International Center for
Supplemental Instruction**



The University of Missouri-Kansas City

About The International Center for Supplemental Instruction

Supplemental Instruction (SI) is an academic assistance program that utilizes peer-assisted study sessions. SI sessions are regularly-scheduled, informal review sessions in which students compare notes, discuss readings, develop organizational tools, and predict test items. Students learn how to integrate course content and study skills while working together. The sessions are facilitated by SI Leaders, students who have previously done well in the course and who attend all class lectures, take notes, and act as model students.

The International Center for Supplemental Instruction at the University of Missouri-Kansas City serves as the international hub for Supplemental Instruction programs across the globe. In the United States of America, the International Center provides training, guidance, support, and resources for institutions of all types through training workshops in Kansas City and on site.

The International Center also has memorandums of understanding with six institutions around the world: University of Wollongong (Australia); University of Guelph (Canada); Nelson Mandela Metropolitan University (South Africa); Lund University (Sweden); University of Manchester (United Kingdom); and North-West University (South Africa—regional center). These institutions serve as national centers or regional centers and support institutions in their country and region in implementing Supplemental Instruction programs.

About the *Supplemental Instruction Journal*

The *Supplemental Instruction Journal* (siJ) seeks to publish the latest research in the field and to be the foremost resource for advancements and discoveries related to Supplemental Instruction. siJ will be peer-reviewed by national and international education professionals working with Supplemental Instruction programs and is intended for a wide audience.

This inaugural issue of siJ includes refereed papers presented at the 8th International Conference on Supplemental Instruction held May 23-25, 2014, in Chicago. Authors of accepted papers presented at the conference and were invited to submit their papers to siJ.

Future issues of siJ will consist of submissions selected by the siJ peer review board. Statistical methodologies should be included in submissions, when relevant, and be clear and succinct. Submissions should provide engaging discussions of findings and consider future applications and implications of those findings. In addition to statistically-based submissions, siJ welcomes submissions that showcase the perspectives and efforts of education professionals and students working with Supplemental Instruction.

Authors interested in publication in siJ should send a manuscript of no more than 20 double-spaced, typed pages (or a maximum of 5,000 words), including an abstract of no more than 150 words and all figures, tables, and graphs. All submissions should be formatted according to the guidelines set by the American Psychological Association in the *Publication Manual of the American Psychological Association*, sixth edition.

Submissions or questions should be emailed to managing co-editors Megan Cross and Patrick Koerner at siJ@umkc.edu.

Call for Submissions

The *Supplemental Instruction Journal* is currently accepting submissions for its second issue.

**Submissions must be submitted in APA format to
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Deadline for submissions is March 1, 2015.

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Adaptations of Supplemental Instruction: Our Course Assistants Wear Many Hats

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Abstract

In this mixed methods study, the influence a grant-funded supplemental instruction program had on students' academic performance at a university in the southwestern United States was examined. Data collection consisted of students' class absences, exam scores, final course grades, hybrid supplemental instruction and tutoring (SIT) attendance, and required Program Coordinator meetings. Analysis of the fall 2013 data demonstrates that students in the treatment sections outperformed students in the control sections. In addition, students within the treatment classes who attended the minimum number of required SIT sessions were more successful in class than those who did not attend the minimum number of sessions, and the faculty, students, and course assistants overwhelmingly supported and participated in the program.

Introduction

With increased focus in higher education on institutional and class level persistence and retention and additional pressure to meet projected graduation rates in four years, many universities are examining ways to improve student success in classes as well as overall success in college. Nationally and internationally recognized programs such as AVID (Advancement Via Individual Determination) and Supplemental Instruction (SI) recognize higher level thinking skills must be learned before students become successful learners. The higher the level of thinking employed, the deeper the knowledge acquired. Students must be taught to understand the connection between a successful college career and the development and use of higher levels of thinking and learning (McGuire, 2006).

To meet these challenges, the university under study enacted the Comprehensive Student Success

Program (CSSP). The CSSP is a grant-funded program awarded by the Texas Higher Education Coordinating Board (THECB). The CSSP targeted classes with traditionally high rates of grades of Ds, Fs, or withdrawals (D/F/Ws). The program also looked holistically at each student in the program to determine risks, academic or otherwise, which may negatively impact the student's ability to be successful in class and at college. The CSSP implemented mandatory supplemental instruction in the CSSP sections and utilized MAP-Works® as the tool for identification of risks, other than academic, which may adversely impact the students in these sections. Course Assistants (CAs) were placed in all treatment classes, and academic progress was closely monitored.

To examine the effectiveness of the CSSP, the following research questions were explored:

- 1) Will class averages be higher in classes which offer mandatory supplemental instruction than in those that do not; and
- 2) Will students who attend the minimum required number of hybrid supplemental instruction and tutoring (SIT) sessions (four) during a semester have higher success rates than those who do not attend the minimum number required?

Literature Review - Traditional Supplemental Instruction

Supplemental Instruction (SI) was developed at the University of Missouri at Kansas City (UMKC) by Dr. Deanna Martin in 1972. The program is designed to increase persistence and retention in high-risk classes by offering voluntary, scheduled, peer-facilitated instruction outside regularly scheduled class time. SI does not target remedial students, nor does it identify students who may be at-risk academically. Instead, SI traditionally targets courses with high rates of D/F/Ws. SI is available from the beginning of the course, so students do not need to wait until they have an academic need for SI (University of Missouri-Kansas City, 2014).

SI helps students develop many of the skills they need to be successful in the academic setting. Many students enter college lacking the skills and motivation to be successful learners (McGuire, S., 2006). SI teaches “students *how* to learn” (p. 4) as well as motivates “them to *want* to learn” (p. 4). SI encourages students to move beyond memorization and regurgitation toward application and evaluation of materials

covered. SI also incorporates important study skills such as time management and note-taking skills into SI lessons. The SI model is centered on peer-led, group-based, collaborative discussions about course material and how they relate to one another (McGuire, 2006).

Research suggests that SI effectively improves the success of all students who participate in SI (Malm, Bryngfors, & Mörner, 2011; Malm, Bryngfors, & Mörner, 2012; Ogden, Thompson, Russell, & Somons, 2003; Shaya, Petty, & Petty, 1993). Some research suggests success rates among at-risk students improve significantly when students attend SI (Shaya et al., 1993). Students who attend SI and are identified as at-risk for academic and other factors outperform the rest of the class (p. 710). Ogden et al., (2003) found students who were conditionally accepted into college and participated in SI courses earned significantly higher grades than conditionally accepted students in non-SI courses. Non-conditional students in SI courses also outperformed their counterparts in non-SI classes (p. 6). Other research indicates that students with identified risk-factors, such as weak past performance in math, experience similar success rates as those with stronger backgrounds when both groups attend the average or more than average number of SI sessions (Malm et al, 2011). SI appears to help all participants, and it may enable students with weaker educational backgrounds in a subject to be as successful as those with stronger backgrounds in a subject.

A key factor to the success of SI is SI Leaders. Leaders have performed well in the targeted course, and completed a two-day training which included hands-on activities similar to what were used during SI. Leaders attend class, take notes, create lessons, facilitate SI sessions, and act as role models for students. Typically, SI Leaders hold three or more 50 minute SI sessions per week (University of Missouri-Kansas City, 2006). They also hold one office hour for tutoring each week (University of Missouri-Kansas City, 2004).

The role of the Leader carries significant responsibility. Leaders create detailed lesson plans which include cooperative, collaborative activities. Peer-led group discussions and activities encourage students to explain challenging concepts, learn various problem-solving techniques, and engage deeply to understand the course content (Paideya & Sookrajh, 2010). The lesson plans include an opening activity, one or two primary objectives, and the “learning strategies to be used to accomplish the objectives” (Hurley, Jacobs, & Gilbert,

2006, p. 17). At the beginning of the sessions, Leaders explain what will be covered during SI as well as how the content will be covered. Leaders must be approachable, knowledgeable, and engaging. They do not “teach” in SI; instead, they guide students to locate answers, improve study skills, and learn to think critically and deeply about the content covered in the course (Hurley et al., 2006). Students need to trust the knowledge of the Leader and believe SI is beneficial because it helps everyone understand challenging material. If students are not comfortable with a Leader, then they are less likely to buy into the program.

Other key roles to SI implementation are the SI Supervisor and SI Mentors. In the UMKC SI model, the Supervisor is responsible for hiring and training Leaders, locating space for SI, maintaining the budget, and meeting with faculty and support staff involved with the program (University of Missouri-Kansas City, 2006). The Mentor is a liaison between the Supervisor and the Leaders. The Mentor’s primary function is to provide support and guidance for the Leaders. They observe Leaders during sessions and, after the session has concluded, they debrief the Leader and discuss the strengths and weaknesses of the CAs facilitation of the session. Mentors also help with data collection, paperwork, outreach, and meet weekly with the Supervisor to share information about the Leaders with whom they work (University of Missouri-Kansas City, 2003). The Supervisor, Mentors, and Leaders evaluate, discuss, and modify strategies throughout the semester (University of Missouri-Kansas City, 2006).

Understanding the importance and delivery of SI is also important for the faculty involved in SI classes. Faculty are key in the promotion and support of SI. Faculty who are enthusiastic and introduce SI as a positive program encourage student buy-in and SI attendance (Hurley et al., 2006). Faculty can mentor the SI leaders in difficult content and delivery of SI sessions. Through regularly scheduled meetings with SI leaders, the faculty can mentor SI Leaders, and receive feedback on the SI sessions and about challenges or successes of the students in the class (p. 15).

Research shows students who attend SI learn the material more deeply and perform better than students who do not attend SI. In addition, students who attend SI tend to persist through graduation (Zerger, Clark-Unite, & Smith, 2006; University of Missouri-Kansas City, 2014), an increasingly important goal for colleges

and universities. In addition, SI leads to increased reenrollment rates and graduation rates (University of Missouri-Kansas City, 2014). Bronstein (2008) notes that students in Physical Chemistry with SI support indicate they have reduced anxiety toward the subject matter, and they believe SI contributed to their academic success in the class (p. 43).

The benefits of SI extend beyond the students in the SI courses. The SI Leaders and the SI supervisors are trained to mentor higher levels of thinking and move students from memorization to application and evaluation of concepts. Faculty can mentor the Leaders in difficult content and delivery of SI. Through regularly scheduled meetings with SI Leaders, the faculty can receive feedback about challenges or successes of the students in the class (Hurley et al., 2006). These discussions offer the faculty insights that may not be available in non-SI classes until the end of the semester. Feedback may also be used in curriculum design to better meet students' needs (Zerger et al., 2006). In addition, SI contributed to creating a "culture of belonging" (p. 70), increased student satisfaction, and provided a better, deeper understanding of successful student behavior (p. 70).

Leaders are also positively impacted through their participation in an SI program. Leaders gain a better, deeper understanding of the course materials (Lockie & Van Lanen, 2008; Stout & McDaniel, 2006; Zaritsky & Toce, 2006). Leaders also report an improved understanding of differing learning styles and how students cope with academic stressors. Leaders strengthen their leadership abilities and build effective communication skills through their role in SI. In addition, they report an increase in self-confidence and increased participation in their own courses (Lockie & Van Lanen, 2008; Zaritsky & Toce, 2006). Leaders also feel "a great deal of personal satisfaction" (Lockie & Van Lanen, 2008, p. 12) as students' levels of understanding of the course material increases.

Methodology

Setting

The study was conducted at a doctoral granting, mid-sized university in the southwestern United States during academic years 2012-2013 and 2013-2014. The analysis presented focused on fall 2013. Treatment and

control sections were randomly chosen for each subject: College Algebra, Introduction to Statistics, Introduction to Chemistry, and Microbiology. Microbiology was included in the study only during the 2013-2014 academic year. All sections met twice per week for 80 minutes except the Microbiology control class which met during the evening once a week for 160 minutes. All classes are considered freshman-level classes. The control sections were taught without any interventions while the treatment classes required participation in SIT, MAP-Works[®] survey completion, and potentially, required meetings with the Program Coordinator, the CSSP's version of the SI Supervisor.

CSSP Grant Requirements

The CSSP grant required all students within the CSSP sections to: 1) attend two Supplemental Instruction sessions with a course assistant, and 2) attend tutoring twice during the semester. After the university's early warning system's announcement of failing grades, approximately four weeks into the semester, students who were identified as at-risk academically were required to attend four additional Supplemental Instruction sessions and attend weekly tutoring. Students were considered academically at-risk if their class average fell below 70%, and once they were identified as at-risk academically, they were considered at-risk for the rest of the semester. Students who were at-risk academically or who are identified through MAP-Works[®] as at-risk for something other than academics, such as financial, emotional, or social risks, were required to meet with the CSSP Coordinator to discuss ways to mitigate risks which may adversely affect the student's ability to be successful in class and at the university. Students who were at-risk were assigned to a Course Assistant (CA), the CSSP's version of an SI Leader, who served as a peer mentor on an as-needed and as-appropriate basis. All at-risk students were required to have two-way contact with a CA at least twice a month. Two-way contact was made through email, texting, phone calls, or face-to-face meetings.

CAs were responsible for facilitating SI sessions, holding tutoring sessions, and collecting data for the program. They also attended class, took notes, and modeled exemplary student behavior.

The Evolution of the Hybrid Version of SIT from Fall 2012 to Fall 2013

From implementation, the CSSP SI model varied from the traditional SI model. Instead of one Leader

per class, the CSSP placed a ratio of one CA to 20 students in class. Thus, three to six CA's were placed in each CSSP section. In the first year of the program, each CA held multiple, separate SI and tutoring sessions each week. In the refined CSSP, each CA held five hybrid SI and tutoring (SIT) sessions every week. In some courses during class-time, the CAs facilitated in-class activities, and they led class review sessions, but in other classes they spent most of their time in class modeling good student behavior and note-taking skills. An additional variation from traditional SI was that SI (and tutoring) was required by the CSSP instead of being voluntary. With multiple CAs in each section, the schedule of SIT sessions was designed to allow all students in class to participate in SIT. If a student could not attend any of the scheduled sessions, then the schedule was amended to include a time when that student was able to attend.

There were several challenges in the first year of the program. Tracking was complicated and time-consuming for the CAs and for the Coordinator. Too many emails were sent to students, such as reminders of surveys, SI and tutoring scheduling changes, and peer mentoring outreach. Students were overwhelmed by emails, and they had difficulty keeping track of whether sessions were SI or tutoring. A Course Assistant Mentor (CAM) was hired in fall 2013 to act as a liaison between the Coordinator and the CAs and to help with paperwork submission and processing. The CAM's role is closely modeled after the UMKC SI Mentor.

There were also variations as to how the grant requirements were incorporated into each course. Two of the classes included the grant requirements in their syllabi, and one class did not mention the grant or its requirements in the syllabus. The CSSP used an IRB-approved informed consent during its first year, which was two full pages and quite daunting to read, so numerous students opted out of the study. It was clear that consensus was needed for how the grant should be implemented in all classes. In addition, the data-tracking methods had to be streamlined; the CAs responsibilities needed to be more narrowly focused; and the type of session, whether tutoring or SI, needed clarity.

Lack of buy-in was also an issue during the first year of the program. The students in the classes did not want to be obligated to attend SI or tutoring. There was a perception that SI and tutoring were only for students who could not do well in class without help. Not only was it important to convince the students SI is designed

to help all students, it was also important to have the faculty, staff, and the CAs believe it too. Thus, one of the goals of the CSSP became self-promotion. The CSSP was tasked with spreading the word throughout the university that SI targets challenging courses and not struggling students. The program was continuously evaluated and small adjustments were made in the first year, but significant changes to the format did not occur until the second year of the program.

Through feedback from previous and new CSSP faculty, consensus was reached that each CSSP section would count CSSP requirements as 10% of each student's grade, mandatory attendance would continue, CSSP requirements would be similar in all courses, and the requirements would be incorporated into the class via the syllabus. The elimination of the informed consent reduced some of the paperwork associated with the program, but more importantly, reduced the trepidation associated with signing a lengthy informed consent.

To reduce the confusion associated with holding multiple SI sessions and multiple tutoring sessions, a hybrid version of the sessions which included both SI and tutoring (SIT) was introduced. SIT was less than one hour long, and the majority of the session was SI with the final 10-15 minutes reserved for tutoring. At the end of each session, CA's often administered an assessment of the content covered. The assessment was not graded, but it offered the students an opportunity to self-assess their knowledge. Each CA was responsible for creating one or two lesson plans each week. The lesson plans were reviewed each week by either the Coordinator or Course Assistant Mentor (CAM). The faculty agreed that all students must attend a total of four SIT sessions during the semester, one prior to each exam. This requirement exceeded the terms of the grant and, because SIT was hybrid Supplemental Instruction and tutoring, this requirement also covered the grant-requirement for each student to attend two tutoring sessions per semester. If at any time during the semester a student's average in class dropped below 70%, additional mandatory interventions were implemented. These interventions included attending additional SI sessions, attending weekly tutoring at one of the university tutoring centers (weekly attendance at SIT covered the requirement for weekly tutoring) and, as needed, included bi-weekly peer mentoring. All students identified at-risk, academically or otherwise, were required to

meet privately with the CSSP Coordinator during the semester.

During the first year of the grant, the Coordinator relied heavily on the faculty and other CAs for referrals for CAs. Many of the students recommended for the CA position were already working in the Mathematics or Science tutoring centers located on campus. Hiring these students for the CSSP meant reducing the available, qualified tutoring center workers. To expand the pool of potential Course Assistants and to reduce the drain on the tutoring centers, a formalized application and recommendation process was created, and the forms were posted on the university's Career Services website. The primary result was that the pool of potential CAs was greatly expanded; the secondary result was that students across many disciplines became aware of the CSSP. The challenge of identifying well-qualified, appropriate CAs was met, and the CSSP Coordinator received inquiries about the position throughout the semester from students familiar and unfamiliar with the program. The Program Coordinator individually interviewed qualified applicants; however, the faculty was included in the final decision to hire all CAs.

Three Course Assistants were placed in each of the Mathematics treatment classes, which were capped at 60 students, and six CAs were placed in each of the Science treatment classes, which were capped at 120 students. Each CA offered at least four to five SIT sessions per week. Past experience showed more students attended SIT immediately following the class capped at 120 students; therefore, two CAs worked together to facilitate SIT sessions immediately following the Chemistry and Microbiology classes. Additional Exam Review sessions were offered within the week prior to an exam for all classes.

Additional formalized training was incorporated into the CSSP at the beginning of the second year of the program. Faculty and CAs had formal training which included the experiences of a past faculty participant and definitions and applications of traditional and hybrid SI models. SI training for CAs was more in-depth and included modeling of SIT sessions. To increase the level of understanding and expertise for CAs and faculty, UMKC facilitated an SI Leader workshop in October 2013.

Students in need of peer mentoring were assigned to CAs as the students were identified by the CSSP Coordinator with a specific need for peer mentoring. An example of a student in need of peer mentoring was

one who was extremely homesick or not making social connections at the university. The Coordinator also assigned one-to-one tutoring for some students who were actively participating in SIT but continued to struggle with specific concepts.

In fall 2013, both sections of Statistics were taught by the same professor, and both sections of College Algebra were taught by the same professor. There were two different professors for the two sections of Chemistry; however, they worked closely together to try to limit variations in content delivery. The Microbiology sections were also taught by different instructors. Unfortunately, due to several technical challenges in the control section, the results were not reliable. Thus, the class used for comparison instead of the control class was the Microbiology class from fall 2012. Microbiology in fall 2012 was taught by the same professor who taught the treatment class in fall 2013.

Data Collection

Data were collected regarding class absences, exam scores, final course grades, SIT attendance, and required meetings with the Program Coordinator. Students signed in for each SIT session and, at the end of each week, each CA submitted this information. The total number of SIT sessions attended prior to each exam was made available to each professor throughout the semester.

Analysis

Analysis was conducted by two methods. First, the treatment and control classes were compared. Overall class grade point averages were compared with and without withdrawals. Additionally, success and lack of success within the treatment class was compared to success and non-success in the control classes. The second analysis compared those who attended the minimum number of mandatory SIT sessions and those who did not attend the required minimum number of sessions within each treatment class. Logistic regression was used to determine if attending SIT the minimum number of required times (four) had a statistically significant impact on success.

The dependent variable in the regression is Success/Non-success. Success is defined as ending the course with a letter grade of A, B, or C, and Non-success is defined as ending the course with a letter grade of

D, F, or W. Independent variables included in the regression model were Race, Gender, Age, and Met Minimum SIT. Race was dummy coded using “White” as the reference group. Gender was coded with “Female” as the reference group. Age was grouped and then dummy-coded with “Teens” as the reference group. The minimum number of SIT required was four; therefore, students who “Met Minimum SIT” attended SIT at least four times during the course of the semester.

Results

In each course, the treatment class outperformed the control section. The overall class average was higher in the treatment classes than in the control sections, and the proportion of successful students was also notably higher in the treatment sections. Table 1 presents the class GPA, based on a 4.0 system, with and without withdrawals (Ws) and the overall success rates in the treatment and control classes.

Table 1

Fall 2013 Comparison of Success

Course	Class GPA	Class GPA with Ws	Success (Grade A, B, C)	Non-Success (Grade D, F, W)
Algebra (T) N=58	2.45	2.33	74.14%	25.86%
Algebra (C) N=57*	2.35	2.11	61.40%	38.60%
Statistics (T) N=53	2.22	2.06	66.04%	33.96%
Statistics (C) N=44	1.64	1.57	52.27%	47.73%
Chemistry (T) N=119**	2.50	2.35	68.07%	31.93%
Chemistry (C) N=95	2.26	2.17	64.21%	35.79%
Microbiology (T) N=126	2.19	1.93	61.11%	38.89%
Microbiology (C) (Fall 2012) N=106	1.96	1.44	42.45%	57.55%

*1 incomplete; **2 incompletes

Logistic regression results indicate that those who met the minimum number of required SIT sessions during the semester are more likely to be successful than those who did not attend the minimum number of mandatory

SIT sessions. Table 2 provides an illustration of the variables included in the regression models. Tables are not included for College Algebra, Introduction to Statistics, and Microbiology as the only significant factor was whether the student met the minimum number of mandatory SIT sessions. All four models demonstrated a statistically significant relationship between attending SIT sessions at least four times during the course of the semester and success in the course.

Unlike the results for the other three treatment sections, the results for the Chemistry class reveal several statistically significant relationships in the model. Black and Hispanic students are less likely to be successful than White students in Chemistry. Students who are 20-29 years old are less likely to be successful in Chemistry than those in their teens. Cox & Snell R^2 indicates that 29.9% of the variation in the dependent variable is explained by the logistic model. Nagelkerke's R^2 of .418 suggests a moderate relationship between the independent variables and the dependent variable.

The results indicate class averages, with and without the withdrawals included, were higher in all of the treatment sections. The success rates in all treatment classes exceeded the success rates in all control classes. Finally, students who attended the minimum required number of SIT sessions (four) during the semester had a significantly higher success rate than those who did not attend the minimum number required.

Table 2

Chemistry and SIT

Variable	B	Wald	Odds Ratio	95% CI	
				Lower	Upper
Race (White)					
Asian	-.418 (1.021)	.168	.658	.089	4.865
Black	-1.873** (.670)	7.805	.154	.041	.572
Hispanic	-2.115** (.728)	8.432	.121	.029	.503
Gender (Female)					
Male	.628 (.763)	.677	1.874	.420	8.362
Age (Teens)					
20-29	-1.998*** (.540)	13.704	.136	.047	.390
30+	-1.590 (.942)	2.849	.204	.032	1.292

Met Minimum SIT	1.723** (.565)	9.305	5.602	1.851	16.952
Constant	1.633*				
-2log likelihood	106.853				
Model χ^2	142.222				
Pseudo R ²					
Cox & Snell R ²	.299				
Nagelkerke R ²	.418				
Degrees of freedom	7				
N	119				

*p<.05 **p<.01 ***p<.001 (two-tailed test)

Discussion and Conclusion

Based in the results, the research suggests the CSSP's variation on the SI model was successful and gained more positive attention and results each semester it was implemented. The results clearly indicate that those students who attended SIT outperform those students who did not attend. Although in its infancy, the CSSP is growing in popularity among students, CAs, and professors. The SIT model is continuously reassessed and adjusted as needed, but its foundation is firm. The hybrid version of Supplemental Instruction and tutoring works well for those involved with the CSSP at the university under study.

Students in the CSSP sections credit the CAs and SIT for their ability to be successful in difficult classes. They appreciated having the opportunity to work in small groups and ask questions they were too nervous to ask in a large class. SIT sessions provided support for deeper learning and was where Course Assistants mentored and motivated students to be successful. Most students were also excited to be part of the CSSP sections, and an increasing number of students request to enroll in CSSP sections or applied to be a CA. Feedback from students overwhelmingly indicates having CAs in their classes was beneficial, and they often express the desire to expand the CSSP to other courses.

In addition to improvement in class averages and success-rates for students in CSSP sections, Course Assistants and faculty also reported benefits from working with the program. Similar to Lockie & Van Lanen's (2008) findings regarding SI Leaders, the CSSP Course Assistants reported they gained a better understanding of the course material and the ability to explain it. They also enjoyed helping others be successful and

especially enjoyed when students “got it.” The faculty reported a more positive atmosphere in-class than in the past, as well as a positive impact on the number of students who were successfully passing with a grade of 70 or higher.

Plans to transition the program to include more students and courses are ongoing. The holistic approach to identifying a variety of risk factors and then addressing them through the use of CAs and Coordinator meetings is working to create a network of support for each student in the CSSP.

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Supplemental Instruction as a Mandatory Lab Component for Developmental Education Courses at Community Colleges

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Abstract

Students enrolled in developmental education courses have very low rates of persistence, especially at the community college level. Nationally, only 31 percent of those referred to developmental math successfully complete their sequence (Bailey, 2009). At Austin Community College, only 44.1 percent of entering First Time in College (FTIC) mathematically underprepared students returned to college the subsequent fall semester (Texas Higher Education Coordinating Board [THECB], 2011). The number of persisting students from Fall 2010 to Fall 2011 drops even lower for FTIC students who are underprepared in reading and writing, at 39.7 percent and 42.5 percent, respectively (THECB, 2011). The following discussion will center on the idea that Supplemental Instruction should be a required component of developmental courses, especially developmental mathematics, at the community college level. Pairing developmental courses with a mandatory lab component addresses many of the contributing factors that aid in student retention: social and academic inclusion, time management and study skills, financial aid issues and the development of student self-efficacy. Also examined are the implications of turning the mandatory lab component of Austin Community College's Quality Enhancement Plan that began in Fall 2013, into Supplemental Instruction sessions.

Keywords: Supplemental Instruction, Developmental Education, Retention, Mandatory Lab, Community College

Supplemental Instruction (SI) is a learning resource that has been in existence since 1973. As the 1960s gave rise to the Civil Rights Movement, many students from underrepresented groups gained greater access to higher education. The SI model was created at the University of Missouri-Kansas City (UMKC) as a response "to a need at the institution created by a dramatic change in the demographics of the student body

and a sudden rise in attrition” (Arendale, 2002). Initially piloted as a support service for minority students in the health professions, SI was expanded to undergraduate courses at UMKC in 1981 after its proven success (Arendale, 2002). In an effort to avoid the stigmatization associated with “remedial” courses, SI was marketed as a resource to help students succeed in traditionally difficult courses, rather than as a resource to help students with academic difficulties. At the undergraduate level, classes that are considered traditionally difficult are the gateway, or gatekeeper courses, those courses that have high attrition rates such as College Algebra, Composition One and History One. However, any course that has a “30 percent or higher rate of D or F final course grades and course withdraws” can be supported by Supplemental Instruction (Arendale, 2002).

Since the creation of Supplemental Instruction in 1973, it has been adopted and adapted by institutions worldwide. An example of the model’s adaptation is illustrated at Austin Community College (ACC), where SI supports two courses in the developmental mathematics sequence, Elementary and Intermediate Algebra. While developmental mathematics courses are not gatekeeper courses, they do have very high attrition rates. In Fall 2009, of the 17 classes with the largest enrollment at ACC, the four with the lowest success rates were in the math department (“QEP,” n.d.). In Basic Math, MATD 0330, only 52% of students, or 2,542 of the students enrolled in the course, were successful (“QEP,” n.d.). The success rate drops when students move on to Elementary Algebra, MATD 0370, which has a success rate of 46%, or a total of 3,162 successful students, and Intermediate Algebra, which has a success rate of 48%, or a total of 2,022 successful students (“QEP,” n.d.). Success, in this case, is defined by passing the course. Additionally, at ACC, only 44.1 percent of entering First Time in College (FTIC) students who were underprepared returned to college the subsequent fall semester (Texas Higher Education Coordinating Board, 2011). The percentage of persisting students from Fall 2010 to Fall 2011 drops even lower for FTIC students who were underprepared in reading and writing, at 39.7 percent and 42.5 percent, respectively (Texas Higher Education Coordinating Board, 2011). Nationally, only 31 percent of those students referred to developmental mathematics courses successfully complete the course sequence” (Bailey, 2009).

Community colleges, largely due to the open door admissions policies and affordable tuition rates,

enroll “more than one in every three undergraduates nationally” (Weiss, Vish & Wathington, 2010). Additionally, on a national level, “well over half of the students who begin community college do so unprepared to succeed,” and, “almost 60 percent of community college students take at least one developmental education course” (Collins, 2009, p. 1111). Of the 60 percent of students who are referred to developmental education courses nationally, “only 15 percent complete all of their developmental education requirements within the first academic year” (Collins, 2009, p. 1111). These statistics clearly illustrate the imperativeness of support and intervention for developmental students, especially at the community college level, in their first year of post-secondary education. These success rates also highlight the fact that current practices, with regard to instruction and support services, are not working for a majority of students enrolled in developmental courses.

The current SI model is met with little success in developmental courses when success is measured by the percentage of students who attend SI sessions supporting their course. In the Spring 2013 semester, two of the nine SI Leaders for Elementary Algebra at ACC quit mid-semester due to lack of attendance. Most of the remaining SI Leaders for Elementary Algebra have low attendance when compared with subjects like College Algebra or Chemistry One. In Spring 2011, 62 of 262, or 24 percent of students enrolled in a developmental math class supported by SI at ACC, attended a session during the semester (Gilmer, 2011). Since attending SI sessions is voluntary, many students do not have the time and/or motivation to attend these sessions. It is also likely that these students feel stigmatized by their placement into developmental courses and do not want to risk further stigma by seeking help and taking advantage of learning assistance services, even if they do not understand the material. All too often, “students who are at risk are notorious for their reluctance to refer themselves for assistance until much too late. Whether it is through denial, pride or ignorance, students who need help are the least likely to request it” (Arendale, 2010). For this reason, some may argue that including Supplemental Instruction as a support service in developmental classes is a waste of resources.

The following discussion will center around the idea that Supplemental Instruction should be a required component of developmental courses, especially developmental mathematics, at the community college level,

specifically at ACC. In researching the possibilities of implementing SI as a mandatory lab component, it was discovered that there is an ideal partnership to bridge SI with developmental mathematics: the Quality Enhancement Plan (QEP) set to be piloted at the ACC Rio Grande Campus in Fall 2013. With “30 percent of all entering college students enrolling in one or more developmental courses” (“National Center for Education Statistics,” 2003), ACC has decided to take action in the form of the QEP. The QEP is a redesign of the Basic Math Class, MATD 0330, that will include the use of collaborative learning activities, study skills and computer-assisted instruction (“QEP,” n.d.). The redesign will also co-enroll students in a required lab course where there will be a tutor on hand to assist the students. It stands to reason that SI sessions should comprise the required lab in order for the QEP to be most effective, since much of the theoretical framework involved with the rise of developmental education mirrors that of the creation of the Supplemental Instruction model. Pairing developmental courses with a mandatory, SI Leader-led lab component will address many of the contributing factors that aid in student retention: social and academic inclusion, time management and study skills, financial aid issues and the development of student self-efficacy. The QEP and SI make a logical partnership that will maximize the use of college resources and student gains while ensuring that efforts are not duplicated.

Arguments for the Institution of Mandatory Supplemental Instruction

Social and Academic Inclusion

Supplemental Instruction provides students with academic and social inclusion, two factors that have been shown to play key roles in retention. Vincent Tinto theorized that “students need to assimilate into both the academic and social communities of the college” in order to be successful (Seidman, 2012). After extensive study of student retention beginning in the 1960s at UCLA, Alexander Astin, building on Tinto’s theory, concluded that “involvement is the key to retention. Simply put, the more students were involved in their academic endeavors and college life, the more likely they were to be retained” (Seidman, 2012).

When students participate in SI sessions, they are establishing both social and academic ties, rooting them in the culture of the college. They are able to establish relationships with the other students in their

classes, which addresses both the academic and social involvement components of retention. Additionally, the unique nature of the SI session environment allows for the students to partake in both social and academic aspects of interaction simultaneously. While a student may come to the sessions to work on homework or to prepare for a test, he or she may also find out about the free food in the student lounge or which classes the other students in the session are going to take next semester. Students might even decide to take classes together the next semester in order to have their own study groups after having experienced the support and success that studying in groups can provide.

Of note as well within the discussion of social and academic involvement is the nature of the community college student, particularly at ACC. ACC is unique in that it consists of eight campuses spread across the Austin-Metropolitan area, so many students are taking classes at multiple campuses, meaning that they must factor in time to get from one campus to the next, often leaving little downtime at a given campus. This time outside of class, perhaps studying or having chance social interactions in common spaces, is imperative for social and academic acclimation and integration into college culture. Many students who attend ACC are considered “non-traditional” in that they “customarily contend with logistical factors associated with getting to campus...and multiple life roles” (Silverman, Aliabadi & Stiles, 2008). All of the students at ACC are commuters. Many of them are attending college on a part-time basis because of other life obligations. Some transfer from other institutions and many are returning to school after being in the workforce or military for a number of years. For this reason, “institutions must provide options that help bridge the gap between Commuter, Part-time, Transfer and Returning (CPTR) students and traditional student experiences” (Silverman et al., 2008). From a broader standpoint, CPTR students, given their multiple life roles, “have limited time to form relationships with their peers” and “establishing a close working relationship with other students provides emotional support and strengthens educational gains from the curriculum” (Silverman et al., 2008). Students returning to school after a number of years comprise a sizable portion of students in developmental classes. They are often a bit rusty with regard to the knowledge and habits required to be successful in college-level courses, but they are motivated to learn. As such, they are prime candidates to be successful with the assistance of Supplemental Instruction, but if they are not co-enrolled in a mandatory lab, other life factors will, all too

often, keep them from attending sessions.

Additionally, there is a paradox that the students who most need help are the least likely to seek assistance. Students tend to have conflicting emotions regarding learning assistance. “They appreciate the help of learning assistance personnel to strengthen their academic skills...[but] contact with these activities inadvertently leads to self-stigmatization because they recognize that not all students use the same learning assistance activities” (Arendale, 2010). In this way, the traditional Supplemental Instruction model, which involves voluntary attendance, does not work for a majority of developmental students: “a major disadvantage is that students who do not generally seek help do not participate. They are then at higher risk for academic failure,” and, “such unintended stigmas can cause motivational problems for developmental students” (Arendale, 2010). Making SI session attendance mandatory in developmental courses would negate this issue. Qualifying the SI session as a lab would further validate and destigmatize the resource, since there are many non-developmental courses with a mandatory lab component as well.

Teaches Students How to Learn

Developmental Education and Supplemental Instruction share one major common thread in terms of philosophical origination; they both emphasize student development rather than student deficit. In fact, “part of the universal appeal of the SI program is the academic improvement for students from a wide range of academic ability levels and course content areas” (Arendale, 2002). Of significance, in terms of comparison, is the definition of developmental education as determined by the National Association of Developmental Education: “Developmental education is a field of practice and research within higher education with a theoretical foundation in developmental psychology and learning theory. It promotes the cognitive and affective growth of all postsecondary learners, at all levels of the learning continuum” (1996). Developmental education, “rather than focusing on student deficits, assumes that each student has talents that can be developed beyond dealing with improving weak skill areas” (Arendale, 2002).

In the same way, Supplemental Instruction focuses upon “teaching students how to learn and in motivating them to want to learn” (McGuire, 2006). Cognitive development is accelerated and given deeper

meaning through involvement in collaborative learning. When students participate in SI sessions, they must not only solve problems and work through difficult concepts with their peers as a group, they must also verbalize concepts that they may never before have had to formulate into spoken language. Students participating in SI sessions are “involved in paraphrasing course information, using it in different contexts, and even writing potential exam questions” (McGuire, 2006). By participating in these types of activities, students are not only able to better understand their own thought processes, but also what kind of activities are needed in order to move beyond rote memorization to higher cognitive processing, such as application and synthesis. Through these interactions, “students receive continuous feedback regarding their comprehension of the classroom material, thereby giving them opportunity to modify their study behaviors before major examinations” (Arendale, 2002). By verbalizing their ideas, students are able to make deeper connections, develop critical thinking skills and modify ineffective study behaviors through immediate peer feedback. Subsequently, SI participants typically achieve higher final course grades and exhibit improved attitude and behavior (Arendale, 2002).

Another major strength of the SI model is that students are led through difficult material by a peer, an SI Leader. The SI Leader has already been successful in the course that the SI attendees are taking and, as such, has already figured out some of the most effective learning strategies to employ in order to learn the information. This is not to say that a single learning strategy will work for all students within a given course; the SI Leader may offer a number of different “cognitive tools” to help students process and encode difficult material. To learn most effectively, students should not only understand what strategies are available and the purposes these strategies will serve, but also be capable of adequately selecting, employing, monitoring and evaluating the use of these strategies.

The SI Leader is trained to check for understanding and redirect questions, helping students analyze their metacognitive processes and which learning strategies are most effective for the given content and type of learner. Checking for understanding, “comprehension monitoring [that] involves checking our understanding of something we are trying to learn using some form of review or self-testing” is one of the most effective

tools in terms of learning strategies (Weinstein, Acee, and Jung, 2010). The ability to self-test, prior to the time of an exam, plays a huge role in a student's ability to be successful academically and can also help to develop a student's self-efficacy. The ability to self-regulate learning and develop academic confidence in a group setting, with the guidance of a SI Leader, can translate into the ability for students to do so on their own in future courses.

Potential to Alleviate Financial Burden

Beginning in the 1990s, "the significance of finances in retention was one of the areas that began to receive more attention as a field of study" (Seidman, 2012). The role of finance cannot be underemphasized in the discussions about retention and the potential solutions to help students, especially those attending community colleges, in achieving their goals. There is an interesting financial aspect that could go along with the institution of mandatory SI sessions paired with developmental classes, both for the students enrolled in the classes, as well as the students hired to be SI Leaders.

Beyond the potential academic benefits that students receive by attending SI sessions, such as higher mean courses grades and lower attrition rates, if SI was a mandatory lab, students could also potentially qualify for more financial aid. The lab could be counted as an extra credit hour toward their financial aid status. It seems that one of the major factors contributing to student attrition, especially in developmental classes, is that the student does not have the study and/or time management skills to successfully navigate through and process the course material. In 2008, students enrolled in "public, two-year colleges were most likely to work (52.9 percent)" (Seidman, 2012). SI sessions would provide an extra credit hour, providing the imperative study time that should be carved into the student's schedule but all too often is not. Many students, especially at the community college level, have responsibilities aside from their academic endeavors, and, "having responsibilities off-campus and having outside family commitments, for example, have been shown to negatively influence degree attainment of undergraduates" (Seidman, 2012). Students with a multitude of outside commitments, even those with the best intentions of studying, just might not make the time to do so unless it is part of a required lab and a requisite of course enrollment. This structured lab time would provide

students with more than just time on task. They would be guided through the material learning the most effective strategies to encode information. They would be learning how to study smart.

Additionally, there would be benefits for the SI Leaders, beyond just monetary compensation. In a discussion of student persistence beyond the first year, Seidman found that “work beyond the first year revealed that students who had on-campus jobs and were permitted to remain in close proximity to faculty and an academic environment were likely to persist well beyond the first year” (2012). Those employed as SI Leaders fit into every aforementioned category. Not only are they helping other students, they are solidifying the path to achieve their own academic goals. In fact, when LaGuardia Community College polled their SI Leaders, they found that “95 percent of respondents reported that SI was very helpful in giving them a better understanding of their course material” and “98 percent reported that being an SI leader helped them gain self-confidence” (Zaritsky & Toce, 2006).

Arguments against the Inclusion of Mandatory Supplemental Instruction

There could be many arguments against the institution of Supplemental Instruction as a mandatory lab. The first could deal with faculty support. It has been shown that “SI works best when faculty understand and support the program” (Zaritsky and Toce, 2006). If SI were mandatory for developmental courses, it would require that all developmental education faculty participate in the program. Without a genuine belief in the program and open, constant communication between faculty and their SI Leaders, the sessions will not be as effective. This hindrance could pose a significant threat to the quality of the program since “students have little free time and may not want to attend SI sessions unless it is clear that doing so will improve their grade” (Zaritsky and Toce, 2006).

Another issue that could arise with the implementation of mandatory SI sessions is more practical: resources. If the students are attending a “lab” credit hour, how would they be billed for such a resource? Since SI sessions are typically free of charge, how would this system work? Who would be the instructor of record? How much would the SI Leaders be paid? Where would these sessions be held? As it is commonly known in the field of education, resources tend to be scarce, especially in terms of space, and holding SI sessions in

classrooms would be like adding a significant number of classes to a given campus' already packed schedule.

The final, and perhaps most significant, issue that could arise with the implementation of mandatory SI sessions has to do with the students enrolled in developmental courses. As mentioned in the above discussion concerning financial aid, "In 2008, students enrolled in "public, two-year colleges were most likely to work (52.9 percent)" (Seidman, 2012). Students have very real, pressing financial and personal demands upon their time. It can be argued that, "in many cases, students often hold the prevalent assumption that none of the co-curricular experiences the institution offers are more important than their obligations" (Silverman et al., 2008). Adding another hour of schooling to their already jam-packed schedules could simply be impossible for some students. Additionally, students may feel even more frustration if faced not only with paying for a three-hour "credit" course that does not count towards their college degree, but also another "lab" hour. It may seem like an insurmountable amount of time to spend in school before the students can actually begin working toward their goals.

However, the fact remains that state and nationwide, the focus is shifting from an emphasis upon admissions to a focus upon retention, especially focusing on the effectiveness of developmental programs: "In 2009, the Higher Education Policy Institute of the Texas Higher Education Coordinating Board released a set of recommendations for policy practice to systematically enhance the capacity of state institutions to provide effective developmental education" (Collins, 2009). One of these recommendations was for "small learning communities via linked courses as a mechanism of social and academic integration into community colleges" (Collins, 2009). This recommendation illustrates the awareness of the role that academic and social inclusion plays in retention. However, the idea of using learning communities lacks the innovation needed to increase the completion and retention rates of students in developmental classes at community colleges in a fundamentally positive way. Moreover, while learning communities are considered an effective practice by many institutions, a recent, comprehensive study at Hillsborough Community College examining the effects of learning communities pairing a study skills course with a developmental reading course found that the "program did not have a meaningful impact on student's academic success" (Weiss, Visser & Wathington, 2010). It could be argued that there is a piece of the puzzle missing: Supplemental Instruction.

In Spring 2010, ACC's SI program piloted a program to support a class called "Intersections."

Intersections is a learning community linking Basic Math, MATD 0330, Writing Skills I (DEVW 1403), and Basic Study Skills (DSSK 0011) ("ACC Communications," n.d.). Of the 14 students enrolled in the Intersections course, 12 attended SI (See Table 1). The two students who did not attend SI, were unsuccessful in the linked courses. The following semester, Fall 2011, the Intersections course was again supported by SI, with 100 percent of the students attending the sessions (Gilmer, 2011). These numbers suggest that SI is highly effective when paired with a learning community. Learning communities, engaging students and fostering an environment conducive to interaction, are more effective when students also have a more informal meeting time, led by a peer, to process course concepts. Pairing SI with learning communities is also practical from a student's standpoint, as they can go over material from multiple classes in the SI session. Most importantly, the Intersections class illustrates the effectiveness of SI for developmental education when students actually attend the sessions.

Table 1

Results of Intersections Class Supported by Supplemental Instruction

Austin Community College

Coordinator: Mary Gilmer

Spring 2010

SI and Non-SI Group Comparison

Course: Intersections		Instructor: Lavigne/Cronin			SI Leader: Splash Vela	
	SI Group (N=12)		Non SI Group (N=2)		Total (N=14)	
Grade	Number	Percent	Number	Percent	Number	Percent
A	0	0%	0	0%	0	0%
B	2	17%	0	0%	2	14%
C	1	8%	0	0%	1	7%
D	0	0%	0	0%	0	0%
F	2	17%	1	50%	3	21%
I/IP	0	0%	0	0%	0	0%
W	7	58%	1	50%	8	57%
Combined ABC	3	25%	0	0%	3	21%
Combined DFW	9	75%	2	100%	11	79%
GPA	1.6		0.0		1.3	
Totals						
Total Graded Enrollment					14	
Number of Session Hours Offered During the Term					31	
Total Number and Percentage of Graded Students Attending SI					12	86%

Total Contact Hours of SI Participating Students	95
Mean Number of Sessions Attended by SI Participants	8
Mean Size of SI Sessions	3
Mean Final Grade of SI Participants	1.6
Mean Final Grade of Non-SI Participants	0.0
Difference from SI to Non-SI Group	1.6

In 2006, the Texas Higher Education Coordinating Board (THECB) began to provide funding for institutions that implemented innovative, “research-based initiatives in developmental education” (Collins, 2009). Further, during the 2009-2011 legislative session, the THECB asked for \$30 million “to fund performance incentives that would encourage institutions to improve developmental education outcomes” (Collins, 2009). The push for funding, coupled with the Southern Associations of Colleges and Schools (SACS) requirement that, in order “to gain or maintain accreditation with the Commission on Colleges, an institution must comply with the standards contained in the Principles of Accreditation: Foundations for Quality Enhancement and with the policies and procedures of the Commission on Colleges” (“Principles of Accreditation,” 2009), has created a perfect storm for the beginnings of a mandatory Supplemental Instruction model.

Austin Community College chose to focus upon developmental math for their Quality Enhancement Plan (QEP) central goal, since the class with the lowest student success rate is Basic Math Skills (MATD 0330), with only 52% of students passing the course in Fall 2009 (“QEP”, n.d.). The QEP will be piloted at ACC’s Rio Grande campus in Fall 2014, according to the Developmental Mathematics advisor at ACC’s Eastview Campus. The QEP will consist of ten sections of a new course, MATD 0332: Basic Math with Collaborative Learning, an equivalent to MATD 0330: Basic Math Skills, with the addition of a laboratory component. Students enrolled in the new MATD 0332 course will be co-enrolled in a lab just before or just after the course. There will be computer technology available for them as well as tutors on hand to help with any questions that arise along the way (“QEP,” n.d.).

The QEP model described above sets the stage to circumvent many of the logistical issues that would arise in attempting to implement mandatory Supplemental Instruction sessions. There is a designated space for the session/lab to be held. There will be one instructor of record for every 150 students, according to Kristina

Flores, a developmental mathematics advisor at ACC, and the program will be grant-funded. So, there will be no additional cost to the students enrolled in these labs. Finally, the funds have been allocated to hire tutors to support these students. However, the students co-enrolled in these classes can be best supported by SI Leaders, rather than tutors. In order to avoid duplicating efforts and existing models of support, such as learning labs and learning communities, creating a lab for these QEP pilot classes that is run by a trained SI Leader will help students more effectively. Rather than continuing on a solitary path by only working problems on a computer during the designated lab time, the students can be better served by engaging in truly collaborative activities, led by a peer, based in active learning theory. The SI Leader can also help the students both to remain focused on the material and, through the use of the SI strategies such as redirecting questions and checking for understanding, develop a deeper sense of self-efficacy.

In order to begin making a positive change in terms of completion rates in developmental courses at the community college level, “Developmental Education will need to continually evolve using new emerging theories of learning and research-based practices to meet the practical education needs of students and the pragmatic political environment in which it must operate” (Arendale, 2010). One of the most effective research-based practices is Supplemental Instruction. The two strongest hindrances to the program’s success are the scarcity of resources and the ability and willingness of the students to attend the sessions, especially when SI is linked to developmental courses. The schedule constraints of commuter and returning students are also not conducive to the traditional Supplemental Education model. In order for the program to truly be effective for these students, there must be a mandatory lab component and ready-made study time. The study time that the mandatory lab would make possible would benefit the student in a number of ways. They would be building relationships, study skills and have a time that would be devoted solely to their academic success. The completion rates show that, all too often, students left to their own time management, are unable to devote the requisite amount of time and study know-how to successfully complete courses on their own. In terms of resources, in a report on developmental education effective practices, it was found “among the things that were consistently encountered at the institutions described...was that they considered developmental education to be a priority,” and, “quality developmental education results from an institutional culture that values

developmental education and considers it a priority” (Boylan, 2006). ACC has obviously made developmental education, particularly regarding developmental mathematics, a priority though the developmental and impending implementation of the QEP.

The plan is missing one fundamental component for success: Supplemental Instruction. SI is a research-based best practice that has the ability to change the QEP from the potential of deteriorating into another initiative that duplicates resources. Instead of including tutors in the mandatory labs, much like the environment in the learning labs housed on each campus, SI sessions could help students develop socially and academically within the same environment and window of time. Most importantly, though peer-guided involvement and a specified time and space to focus upon studies, students will increase self-efficacy, develop as learners and have a better chance of persisting toward their ultimate educational goals.

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Exploring Students' Experiences of Chemistry SI with a Vision to Improve Throughput and Retention Rates

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Abstract

“While it is true that student retention programs abound on our campuses, most institutions have not taken student retention seriously. They have done little to change the essential character of college, little to alter the prevailing character of student educational experiences and therefore little to address the deeper roots of student retention” (Tinto, 2005, p.1).

This paper reports on part of a longitudinal study conducted to track first-year, regular Supplemental Instruction (SI) attendees into their second and third years of study to determine progression and throughput rates. Surveys and focus group interviews were used to determine first year students' experiences of chemistry SI sessions. Data was analysed using an Interpretive methodology. Several themes emerged from the data with respect to students' attendance at SI sessions and their progression rates. It is therefore argued that SI sessions have the potential to support student retention and improve throughput in the School of Chemistry and Physics.

“Massive investments in the higher education system have not produced better outcomes in the level of academic performance or graduation rates. While enrollment and attainment gaps have narrowed across different race groups, the quality of education for the vast majority has remained poor at all levels. Higher education in South Africa, therefore tends to be a low-participation, high-attrition system” (Badsha and Cloete, 2011, p.7).

The increase in student numbers in higher education globally has resulted in a number of educational reforms meant to increase retention and throughput. Early attempts at educational reformation, although there

is evidence that these have been sustained, focused on addressing perceived deficits in students through remediation. In South Africa, such programs have been referred to variably as “add on,” “bridging” courses or “access” courses. The aim is to fix students to fit within the university. As a result of this erroneous view of students, discussions on throughput and retention in Higher Education Institutions (HEIs) have focused on students as individuals without carefully considering the causal mechanisms for failure (Boughey, 2005). Pandor (2006) captures this well when she says, “There is little virtue in admitting students into higher education unless we create conditions conducive to success” (Pandor and DoE, 2006, para 5). Concerns such as these have led to a shift from locating deficits entirely in the students to institutional development. This shift has taken different forms at different institutions, such as the First Year Experience (Krause, Hartley, James and McInnis; 2005), student engagement (Krause and Coates, 2008; Crosling, Heagney and Thomas, 2009), and Supplemental Instruction (Martin and Arendale, 1994). In this article, the focus is on the latter approach, Supplemental Instruction (SI), which also forms the conceptual focus for this paper.

Supplemental Instruction (SI) was adopted by the University of KwaZulu-Natal’s (UKZN) College of Agriculture, Engineering and Science in 2008 as a tool for academic development as well as a transitional support program for first year students. Tinto (2005) sees SI as “an important condition for [students’] continuation in the university,” hence as a strategy that can enhance retention. This understanding is supported by Bowles, McCoy and Bates (2008, p. 856) who suggest that SI can enhance the development of “micro and macro-behaviours related to successful long-term educational outcomes.” Taking this as the point of departure, this paper explores the SI model at the UKZN and its effect on pass rates, retention and throughput and the related behaviors that led to student success through students’ experiences of the Chemistry SI program. In the context where the transformation of higher education has seen policymakers pushing for wider access and participation by groups previously excluded, it is promising to explore an intervention such as SI.

A detailed discussion on the conceptualization of SI within the UKZN context follows in order to provide both a contextual and theoretical background that explicates the approach as it works within this context.

The SI context

SI is a voluntary program in the college that uses trained and mentored SI Leaders who conduct the SI sessions. These sessions are usually held for 45 minutes twice a week. The SI sessions integrate facilitative measures to encourage an atmosphere that emphasises that “no question is a dumb question” (Webster & Hooper, 1998), thereby encouraging the students to ask the dreaded question, “why?” The learning spaces designated for SI sessions are usually flat rooms with approximately five tables seating eight students to enable communal arrangements. The limited seating per room is deliberately designed to facilitate small group discussions. This physical environment is specifically created to encourage a collaborative learning space for SI sessions (Paideya, 2011).

These SI sessions are conducted by third-year or post-graduate students who are referred to as SI Leaders. SI Leaders are recruited by the SI Supervisor and academic staff based on their interpersonal skills and course competency. SI Leaders are not tutors; their role is not to introduce new content or “re-teach” lecture material (Dawson, Lockyer & Ferry, 2007). They are responsible for facilitating the discussions and preparing activities for their sessions.

SI Leaders at the University of KZN are allocated two days of training before they formally commence with SI sessions. SI Leaders are trained with respect to SI principles and facilitation techniques. The focus of the training is to introduce the basic ideas of SI to the participants and provide them with tools for their role as an SI Leader. The initial SI training program is followed by continuous training, periodic monitoring and support by the SI Supervisor as the semester progresses. SI training emphasises effective collaborative learning techniques and ways to integrate various study skills (lecture note taking, textbook reading, memory enhancement, time management, etc.).

Further, the SI Leaders are required to attend course lectures to keep abreast with content covered in lectures. The SI Leader also serves as a feedback mechanism for the course lecturer through discussion with lecturers about concerns and difficulties students may be experiencing with course material (Paideya, 2011).

SI sessions are usually held within 48 hours of the lecture and therefore represent an immediate recall

of course information. Questions that arise during this process are answered by the SI participants and not the SI Leader who most often play a facilitation and support role. This method forces students to speak and learn subject vocabulary and consequently reinforces pertinent information (Webster & Hooper, 1998). The problem-based method employed during SI sessions involves small group discussions and reflection through discussion. The SI learning context is considered social in that the student does not acquire scientific concepts in isolation; with the group's assistance, they are able to grasp concepts they could not achieve independently (Paideya, 2011). Session activities vary throughout the semester, according to SI attendee and leaders' needs. This model of SI has been adopted by UKZN and adapted to the South African context by Nelson Mandela Metropolitan University's (NMMU) national office which coordinates SI in the country.

The discussion above has outlined the theoretical underpinnings that have framed this article (SI as context and concept). In the next section we discuss some of the research literature on the implementation of the SI model.

Literature on SI

Several studies across different institutions have found that SI is a system of course-linked student support aiming to improve grades and student retention (Arendale, 2002; Bowles et al., 2008; Doty, 2003; Blanc, de Buhr & Martin, 1983). Arendale (2001) divided 1628 students attending 19 courses at the University of Missouri-Kansas City during the fall semester 1989 and spring semester 1990 into three groups depending on their prior academic achievement as measured by the mean composite score on a college entrance exam. He found that in all groups (i.e., the groups with “weak”, “average” and “strong” prior academic achievement) SI attendees had significantly better final course grades. However, McCarthy, Smuts, and Cosser (1997) in a study of SI attached to an engineering course at the University of Witwatersrand, South Africa, found significantly higher grades for SI attendees only in the group with the lowest academic ability. Malm, Bryngfors, and Mörner (2011) noted that even if SI has been shown to reduce failure rates and increase re-enrollment figures, very few studies have been devoted to determine how well it benefits students with different prior academic abilities. These studies tend to show that “weaker” students benefit from SI. The

results for “average” and “strong” students are not as clear. Their study focused on the benefit of SI for “weak,” “average” and “strong” first-year engineering students in a calculus course. Their results show that all three groups benefit from SI and that the failure rates among students with low prior mathematics achievement who had high SI attendance are almost as low as for students with high prior mathematics achievement who do not attend SI. In addition, SI was found to assist the development of the learning strategies.

According to Jacobs et al. (2006), SI has been expanded to Mexico, South Africa, Australia and Sweden. They highlight the potential for further expansion of SI into developing countries and suggest that the SI model is flexible enough to be adapted to different contexts, affordable enough for widespread use, and pedagogically sound enough to address the challenges faced by students with limited exposure to formal education. This paper aims to report on the implementation and effectiveness of SI in a South African context.

Bowles, McCoy, and Bates (2008), noted that researchers’ analyses of the influence of SI on student achievement is challenging because of the bias attributed to it by virtue of self-selection. They analyzed the effect of SI participation using a statistical method that controls for self-selection. The results of the analysis suggest that graduation rates of SI participants show a statistically significant increase of 11% on freshmen level courses. Doty (2003) collected data on the academic achievement of SI participants from 53 institutions. His report shows that SI participants achieved a D, F or withdrew from the SI module they attended at a rate of 25-33% the rate that non-SI participants did. Blanc, deBuhr and Martin (1983) were charged with the task of developing a cost-effective program that could successfully reduce the high retention rates at their institution, UMKC. They report that when SI was implemented in an institution which evidenced almost 40% attrition, the results indicated a significant reduction in attrition over a five-year period.

The next section will focus on the research methodology that was used in answering the research question: What are students’ experiences of SI in achieving student retention and timely graduation rates?

Methodology

This is a case study of the 2013 cohort of first year Chemistry students. In order to establish students’ experiences of the chemistry SI sessions, surveys and two focus group interviews were conducted. Students

participating in two or more SI sessions completed surveys. One hundred and seventeen SI attendees responded to the questionnaire.

The next step was to identify regular and irregular SI attendees, who were then tracked over the following two semesters to determine their progression rates as well as projected time to graduation. Students who attended more than five SI sessions in a semester were considered regular attendees. The rationale for this was to determine the long term effects of SI which can be linked to throughput as suggested by Bowles et al. (2008). Fifteen students were identified (eight regular attendees and seven irregular attendees) to attend focus group interviews to gather their opinions about the value of the SI program and feedback on ways the SI program could be improved.

The survey data was analyzed thematically. Statistical and interview data were correlated and analyzed to determine the extent to which SI influenced Chemistry students' performance in achieving timely graduation rates. The findings drawn from this data are discussed in the section to follow.

Findings

Thematic analysis of data revealed the following themes as factors influencing students' experiences of SI learning in achieving timely graduation and retention rates:

- SI attendance
- Students' academic performance

SI Attendance

In order to identify the regular attendees, SI attendance patterns for the first semester first year Chemistry module were tallied. Two SI sessions were scheduled per week over a period of 10 weeks, and students were to attend only one of the two sessions; thus, 10 attendances were possible for each student. Nonetheless, some of the students attended both sessions each week; thus, for these students, more than 10 sessions were possible as indicated in Table 1.

Table 1

SI attendance patterns

SI Attendance			
Chem 110	between 1 and 5	between 6 and 10	more than 10
117	34	46	37

Analysis of the sample of 117 respondents attending SI sessions for the first semester chemistry module, Chemistry 110, reveals that 71% of the sample is classified as regular SI attendees (attended more than 50% of the SI sessions), whereas, 29% of the sample is regarded as irregular SI attendees.

In order to establish factors contributing to SI attendance, three relationships were looked at: SI attendance and gender distribution; SI attendance and Home Language; and SI attendance and students' matric points.

Table 2

SI attendance and gender distribution

SI Attendance	First Semester Module		Second Semester Module	
	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>
between 1 and 5	34	14	19	9
between 6 and 10	23	9	28	10
more than 10	30	7	22	6

Table 2 reveals that in both semester one and semester two SI sessions are dominated by female attendees and it is also acknowledged that the female students are the regular SI attendees (attend more than five SI sessions per semester).

An analysis of SI attendance and students' first languages, displayed the following results:

Table 3

SI Attendance and Home Language

SI Attendance	English Home Language	Other
Chem 110		
between 1 and 5	11	37
between 6 and 10	9	23
more than 10	6	31

Table 3 reveals that the majority (78%) of the students attending the first semester SI session are English second language students. It is also evident that 32% of these students who are English second language students are irregular SI attendees (attending between 1 to 5 SI sessions out of a possible 20 SI sessions available). These irregular SI attendees perhaps only attended SI sessions in preparation for tests and examinations, as was indicated during the focus group interviews with irregular SI attendees.

This was followed by an analysis of SI attendees’ matric points for entrance into university against the three SI attendance categories, as shown below:

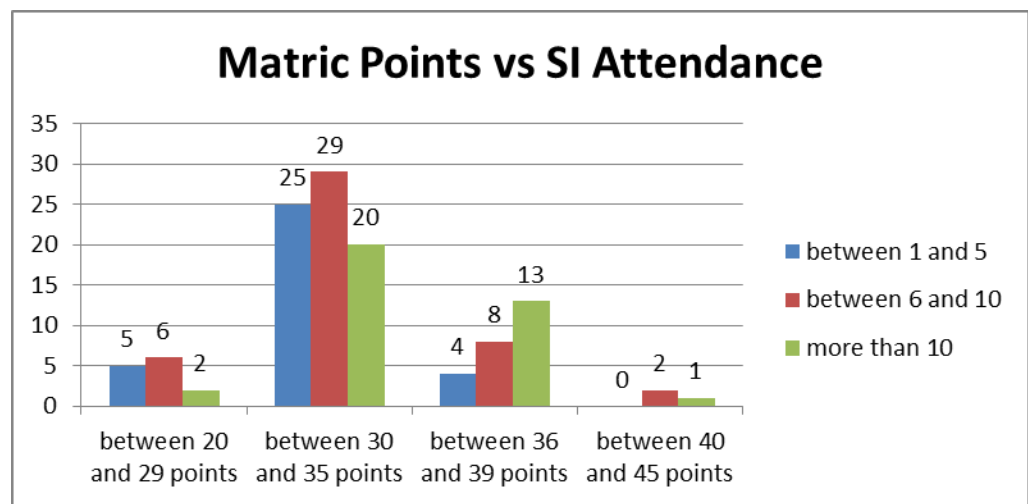


Figure 1: SI attendance and University entrance points

It is evident from Figure 1 that students who come into university with matric examination points ranging from 30-35 points are more likely to seek academic support and account for the highest number (42%) of the regular SI attendees in that category of students. Anecdotal evidence suggests that students (18%) with matric points ranging between 36-39 usually attend SI regularly to maintain or improve their performance in the course. Students with matric points ranging from 40-45 are probably overconfident of their abilities considering their matric performance. Whereas those students with matric scores of 20-25, which represent 11% of the sample, perhaps associate any academic support programs as remedial and therefore do not attend regularly.

We are aware of previous research which has found that regardless of prior academic ability (Arendale, 2001), SI attendees always achieved higher scores than non-attendees. However, it is interesting to note from

the results of this study which students attend SI regularly, since SI is a voluntary program at the institution. These results are important to inform SI policy and practice to ensure timely graduation and progression.

An analysis of students’ progression rates with respect to SI attendance is depicted by the Figure 2 and Table 4 below.

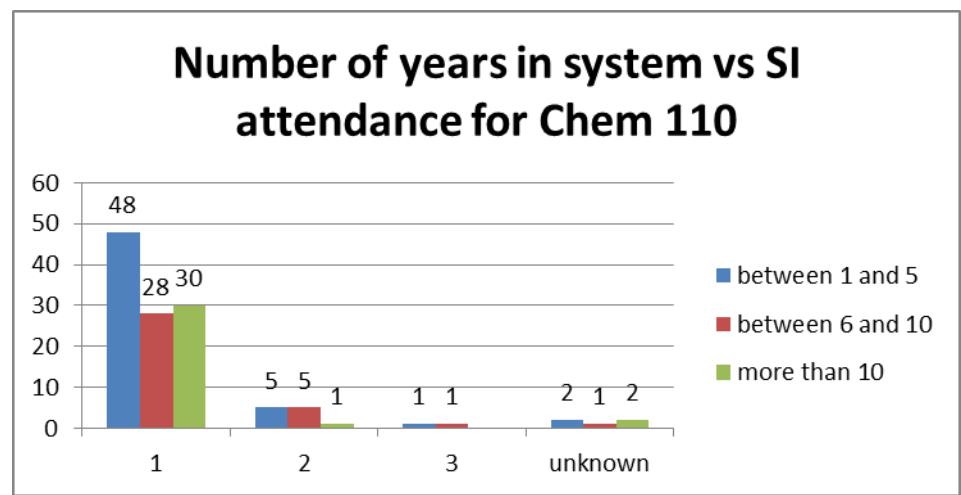


Figure 2: SI attendance and number of years at the institution

It is evident from Figure 2, which represents SI attendance for the first semester module (Chemistry 110), that the majority of students attending SI sessions are in their first year of study. There could be several reasons for this trend, however, drawing from the responses from the focus group interview, which indicate that SI offers support to the first year students who find the transition from secondary education to higher education extremely difficult. This trend is followed by the students in their second year at university who are probably repeating the module.

Table 4

SI attendance vs Progression rates

SI Session Attendance	Current Year of Study		
	1st Year	2nd Year	Excluded
between 1 and 5	16 (13%)	15(13%)	8
between 6 and 10	9 (10%)	33(28%)	4
more than 10	8 (6%)	26(22%)	4

From Table 4 it is evident that 63% of the 2013 SI attendees have progressed to second year Chemistry in 2014, whereas 9% of the SI attendees no longer require Chemistry for their degree and are progressing without a second-year Chemistry module. Therefore, 72% of the SI attendees have progressed to their second year of study. However, it is interesting to note that 86% of the regular SI attendees have progressed to the second year of study. Students excluded from the system equal 13%, of which 7 (44%) out of the 16 students excluded were excluded based on outstanding fees.

Students' academic performance

By good academic standing, we mean a student who has met their cumulative progression requirements as determined by the College although this student might have failed certain modules. Risk pertains to a student who is at risk of achieving below the minimum progression requirement while probation refers to a student who has failed to meet the minimum progression requirements. The final measure, excluded, refers to a student who has been expelled from the University for underperforming or non-payment of fees.

The academic status and progression of students who registered in 2013 were tracked in the two first-year chemistry modules in which SI was conducted (see Table 4). Interrogation of the data indicated that students who attended SI regularly (five or more sessions for the semester), in Chemistry 110 module, showed 89% of the students on good academic standing and 11% at risk. There were no students in this category who were underperforming or excluded. Fifty-nine of the regular SI attendees for this module are currently in their second year of study, while 17 (24%) are repeating a first-year module. This shows that just over 86% of students who were regular SI attendees are in line to complete their degrees in minimal time. This study has not reached completion and will track students' progress in semester two of 2014 as well as two further semesters in 2015 to determine progression and graduation rates.

Analysis of the relationship between regular SI attendees' academic performance and gender reveals the following:

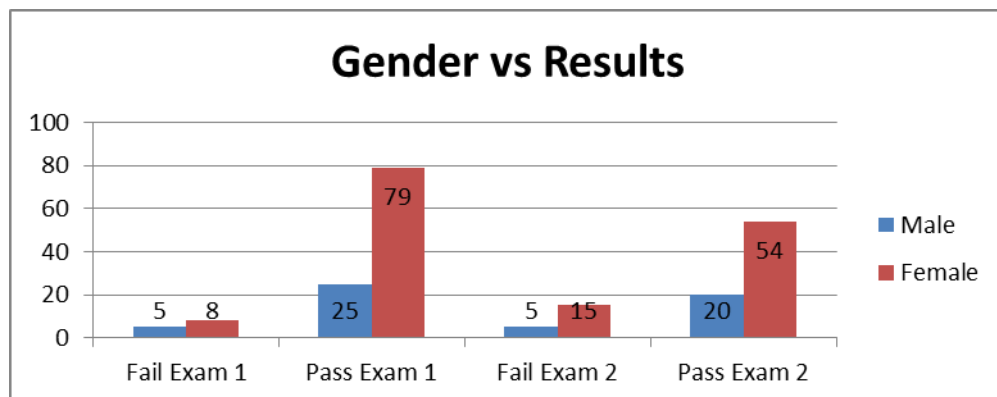


Figure 3: Relationship between academic performance and gender

It is apparent that since the female students are the majority with respect to regular SI attendance in both first-year chemistry modules, females have a higher pass rate than males in both examination results. Further investigation is required with respect to why the female students are keener on attending SI regularly than male students in the same course.

Finally, with respect to the survey data, an analysis of SI attendees' academic performance in relation to their attendance patterns displayed the following trends:

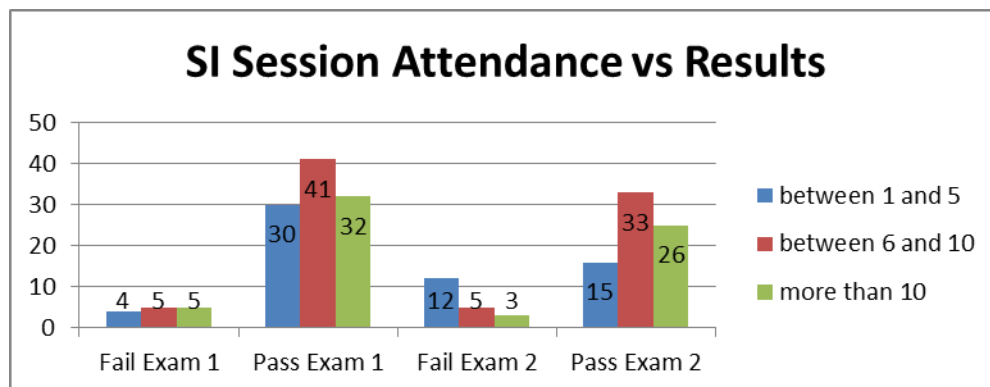


Figure 4: SI attendees' academic performance in relation to SI attendance

From Figure 4 it is evident that, for the semester one examination, regular SI attendees had a pass rate of 62% in comparison to irregular attendees who produced a pass rate of 26%. The overall pass rate for semester one was 88% for SI attendees. The semester two module has a smaller cohort of students either due to failures in semester one or students who do not proceed with chemistry in their course of study. Semester two regular SI attendees produced a pass rate of 63% in comparison to irregular attendees (16%). The overall pass rate for SI attendees in semester two is 79%. It is therefore evident from the data that regular SI

attendance produces a higher examination pass rate.

Focus Group Interview Data

Focus group interview data with regular SI attendees and irregular attendees were thematically analyzed in two categories to reveal their experiences of the SI sessions in achieving student retention and timely graduation rates.

Benefits of SI. Regular SI attendees concurred that SI Leaders were seen to provide a strong supporting structure for their learning processes. Exposure to different activities by SI Leaders (e.g. questioning techniques, explaining answers and peer learning) encouraged the students to engage with chemistry concepts in ways they normally might not have on their own. This is revealed by the following statement:

You may think you know something but in actual fact you don't understand it until you can explain it to other people and you get this whole new perspective and in that way you know that you have certain problem areas and this can help you improve your understanding.

Motivation and encouragement to pursue challenging tasks by SI Leaders was seen to inspire learning through the knowledge that, "In SI, there is always someone there to help you out even when you are wrong; the SI Leader is always there to bring to your attention where you went wrong and why it's that way." Constant feedback provided by the SI Leaders and peers through discussion was viewed as strong support for learning process.

There is clearly a link between motivation to learn and the support the students receive, which is evident by the following comment:

So you found some place where someone can explain you better and you come to understand something better so SI is giving you motivation to come every time and every day to learn more because it makes you understand better.

The SI Leader's role in creating a safe non-judgmental learning engagement space also seems to be valued by students in motivating them to engage with chemistry concepts.

Challenges of SI. Students described engagement within chemistry SI learning spaces as very

rich and engaging, but in some instances, translation of knowledge into an actionable idea was limited, as is evident in the perusal of test and examination scripts of some of the SI irregular attendees interviewed. This was attributed to either (a) irregular SI attendance and therefore lack of academic skills development; (b) students who disengaged through their lack of confidence in contributing the right answer, as evident in the following excerpt (*“Group work not always good - because sometimes if you don’t have a clue of what is happening, you end up asking and asking you feel a bit silly”*); or (c) students’ lack of time management skills influenced their decisions about SI attendance.

Discussion and Conclusion

Involvement in classroom learning, especially with other students, leads to greater quality of effort, enhanced learning and—in turn—heightened student success (Tinto, 1997). This is typical of the data presented which reveals that students regularly attending SI sessions are acquiring study skills in preparation for their examinations that irregular attendees seem unable to develop while studying on their own.

The data presented reveals SI attendees’ experiences of the chemistry SI sessions with respect to the relationship between SI attendance and student performance, as well as the factors influencing SI participation in affecting timely graduation and student retention. Support and motivation were regarded as integral parts to developing students’ confidence in taking responsibility for their learning. This was demonstrated by students who claimed that SI inspired them to engage with chemistry concepts. Students who were accustomed to the didactic lecture disengaged in chemistry SI as they were more focused on the products of the SI engagement rather than developing an understanding through the process.

The analysis provided above suggests a correlation between regular SI attendance and progression, pass rates and time to graduation. Literature linking SI to pass rates is robust, although there have been attempts as we have already highlighted that link SI to graduation (see Bowles et al., 2008). It is evident that measuring the long term effect of the SI model provides a compelling argument for the continued use of SI at UKZN. At the same time, it is not being overlooked that factors influencing throughput and graduation success may be more complex. This complexity is also heightened by the fact that SI attendance is voluntary; therefore, this study only represents a marginal fraction of the entire cohorts. Yet based on these few

exemplars, it is convincing that the data highlights the potential of the SI model in improving retention and timely graduation at the University of KwaZulu-Natal. Plans are also underway to encourage other colleges within the university to pursue the SI model so that SI is available in all subjects for students. It is believed this will improve participation and students overall performance.

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Does SI Belong in Lower Secondary School?

An Exploratory Pre-study in a Swedish socially challenged area

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Abstract

Supplemental Instruction has worked very well in various settings all over the world. It should be of interest to see if SI works at earlier stages than tertiary education. There are examples of successful SI programs at upper secondary schools, but no reports from lower secondary schools. This study evaluates a pilot SI program in a 7th and a 9th grade class in a socially challenged area with regards to the general impression of SI, development of study strategies and general skills, motivation for further studies, and whether lower secondary school students would be interested to be SI Leaders themselves and, if so, why. Overall, questionnaires and student interviews indicate that SI seems to work in all evaluation areas. However, further extensive research is needed, and the authors suggest future areas to focus on.

Keywords: Supplemental Instruction, lower secondary school, study motivation, study skills, bridging educational gap

Introduction

Supplemental Instruction (SI) was developed to increase student success in difficult courses in 1973 at the University of Missouri-Kansas City (Hurley, Jacobs, and Gilbert, 2006). Since then, SI as a concept has spread widely and is used at more than 2,500 colleges and universities in nearly 30 countries (Martin, 2008). Other names for SI exist, such as Peer Assisted Learning (PAL) and Peer Assisted Study Sessions (PASS), but the method's basics are the same.

SI has continually given positive results in different courses in all kinds of settings at universities (Blanc et al., 1983; Burmeister, Kenney, and Nice, 1996; Congos and Schoeps, 1993; Hensen and Shelley, 2003; Malm, Bryngfors, and Mörner, 2010; Ogden, Thompson, Russell, and Simons, 2003; Packham and

Miller, 2000; Power and Dunphy, 2010; Ramirez, 1997; Rye, Wallace, and Bidgood, 1993; Sawyer, Sylvestre, Girard, and Snow, 1996; Webster and Hooper, 1998; Wright, Wright, and Lamb, 2002). It should be of interest to see whether SI also works at a lower educational level than tertiary education. In Sweden, a study by Malm, Mörner, Bryngfors, Edman and Gustavsson (2012) shows that SI seems to work in an upper secondary school setting. Here, upper secondary schools in the region have students from the faculty of engineering at Lund University (LTH), Lund, Sweden, acting as SI Leaders in difficult courses such as math, physics and chemistry. The students attending SI sessions regularly appear to improve general skills such as making presentations in front of others, team-work and communicating a subject.

This study examines if a similar link from the university could be established to an even earlier stage, specifically to lower secondary school. Given that a lower secondary school SI program would provide the same benefits as the SI program at upper secondary schools (Malm et al, 2012), the program would provide the following advantages for the involved school and university. For the university, these include:

- Academic leadership experience for university students
- Targeting lower secondary schools in areas where people with tertiary education are uncommon
- Creating an interest in science and technology in lower secondary school

The additional advantages for the lower secondary school include:

- Creating an extra learning opportunity in difficult courses such as math
- Developing study strategies for students, such as increased abilities for collaboration, discussion, viewing fellow students as resources in a learning perspective and developing the students' responsibility for their own learning
- Giving students an insight into what it is like to study at university through the informal meetings with the university student, which is particularly valuable in areas where people with tertiary education are uncommon.

Also, since it repeatedly has been reported that the SI Leaders are the big winners of the SI program, it should be of interest to examine the willingness among lower secondary school students to be SI Leaders.

Purpose and delimitations of the study

The purpose of this article is partly to describe the setup of one SI program at a lower secondary school in a socially challenged area. Furthermore, it is to qualitatively evaluate this SI program to provide a basic understanding of the potential positive effects, as well as challenges, of SI in this environment. The following areas will be evaluated:

- Attendance at SI sessions
- The students' general views on the SI sessions
- The students' views on their development of study strategies, general skills and self-confidence in their studies due to SI
- The students' views on studying at further education due to SI
- The students' interest in becoming SI Leaders themselves.

The focus of this study is thus not on grades and retention, but on the SI attendees' views on SI and their own development of skills and attitudes toward learning. The evaluated case study only involves one 7th grade and one 9th grade class in the subject of math with a total of around 40 students visiting at least one session. Consequently, a wider study is required to provide valid confirmation of SI's applicability in this environment. Furthermore, since the SI program is set up in a Swedish education system, the results are not directly transferable to a different education system. However, the results can provide an indication of the potential of SI in a lower secondary school environment and its function as a link between lower secondary school and upper secondary school and tertiary education.

Description of the SI program at the lower secondary school

The chosen lower secondary school is a school with classes from grade zero (six-year-olds) to 9th grade. The SI program targeted one 7th grade and one 9th grade class based on the request of the school's principal and responsible teachers. Both classes had a particular need for extra supportive activities. The 7th grade class had problems with its class spirit, and the 9th graders were in particular need of an academic boost before the upper secondary school applications. In addition to observing SI at an earlier educational stage, the school is situated in Rosengård, which is an area in Sweden characterized by alienation with socioeconomic

challenges. In short, the students are generally at larger risk of not succeeding in school compared to the national average, and the absence rates are also relatively high. The school had never come in contact with SI before, and in order to integrate us as much as possible into the case school we met with the principal and administrative board of the school. Furthermore, we got to introduce SI to the whole school's teacher staff at a capacity-building day.

By doing this we mitigated one out of three main challenges (The other two will be discussed later.) pointed out by Malm et al (2012) with conducting SI at an external institution, namely having good and involved contact people at the host school. We also received full access to the school building with personal keys and workspace. No contract was drawn up or signed, and the SI program was carried out free of charge.

The students were divided into four different groups, two groups splitting one of the 7th grade classes, and two groups splitting one of the 9th grade classes. The student composition of each group was established in collaboration with their responsible teacher. The goal was to establish a balance between gender and aptitude and to minimize the risk of conflicts or losing focus during class. Furthermore, an introduction to the specific needs of certain students was provided, e.g. "You should not talk in this particular country's language to this child," or, "You should avoid even to gently touch this child in any way."

All groups received nine SI sessions each (except 9:2 who got eight) of one hour duration. The sessions were scheduled parallel with the ordinary math class. This means that one group (around half of the class) had an ordinary math lesson, whereas the other group was gathered and transported to the room where the SI session took place (usually less than five minutes). By doing this, we were not dependent on another challenge pointed out by Malm et al (2012), namely scheduling of SI sessions in order to increase attendance. These groups had their sessions scheduled at different times during the day: 7:1 had their meetings scheduled for 11 a.m.-12 p.m.; 7:2 for 1-2 p.m.; 9:1 for 2-3 p.m. and 9:2 for 8-9 a.m. The participation was made mandatory due to the school's problem with low class presence, even in the ordinary lessons. However, students who said that they did not want to attend the SI lessons did not have to.

The SI Leader, one of the authors, was at the time a university student with rigorous training and experience as an SI Leader, SI coach and SI method supervisor at both the upper secondary school and

university level. Due to the lack of knowledge on how to conduct effective SI sessions in lower secondary school, the approach toward facilitating the sessions was explorative, and the sessions were continuously iterated in an evolutionary manner. For instance, initially a more self-organized structure was used where the students were asked to propose most issues and tasks themselves. However, the students had a hard time staying within the subject of math, and the groups' attention on the subject was lost. The takeaway from this was that the SI Leader in this environment must be prepared to take initiative and structure the meeting. One of the authors acted as an observer logging an in-class journal throughout the program. Furthermore, after each session, the authors wrote a second journal over the different groups' learning climates for each SI session. In this way, a greater awareness on how to continuously improve the SI sessions could be achieved throughout the program, and the journals helped to minimize memory errors when finalizing this study.

The typical SI session roughly consisted of three major parts. First, after the group had been gathered from the ordinary lesson, a check-in was facilitated. The group was asked to form a circle with chairs where only the one person holding a certain talking piece was allowed to talk. The talking piece rotated around the circle until everyone had been involved. Typical check-in conversation topics were, "What do I need to be my best self today?" and/or "How am I feeling in the course?" The second major part consisted of a full-group discussion around an interactive digital white board. One or two students were encouraged to facilitate a math problem suggested by the group or by the SI Leader. The third and final part was to reassemble in the circle and go through a check-out with the same principles as during the check-in. Typical check-out conversation subjects were, "How was the learning climate today?" and "What have we done today and what would you like to do next time?" All sessions were, however, subject to structural variations as a consequence of the climatic variations of the student groups that occasionally were very strong.

Evaluation methods

Up to this date, there are no reports on SI's success in lower secondary school to the authors' knowledge. The school setting, a socially challenged area, is unexplored. Hence, no previous methodological framework was available for the authors, and the study was conducted in an explorative manner. To receive information regarding this article's evaluation, attendance records, interviews with the SI participants and a

questionnaire were used. The interviews and collection of questionnaire answers were carried out post-SI program a week after the last round of SI session at evaluation sessions scheduled at the ordinary SI session time.

The interview questions put to students are provided in Table 1. They were open-ended questions with some aiming to get more in-depth answers of the students’ views towards the SI sessions in general, while others focused on their interest in becoming SI Leaders. However, since they are open-ended, all questions might provide answers to any evaluation area and some questions might not provide applicable answers.

The interviews were limited to those students who were present during the last evaluation session and who volunteered to be interviewed. All in all, seven 7th graders were interviewed, of which five had high attendance (eight out of nine sessions) and two had medium attendance (four and six out of nine sessions). Among the eight interviewed 9th graders, all had high attendance (six or seven out of eight sessions and seven or eight out of nine sessions). To decrease potential positive or negative bias in the answers, the SI Leader was not present during the interviews; instead, the author who conducted the in-class observations conducted the interviews. Since the students had varying aptitude in the Swedish language, being very specific was important in order to receive comparable answers. The questions were rephrased if the students did not understand them or if their answers addressed something completely different.

Table 1

Open-ended questions to SI attendees at the lower secondary school

<u>Number</u>	<u>Question Text</u>
Q 1.	If you were to describe Supplemental Instruction, how would you do that?
Q 2.	How have the SI sessions affected your motivation?
Q 3.	How are the SI sessions differing from the ordinary lessons?
Q 4.	What has been the best thing with the SI sessions?
Q 5.	What has been the worst thing with the SI sessions?
Q 6.	What would you like to have been done differently [with the SI sessions]?
Q 7.	Would you consider facilitating SI sessions in the future?
Q 8.	If you are in the 9th grade, how young students do you think you could manage to lead?
Q 9.	What would make you want to become an SI-leader?
Q 10.	Anything to add?

The questionnaire consisted of statements regarding the students’ interest in becoming SI Leaders and their motivation and skills (such as self-confidence in the subject, ability to question, discuss and cooperate)

developed in the SI sessions. These statements were to be answered in one of five steps between fully agree and fully disagree. The typical statement was formulated so that the respondent took a stance to an effect caused by the SI sessions, e.g. “The SI sessions have made me appreciate group work to a greater extent.” Applicable statements will be presented in the Results section.

Results

The SI program was implemented by the authors during the spring semester of 2014 at a lower secondary school comprised of a 7th grade class and a 9th grade class. At each SI session, there were about six students attending on average among the 7th graders and seven students among the 9th graders. If we consider the percentage of students (that at least attended one SI session) with low, average and high attendance at available SI sessions, we get the distribution seen in Table 2.

Table 2

Attendance — percentage of available SI sessions

<u>Group</u>	<u>Session Time</u>	<u>Group Size</u>	<u>Low (<33%)</u>	<u>Medium</u> <u>(≥33%-</u> <u>≤67%)</u>	<u>High (>67%)</u>
7:1	11 a.m.-12 p.m.	8	13%	25%	63%
7:2	1-2 p.m.	8	0%	38%	63%
9:1	2-3 p.m.	15	29%	43%	29%
9:2	8-9 a.m.	14	9%	27%	64%

Thus we see that the attendance was high among the 7th graders with over 60% having a high attendance. Among the 9th graders, the attendance is just as high in the 9:2 group and a little lower in the 9:1 group where it is rather evenly distributed. Since the sessions were mandatory, the reasons for attending were not measured.

What are the students’ general impressions of SI? From the interviews it is evident that the students are fond of SI and feel they are getting new dimensions to their education in the SI sessions. An analysis of different themes in the answers to the open-ended question, “How do SI sessions differ from ordinary lessons?” is showed in Table 3. Several clearly marked differences appeared. One-third of the interviewed students expressed that it was easier to ask questions, and that the smaller groups (in average six to seven

students) were positive for their learning. Four out of fifteen students mention more discussion and enjoyment of the SI sessions.

Table 3
Response Themes from Interviews

Themes	Number of mentioning students (out of 15 interviews)
It is easier to ask questions on the SI sessions	5
It is positive with smaller groups for my learning	5
The SI sessions are more fun/pleasurable	4
More focus on explaining to each other/discussion	4

Below are a few of demonstrative examples of answers to the open-ended question, “If you were to describe SI, how would you do that?”

“It is easier to work in smaller groups. And to express yourself, everyone gets to express themselves so that the best thought comes up. (7th grader)

“You have made us learn so much. If we say something, then you await our answer. You have taught us how to answer hard questions.” (7th grader)

“I have never been able to collaborate with anyone. It feels like the whole class suddenly is shutting up. It takes away most of the mess. [At the SI sessions we] go through math solutions in new unusual ways.” (9th grader)

Other examples are shown of responses to the question, “How are the SI sessions different from the ordinary lessons?”

“You give us chances to explain. You await our answer before you tell us the correct answer.” (9th grader)

“Instead of just working with the book, you get to work by the board. Instead of being quiet, you talk more. I talk more and then I get more ideas and the ideas make me better at math. I have got to know the students in my class better. I feel safer regarding math.” (7th grader)

“Helpful. Nice. Nice atmosphere. One has learnt by explaining better to each other.” (9th grader)

One final example that indicates that the students have a positive attitude toward the concept of SI is one student's answer to the final question, "Anything to add?"

"That we really want to continue have you and SI." (7th grader)

The students were also asked, "What has been the worst thing with the SI sessions?" Nine out of 15 interviewed students mentioned the messy classroom environment. To the question, "What would you like to have been done differently [with the SI sessions]?" some of the students requested more authority from the SI Leader to handle the disruptive and messy behavior. On the other hand, on the question, "How are the SI sessions different from the ordinary lessons?" one answer was: "They are such lessons you are looking forward to. You want it all the time. It is not that messy." (9th grader)

How have the SI sessions influenced the students' studies and general skills? Answers to the related questions in the questionnaire are given in Table 4. In both the 7th and the 9th grade there is an overall strong trend of increased self-confidence related to their ongoing studies, to mathematics and as problem solvers.

Table 4

Attendees' answers to questions about the influence of SI sessions on the students' studies and general skills. Below the percentage (%) is given for each alternative answer.

Statement	Class	Fully disagree				Fully agree
		1	2	3	4	5
The SI sessions have strengthened my self-confidence to manage my ongoing studies.	7 th	8	0	15	31	46
	9 th	0	0	18	45	36
The SI sessions have strengthened my self-confidence in mathematics.	7 th	0	8	23	23	46
	9 th	0	9	9	36	45
The SI sessions have strengthened my self-confidence as a problem solver.	7 th	0	15	15	54	15
	9 th	0	0	30	20	50
The SI sessions have made me try solving more difficult tasks than before.	7 th	0	8	15	46	31
	9 th	0	9	27	36	27
The SI sessions have made me realize that I am better at math than before.	7 th	0	0	8	25	67
	9 th	9	9	9	36	36

This trend is strengthened by a sample answer from an interview to the question, “If you were to describe Supplemental Instruction how would you do that?” “[It’s] good help and you get self-confidence. You get us to believe in ourselves. [It’s a] good thing for us.” (7th grader)

A sample response to the question, “How have the SI meetings influenced your motivation?” also adds strength to the trend: “Strongly. I have never been excellent at math. Now when you get the chances then you become more secure.” (9th grader)

The questionnaire answers presented in Table 5 indicate that skills of communicating with classmates, presenting and teaching others have developed for a large portion of the attendees, especially among the 7th graders. This is also confirmed by the interviews.

The following are sample responses to the question, “How has the SI-meetings influenced your motivation?”:

“...I have also learnt to explain better. And tell what I know to others.” (7th grader)

“I am more motivated to work with other students.” (9th grader)

The answers to the question, “How have the SI sessions influenced your motivation?” also provide signs of an allowance to be vulnerable and ask questions:

“I feel safe to say what I think. If I am wrong here, I do not have the same feeling as in the class.” (7th grader)

“You dare to talk more. You raise your hand. There are many in class. If I ask there maybe I will be embarrassed, everyone know it. In smaller groups it is more relaxed to ask those things.” (9th grader)

Table 5

Attendees’ answers to questions about the influence of SI sessions on the students’ communication

<u>Statement</u>	<u>Class</u>	<u>Fully disagree</u>				<u>Fully agree</u>
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
The SI sessions have made me better in communicating with my classmates.	7 th	15	23	8	23	31
	9 th	0	27	36	27	9
The SI sessions have made me more comfortable with presenting in front of others.	7 th	0	31	0	31	38
	9 th	0	18	36	27	18

The SI sessions have made me share more of what I can to my classmates.	7 th	8	15	15	15	46
	9 th	10	10	50	20	10
The SI sessions have made my classmates share more of what they can to me.	7 th	0	15	31	31	23
	9 th	18	0	55	0	27

There also seems to be a distinct positive development of the students' study strategies, which is seen in Table 6. When looking at the students' awareness of their own learning, there is an increase for a large majority of the students, especially among the 7th graders. The SI sessions also seem to have influenced the students to set more goals for themselves. There also seems to be a profound, positive effect on learning things that are useful in other courses.

Table 6

Attendees' answers to questions about the influence of SI sessions on the students' study strategies

<u>Statement</u>	<u>Class</u>	<u>Fully disagree</u>				<u>Fully agree</u>
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
The SI sessions have made me think more about how I am learning in the best way.	7 th	0	8	8	31	54
	9 th	9	9	45	27	9
The SI sessions have made me understand how I am learning in the best way.	7 th	0	0	15	31	54
	9 th	9	0	55	18	18
The SI sessions have made me setting more goals for myself.	7 th	8	8	8	8	69
	9 th	18	0	36	18	27
The SI sessions have taught me things that are useful in other courses.	7 th	0	15	23	38	23
	9 th	9	18	27	18	27
The SI sessions have made me see how math can be used outside of school.	7 th	8	0	15	23	54
	9 th	10	20	20	30	20

Finally, the attitude towards teamwork seems to have changed positively in both grades. As can be seen in Table 7, a large portion of the responding students also feel that there is a greater unity in the classes thanks to the SI sessions.

Table 7

Attendees' answers to questions about the influence of SI sessions on the students' views on working in groups

<u>Statement</u>	<u>Class</u>	<u>Fully disagree</u>					<u>Fully agree</u>
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
The SI sessions have made me appreciate working in group to a greater extent.	7 th	8	8	0	31	54	
	9 th	0	18	27	45	9	
The SI sessions have made me see a greater value of learning together with others.	7 th	0	8	23	23	46	
	9 th	0	18	27	36	18	
The SI sessions have created a better unity among the classmates.	7 th	8	31	8	8	46	
	9 th	9	18	36	9	27	

This is also shown in the interviews. For instance, one answer to the question, “If you were to describe SI, how would you do that?” was:

“Instead of being quiet, you talk more. [...] I have got to know the students in my class better. I feel safer regarding math.” (7th grader)

How have the students' views on further education developed in the SI sessions? The results from the questionnaire, shown in Table 8, clearly show that the students believe that the SI sessions have given them an increased motivation for continuous education.

Table 8

Attendees' answers to questions about the influence of SI sessions on the students' views on further education

<u>Statement</u>	<u>Class</u>	<u>Fully disagree</u>					<u>Fully agree</u>
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
The SI sessions have given me greater motivation to start upper secondary school.	7 th	0	8	8	38	46	
	9 th	0	9	18	9	64	
The SI sessions have given me greater motivation to study at post-secondary school.	7 th	0	8	23	15	54	
	9 th	0	9	36	27	27	

This is also apparent in the interviews. Here are some illustrative examples to the question, “How have the SI sessions influenced your motivation?”:

“Much more. It has influenced me within all subjects. It has influenced me in that extent that I have started to think about the future.” (7th grader)

“It has given me self-confidence to know how big you can be in the future. Get a good job and good education.” (9th grader)

“In a good way actually. It has given me the hope to learn math and continue study and educate myself at university.” (9th grader)

How are the students’ views on becoming SI leaders themselves? When looking at the questionnaire results in Table 9, there is an indication that the students think positively of becoming SI Leaders while being 9th graders. It seems that more 7th grade students think positively of becoming SI Leaders than the 9th graders. It is also notable that more students think positively of becoming SI Leaders if they received help from the authors.

Table 9

Attendees’ answers to questions about the students’ views on becoming SI Leaders

<u>Statement</u>	<u>Class</u>	<u>Fully disagree</u>				<u>Fully agree</u>
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
I want to facilitate SI sessions when I am in 9th grade.	7 th	8	15	31	8	38
	9 th	55	18	0	18	9
I believe I would have been able to facilitate SI sessions when I am in 9th grade.	7 th	25	8	8	33	25
	9 th	55	9	0	27	9
I believe I would have been able to facilitate SI sessions when I am in 9th grade, if Erik and Johan help me. [Authors]	7 th	0	15	23	15	46
	9 th	36	9	9	36	9

Out of the 15 interviewed students, five unconditionally answered “es” to the interview question, “Would you consider leading SI sessions in the future?” Nine students answered “maybe” or mentioned a necessary condition for becoming SI Leaders. Some examples of these conditions were:

”With a friend. Maybe ‘Name’, someone that is smart.”

“Yes if I receive some support from you [Author].”

“If I were good enough in math. Maybe in Swedish and English, and social sciences.”

Only one student said “no” to becoming an SI Leader out of all the interviewed students. He explained his answer with:

“I do not like to present. Like a teacher. It is fun to explain. But still stressful. Maybe I am little bit less nervous now.”

Regarding the questions how much younger students they could manage to facilitate as SI leaders, an overview is provided in Table 10.

Table 10

Attendees’ answers to questions about the students’ views on SI leading different ages

		<u>Fully disagree</u>				<u>Fully agree</u>	
<u>I believe I am able to facilitate an SI session on my own for students in the:</u>		<u>Class</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
5 th grade.	7 th	8	8	23	23	38	
	9 th	18	27	9	18	27	
6 th grade.	7 th	8	17	17	25	33	
	9 th	36	18	0	18	27	
7 th grade.	7 th	25	8	25	25	17	
	9 th	36	36	9	9	9	
8 th grade.	7 th	33	8	17	17	25	
	9 th	45	27	9	9	9	
9 th grade.	7 th	42	17	0	17	25	
	9 th	64	9	0	18	9	

It is evident that more students, according to this measurement, believe that they would be able to facilitate SI sessions in the lower classes. While conducting the interviews, the question, “If you are in the 9th grade, how

young students do you think you would be able to lead?” was asked. The distribution of different answers is presented in Table 11.

Table 11

Attendees' views mentioned in the interviews on how young students they think they would be able to lead

	4 th grade	5 th grade	6 th grade	7 th grade	8 th grade	9 th grade
	10-11	11-12	12-13	13-14	14-15	15-16
Number of students mentioning (out of 15 respondents)	2	10	11	5	0	2

Table 11 shows about the same picture as the questionnaire, hence that the students generally believe they would be able to handle lower ages if they would become SI Leaders. While interviewing the students, they were also asked, “What would make you want to become an SI Leader?” Some examples of answers are:

“To teach my knowledge. It has been fun every time. Not boring. Nice to get to know you too.”

“It is nice to work with students and teach them what you know.”

“Talk to others. Create discussions. Solve problems with others. It is nice to teach. I like present and such.”

“It is fun to teach. Listen to others how they solve their problems.”

“Meet new people, meet people, students.”

In Table 12, the frequency of certain themes in all interview answers are presented. It is clear that certain enticements are more commonly mentioned than others.

Table 12

Attendees' views mentioned in the interviews on what factors that would make them want to become SI Leaders

	<u>Factors that motivate students to become SI leaders</u>		
	<u>The possibility to travel</u>	<u>The possibility to teach</u>	<u>The chance to get to know the SI Leader</u>
Number of students mentioning (out of 15 respondents)	4	5	4

Discussion

First and foremost, it is important to keep in mind that this is an initial, small-scale pilot study of SI at one lower secondary school. It is only two classes with around 40 students participating in SI sessions facilitated by one SI Leader. As a consequence, these results are not directly transferable to other lower secondary schools. With that being stated, this study concludes that one particular SI program at one lower secondary school in a socially challenged area seems to work well.

The students' overall impressions of the SI sessions are positive, both among 7th and 9th graders, and they seem to provide an extra learning dimension to the ordinary curriculum. This satisfaction would potentially increase the willingness to attend SI sessions in upper secondary school where it is provided. The SI attendees' opinions on how the SI sessions have developed their study strategies and general skills are also positive. Both the questionnaire and interviews show that the responding students feel that the SI sessions have strengthened their skills, study strategies and motivation toward pursuing further education. Furthermore, several students expressed willingness to become SI Leaders themselves. Since the SI Leaders are in many ways the winners of the SI program, an SI program with lower secondary school SI Leaders would at least, in theory, have a potential to contribute a greater value. As a consequence, then, the link to university would of course need to be established in other ways, such as continuous meetings between SI Leaders from all educational stages (lower, upper secondary school and tertiary education), coaching from senior SI Leaders, etc. The potential need for a comprehensive supportive infrastructure is strengthened by the students' requests of coaching from the SI Leaders and the appeal of getting to know other people in general and the SI Leaders in particular.

It is too early to say whether SI belongs in lower secondary schools or not, but these findings indicate a viable potential. In order to provide a more profound understanding of how SI works, further research is needed. The authors recognize several interesting approaches to explore SI's viability in a lower secondary school setting. First, a larger scope of the study should be implemented and evaluated, i.e. more students and more schools, with a variety of SI Leaders. Also, it would be interesting to see the outcomes of lower secondary school students being SI Leaders. There are reasons that speak in favor of this setup; for instance,

several students in this study expressed a desire to become SI Leaders and that SI Leaders repeatedly have been pointed out as the winners of the SI programs. Another research approach should comprise a long-term study for investigating effects such as retention and transfer effects into other courses. Last but not least, a controlled study comparing SI attendees with non-SI attendees should be made in regards to grades, study strategies and skills.

Conclusion

Nothing in this study speaks against the idea that SI with a university student SI Leader is a viable method in lower secondary school. In this study's SI program, the students feel satisfied with the SI sessions and that they have developed their skills, strategies and motivation to pursue further education. There are also several attendees who express a desire for becoming SI Leaders themselves. Since this is a small study any general conclusions of SI's viability in lower secondary school requires further research; for example, a larger, long term study that evaluates grades, retention and study skills. It would also be interesting to see how it could work if lower secondary school students were SI Leaders.

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SI's Role in Promoting Engagement in Academics

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Abstract

The study of engagement and entitlement in higher education has garnered increased attention in the literature because of its relationship with academic performance. Using data collected from over 400 students enrolled in SI-supported courses, this study addresses the relationship between SI attendance and student engagement in academic courses. Students completed two instruments, the Academic Engagement Survey and the Academic Entitlement Questionnaire. The results were then correlated with SI attendance and final course grade. SI was significantly correlated with academic engagement. Contributions and implications of these findings, along with limitations and suggestions for future research are discussed.

Introduction

With recent theories in psychology and learning, education has seen a shift from teacher-centered methodologies to those more student-centered. The consequences of student-centeredness involve looking more at the students themselves, not so much to control, but to meet them where they are and promote attitudes and behaviors that lead to academic success. Student-centered methodologies have at their core the promotion of student engagement in the learning process with students taking a more active role in and increased responsibility for their own learning. Ultimately students not only construct knowledge pertaining to course content, but also adopt a proactive stance in future learning endeavors. These would embody what most educators consider desired student traits and behaviors since they are generally associated with academic success.

A student-centered focus in education to facilitate academically successful students, e.g. attending to learner motivation, utilizing active learning strategies and promoting productive learning relationships, has long been a focus in K-12 settings. Now these same considerations are finding their way to university settings due to increased concerns about retention in higher education. Though they might support more student-centered curricula, university educators find the implementation challenging. Enrollments in introductory classes in many public institutions exceed 100 students. Moreover, perhaps the result of misapplied student-centered approaches and sociocultural changes, university educators find themselves challenged with less desirable student characteristics and behaviors, namely students' unreasonable expectations and incivilities in academics. These academically entitled students tend to demand disproportionately more of instructors' time and energy than their peers.

Managing student-centered instruction and "student-centered students" are daunting tasks for concerned university instructors. How can university instructors promote student engagement and mitigate academic entitlement within their courses? Supplemental Instruction (SI) could provide an answer. This study addresses academic engagement, academic entitlement and academic success measures of students enrolled in SI-supported courses and investigates the role SI plays in these measures.

Conceptual Framework

Academic Engagement

Economic fluctuations, competition, cultural changes, increasingly diverse student populations, and variations in student preparedness have driven institutions' strategic initiatives not only to attract students, but also to retain students once enrolled. Given its relationship to academic performance, student engagement has been among conversations and initiatives in higher education in recent years. Since 2000, a vast number of institutions have employed The National Survey of Student Engagement (NSSE) to gain perspective on student behaviors, characteristics and perceptions for retention efforts.

Inquiries into academic engagement address behavioral, affective and cognitive aspects of learning (Fredricks et al, 2004). In order to create successful initiatives, educators and researchers must first determine the face of engagement, what does it look like; the precursors to it, what motivates students to engage; and the

results of it, what types of learning follow.

According to Astin (1999), students learn proportionally to the amount of energy they expend toward a learning goal. Learning results when students purposefully devote mental and physical energy toward a learning task. Moreover, this student involvement in learning is measurable, academic success correlates with it, and success of educational initiatives depends upon manifesting it. In essence, academic engagement not only implies intent, but also habits and strategies to fulfill learning goals.

The quality of engagement increases in light of students' autonomy and motivational approaches to the learning task/process. Students who value the learning topic and/or process as a source of enjoyment or as an invaluable step to reach personally relevant goals tend to exhibit deeper and more persistent levels of engagement than those who do not. Moreover, students perceive learning as enjoyable and/or relevant when they are in a position to act on it autonomously (Covington, 1997; Vansteenkiste et al, 2004; 2009).

Furthermore, students who perceive themselves able to succeed in their academic goals exhibit higher levels of engagement. These students are more proactive in seeking help when they need it and are more willing to embrace strategies and habits related to academic success (Gasiewski et al, 2012).

Despite the highly individual nature of student engagement, e.g. choices, interests, values, habits, etc., it is not immune to persuasion. Students do not exist in a vacuum and are, therefore, open to environmental and social influences; consequently, academic engagement can be facilitated. "Routes to student engagement may be social or academic and may stem from opportunities in the school or classroom for participation, interpersonal relationships, and intellectual endeavors" (Fredricks et al, 2004, pg. 61).

The Supplemental Instruction (SI) model is an institutional initiative that embodies both social and academic "routes to student engagement." Studies show that students who regularly participate in SI not only perform better than their classmates due to the peer support and critical thinking challenges offered in SI sessions, but also they indicate higher levels of autonomy and efficacy (Hurley & Gilbert, 2008). In their academic engagement study, Ribera et al (2012) reports SI participants indicated higher levels of engagement and deeper levels of learning than their nonparticipating peers.

One aspect of this study concerns students' behavioral, affective and motivational aspects to academic

engagement as addressed in a study by Gasiewski et al (2012). Since engagement is influenced by both environmental and interactional factors from both inside and outside the physical classroom, we hypothesize that SI participants will show higher levels of engagement and, as a result, higher levels of academic performance.

Academic Entitlement

Another aspect of this study relates to some negative trends that may result from a more student-centered focus, among other factors, in academia. Instead of engaged students, instructors and administrators are now facing, what seems to be, a growing population of academically entitled (AE) students.

Unlike engaged students who freely attend review sessions, use strategies, interact with peers and instructors in an effort to better learn course content, etc., AE students are motivated only to receive the reward of high evaluations with minimal personal expenditure spent on the learning goals specified for the course. Instead, their time and energy are spent negotiating their way out of specific learning and performance requirements to receive, what would be generally understood, an underserved high grade. The AE student perceives little responsibility in their educational process or performance than paying tuition.

According to Chowning and Campbell (2009), Academic Entitlement (AE) is defined as a belief maintained by students that one should be able to receive high grades in school without putting forth the effort that warrants such marks. AE has recently become a major topic of conversation in the media, with many higher education professionals expressing frustration in YouTube videos, podcasts, and Chronicle of Higher Education posts. Some of these commenters note that students participate in inappropriate behaviors in the classroom, and speculate that AE may be a contributing factor to these behaviors. Mellor (2011) encapsulates such behaviors as acting disrespectfully towards the instructor, holding conversations with other students during class time as well as using technology in a way that is not conducive to learning (e.g., using a cell phone). Kopp and Finney (in press) found that students who score higher on AE are also more likely to ignore mandatory campus procedures. If it is true that AE students are more likely to illustrate these behaviors, it is no wonder researchers are wanting to further investigate the topic empirically. Although this term has been cited frequently in the media, AE has received only minimal scholarly attention.

The first anecdotal discussion of AE was initiated in 1986 by Dubovsky, a professor who witnessed AE-related behaviors in his medical students. Since this time, the AE literature base has been expanded through the work of Achacoso (2002), Chowning and Campbell (2009), Greenberger et al. (2008), Hersh and Merrow (2005), and Shelley (2005), to name a few. Most recently, Kopp et al. (2011) expounded upon each of these researchers' ideas to consider academically entitled students as holding beliefs that: 1) students have a right to learn and that this process should not be strenuous; 2) students should not have to go out of their way to locate information, which thereby places responsibility on the professor and makes them passive learners; 3) any issues encountered in the academic environment are the result of the instructor, academic domain, etc. and are not the fault of the student; 4) course policies should be negotiable; and 5) since students pay tuition they deserve certain grades. Obviously these beliefs can pose as significant challenges to the learning process.

Research shows that student beliefs can influence the learning process (Greenberger et al., 2008; Hsieh, Sullivan, & Guerra, 2007; Jackson et al, 2011; Pino & Smith, 2004; Singleton-Jackson et al., 2011) and one way to measure this process is through studying the impact of specific measures (e.g., SI attendance, student engagement) on course grades and GPAs. Since students are under pressure to maintain a GPA that is high enough to satisfy university standards, exploring the elements that influence a learner's academic performance is essential (Trombley, 2000). Although some researchers have explored AE's relationship to GPA (Greenberger et al., 2008; Reysen, 2013), none have yet addressed AE's relationship to SI participation, academic engagement and academic performance. We aim to fill this niche in the current study.

Methodology

Participants

Participants were recruited from a major public university in the southern United States. Students who were enrolled during the 2012-2013 school year in SI-supported sections of historically difficult courses were invited to participate. These courses included introductory sections in: accounting, biology for majors and non-majors, anatomy and physiology, chemistry for majors and non-majors, and physics for non-engineering students.

Each student received an invitation via email to participate in an online survey, located in Qualtrics, which included the evaluation items addressing SI participation or non-participation. Additionally, participants were asked to respond to questions on the Academic Entitlement Questionnaire (AEQ; Kopp et al., 2011) and an academic engagement instrument (Gasiewski et al., 2012). As an incentive to participate in the survey, students were informed that their names would be entered into a random drawing for one of two gift certificates in the amount of \$50.00 each. After the survey was closed, two students were randomly chosen from the list of participants and allotted a gift certificate.

Instruments

The first instrument used by the researchers pertained to academic engagement and was developed by Gasiewski et al. (2012). Items on this survey delve into specific domains, such as assessing a student's aspirations ("I aspire to someday obtain an MBA or Master's in Accountancy") or how frequently they have experienced certain phenomena in the classroom (i.e., asking question in class, attending their instructor's office hours, tutoring other students enrolled in the course, etc.). Other items were used to assess how students viewed themselves in relation to their peers ("I have effective communication skills," and, "I am a competitive person"). Additionally, this assessment was comprised of a variety of response types, including Likert-type scales and yes/no responses. For example, participants were asked to respond to a five-point Likert-type scale that ranged from one, "never participating," to five, "very often," for the questions regarding class experiences (e.g., "I asked questions in class"). Yet for their aspirations (e.g., obtaining an MBA), participants responded with either a "yes" or "no". A total of 28 items were used to assess student engagement in the current sample of SI students. Previous researchers have found this assessment to be valid and reliable (Gasiewski et al., 2012)

The second instrument used in this study was the AEQ, which is an eight-item instrument that was developed by Kopp et al. (2011) for the purpose of measuring a student's entitlement in the academic realm. Questions on this instrument include: "Because I pay tuition, I deserve passing grades;" "I am a product of my environment. Therefore, if I do poorly in class, it is not my fault;" and "It is the professor's responsibility to

make it easy for me to succeed” (pp. 125-126). Items can be rated on a Likert-type scale from one to seven, with one referring to “Strongly Disagree” and seven referring to “Strongly Agree.” This instrument has previously been used to assess the relationship between academic entitlement, GPA and satisfaction with life (Reysen, 2013), as well as the relationship between academic entitlement and student incivility (Kopp & Finney, 2013). Although this instrument is still relatively new, it has been shown to be both valid and reliable (Kopp et al., 2011, Kopp & Finney, 2013).

Research Hypotheses

Several research hypotheses were explored in this study. These hypotheses included:

- Is there a difference between Course Grade (Points) for those who attend SI versus those who do not attend SI?
- Does SI mediate the relationship between academic engagement and final course grade?
- Does SI mediate the relationship between academic entitlement and final course grade?
- Does a significant relationship exist between academic engagement and academic entitlement for those who participate in SI? Those who do not?
- Can Course Grade (Points) be predicted using SI attendance, high school core GPA, ACT (Total), academic engagement, and AE scores?

Statistical Analyses

The researchers utilized the Statistical Package for the Social Sciences for Windows (SPSS Inc., 2013) in order to analyze the data. Specifically, the researchers conducted an independent samples t-test to see if there were differences in mean Course Grade (Points) for those who did and for those who did not attend SI meetings. Additionally, a Multiple Linear Regression Analysis was conducted to predict Course Grade (Points) using SI attendance, HS Core GPA, ACT (Total), academic engagement, and academic entitlement scores.

Results

The original sample for this study included 476 cases. However, there were 66 cases with an ACT (total) score and/or a HS Core GPA equal to zero that were removed. After removal of these cases, there were 14 cases with a missing Social Desirability, Academic Engagement and/or Academic Entitlement score that also were removed. Thus, the resultant sample analyzed included 396 usable cases.

Of these 396 students, the majority of the sample were female (71.7%), White (73.5%; see Table 1), and participated in this study during the Fall 2013 semester (57.1%; see Table 2). The frequency of attendance versus nonattendance in SI sessions was virtually identical; most participants attended a biological sciences (BISC; 41.9%) course followed closely by a chemistry (CHEM; 36.9%) course (cf. Table 2). Most students predicted a final course letter grade of B (32.1%) followed next by C (24.5%; see Table 3). Course letter grades were converted to points and used in calculations as an interval measure; with only 20 predicted values of F (see Table 3) out of 396 cases, this assumption should not adversely affect statistical inferences. An independent samples t-test showed no difference in mean Course Grade (Points) between the group attending SI sessions ($M = 2.70$, $SD = 1.05$) and the group not attending ($M = 2.61$, $SD = 1.14$); $t = .746$, p (two-tailed) = .456. Likert-scale responses were also assumed to be interval measures. Means for Social Desirability, Academic Entitlement and Academic Engagement were all less than the midpoint for each respective possible range of scores (cf. Table 4).

Course Grade (Points) correlated with all measures except Academic Engagement (see Table 5) with most correlations significant at the .01 level. SI Attendance correlated with HS Core GPA and Academic Engagement; ACT (Total) correlated with HS Core GPA and Social Desirability; and Social Desirability correlated with Academic Entitlement (see Table 5). Note that significant correlations involving Social Desirability and Academic Entitlement with other measures are negative, which is consistent with these two measures representing undesirable student characteristics. The presence of multiple correlations supports the use of multiple linear regression (MLR).

MLR was performed using Course Grade (Points) as the criterion variable and all remaining interval

measures and SI Attendance as predictor variables (see Table 6). The full model was significant at the .001 level and accounted for 11.7% of the variance in the criterion. Of the six predictor variables, the following three had statistically significant nonzero beta weights: HS Core GPA, $p < .001$; ACT (Total), $p = .007$; and Academic Entitlement, $p = .027$. In this order, these three predictor variables were then used in stepwise fashion to produce three new regression models (cf. Table 7).

All three new models were significant at the .001 level (see Table 8). HS Core GPA accounted for 6.9% of the variance in Course Grade (Points). The addition of ACT (Total) to the model increased this percentage to 8.6%, and lastly the addition of Academic Entitlement increased it to 10.6%. All changes in R^2 were significant at the .05 level (cf. Table 8).

Table 1

Personal Characteristics: Gender and Ethnicity

Characteristic	n	P
Gender		
Female	284	71.7
Male	112	28.3
Ethnicity		
Asian	12	3.0
Black or African American	68	17.2
Hispanic or Latino	16	4.0
Two or More Races	6	1.5
White	291	73.5
Other	3	.8

Table 2

Academic Characteristics: Semester, SI Attendance, Course

Characteristic	n	P
Semester		
Spring 2013	170	42.9
Fall 2013	226	57.1
SI Attendance		
Yes	197	49.7

No	199	50.3
Course		
ACCY 201	30	7.6
ACCY 202	27	6.8
BISC 102	50	12.6
BISC 160	44	11.1
BISC 162	40	10.1
BISC 206	9	2.3
BISC 207	23	5.8
CHEM 101	42	10.6
CHEM 105	73	18.5
CHEM 106	31	7.8
PHYS 213	9	2.3
PHYS 214	18	4.5

Table 3

Estimated Final Course Letter Grade

Letter Grade	n	P
A	87	22.0
A-	12	3.0
B+	8	2.0
B	127	32.1
B-	6	1.5
C+	7	1.8
C	97	24.5
D	32	8.1
F	20	5.1

Table 4

Descriptive Statistics for Interval Measures

Measure	Measured Range	Possible Range	M	SD
Course Grade (Points)	0.0-4.0		2.6	1.1
ACT (Total)	16-35		25.3	4.3
HS Core GPA	2.0-4.0		3.5	.5
Social Desirability	11-48	11-55	27.2	5.0

Academic Entitlement	8-48	8-56	23.8	7.8
Academic Engagement	7-35	7-35	16.8	6.2

Table 5

Correlation Matrix

Measure	1	2	3	4	5	6	7
1. SI Attendance		.04	.02	.12*	-.08	.01	.28**
2. Course Grade (Points)			.23**	.26**	-.11*	-.17**	.08
3. ACT (Total)				.41**	.14**	-.09	.04
4. HS Core GPA					-.01	-.07	.07
5. Social Desirability						.38**	.00
6. Academic Entitlement							.07
7. Academic Engagement							

* $p < .05$, ** $p < .01$; two-tailed.

Table 6

Regression Coefficients (Full Model): Course Grade (Points) Criterion

	b	SE	b	t	p
1. (Constant)	.92	.51		1.80	.073
2. SI Attendance	-.04	.11	-.02	-.33	.742
3. ACT (Total)	.04	.01	.15	2.71	.007
4. HS Core GPA	.43	.12	.19	3.64	<.001
5. Social Desirability	-.02	.01	-.08	-1.56	.119
6. Academic Entitlement	-.02	.01	-.12	-2.22	.027
7. Academic Engagement	.01	.01	.08	1.57	.117

$F(6, 389) = 8.218$, $p < .001$; $R^2 = .117$.

Table 7

Regression Coefficients (Stepwise): Course Grade (Points) Criterion

Model	b	SE	b	t	p
1					
(Constant)	.62	.38		1.63	.104
HS Core GPA	.59	.11	.26	5.42	<.001

2

(Constant)	.17	.41		.40	.687
HS Core GPA	.46	.12	.21	3.90	<.001
ACT (Total)	.04	.01	.14	2.66	.008

3

(Constant)	.75	.45		1.66	.098
HS Core GPA	.45	.12	.20	3.83	<.001
ACT (Total)	.03	.01	.13	2.48	.014
Academic Entitlement	-.02	.01	-.14	-2.98	.003

Table 8

Regression Coefficients (Stepwise): Course Grade (Points) Criterion

Model	F	R ²	Change Statistics		
			DR ²	F	p
1 ^a	29.34*	.069	.069	29.34	<.001
2 ^b	18.42*	.086	.016	7.057	.008
3 ^c	15.49*	.106	.020	8.891	.003

^aPredictor: HS Core GPA.

^bPredictors: HS Core GPA, ACT (Total).

^cPredictors: HS Core GPA, ACT (Total), Academic Entitlement.

*p < .001.

Discussion

The present study adds to the growing body of research which links SI participation to engagement. Though SI is not significantly predictive for academic achievement in this study, which is likely due to the population who participated in the survey, SI creates emotionally safe environments in which students engage in learning on all levels, i.e. cognitive, affective and behavioral, all of which are linked to academic success. Students have opportunities to interact with peers, explore challenging course content and utilize effective learning strategies to satisfy learning goals. Moreover, the voluntary nature of SI participation supports student autonomy in the learning process. The environmental and social aspects inherent to the SI model allow students to develop the sense of belonging to their academic environments and competence in managing themselves within them which is necessary for “meaningful cognitive engagement” (Walker et al, 2005).

Unfortunately, the results of this study do not determine whether SI participation is an intervention to

develop student engagement or it is simply a habit exercised by engaged students.

Certainly, a number of students who attend SI are already high achievers based on standardized test scores and past grades. Less successful students attend as well, however. Students have a propensity to compare themselves with and learn from peers (Bandura, 1997). Self-reported rationales and performances associated with SI attendance suggest that some students attend SI for social reasons, i.e. because their friends go, and because classmates with whom they identify experience improvements in confidence and performance. Students who participate in SI collectively demonstrate a range of academic engagement on any one or multiple levels, e.g. more or less efficacious, motivated or academically related. The foundation for SI is modeling. SI Leaders are selected because they demonstrate engagement behaviors and attitudes generally associated with academic success. They are defined as the model student, a near peer, someone with whom currently enrolled students can identify. SI leaders model attitudes, behaviors and strategies which convey quality engagement and which students can adopt as their own. The potential for less engaged students to develop into more engaged students is there.

Through modeling and peer interactions, SI has the potential to mitigate academic entitlement beliefs as well. Understandably, AE is not correlated with SI attendance or academic engagement in this study. AE students have little interest in engaging in the learning process to achieve satisfaction and academic success. Instead, their interests lie in negotiating their way out of learning obligations toward an unearned high grade. However, AE students like any student learn from experience and observation. Lippmann et al (2009) suggest initiatives founded simply to combat entitlement prove ineffective, but strategies which highlight accepted academic standards and promote engagement can decrease instances of entitlement. SI provides the context to exemplify standards and promote engagement to meet those standards.

Conclusion

As institutions of higher learning increase retention efforts, more emphasis is being placed on initiatives which focus on the student engagement which entail behavioral, affective and cognitive aspects of learning. Instructors are challenged to identify effective strategies to not only promote an intrinsic appreciation

of learning traditionally associated with lifelong learners, but also combat the incivility and unrealistic expectations of entitled students enrolled in their courses. SI provides a unique environment to address both. Through interactive and applied content reviews, students explore ideas and solutions with peers. SI allows students an opportunity to observe and evaluate their beliefs and strategies as well as adopt those which are associated with successful students.

The results of this study suggest SI is significantly correlated with academic engagement. It is likely, then, that students who participate in SI can experience a change in their levels of engagement, e.g. students with lower levels of engagement or academically entitled students with little inclination for engagement learn from and adopt engagement behaviors and beliefs modeled by peers. More research is needed, however, to determine if SI can, in fact, serve as an intervention for minimally engaged students.

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Communities of Practice for International Students: the Role of Peer Assisted Study Sessions in Supporting Transition and Learning in Higher Education

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Abstract

There is growing interest in understanding how international students can best be enabled to adjust to, participate in and learn from higher education (HE). This paper examines findings from a recent study in the UK which explored the contribution the Peer Assisted Study Sessions (PASS) scheme makes to this process.

An earlier study used in-depth interviews with international students to generate data; following findings related to engagement with a learning community, this current study rescutinised that data using Lave and Wenger's (1991) social-learning theory, Communities of Practice, as a theoretical lens. Themes of community, practice and participation were used to explore and understand the role of PASS in supporting international students' transition and learning in HE.

Findings illuminated the role of PASS in helping international students to socially integrate with students of other nationalities, developing friendships with peers and PASS leaders, which literature evidences contributing to an increased sense of belonging to a community. Through the mutual engagement of attendees and leaders, students developed shared language, values and practices relating to their discipline and studying in UK HE. Established PASS leaders shared experiences of first year with 'newcomer' international students, supporting their transition into UK HE culture and enabling their legitimate peripheral participation to develop more fully. Participation in PASS fostered students' engagement with learning activities and independent study habits. Limitations to the study and suggestions for further research will also be discussed.

Key Words: communities of practice; international students; peer assisted learning; learning communities; participation; adjustment; transition

Introduction

This article explores international students' participation in, and experience of, the Peer Assisted Study Sessions (PASS) programme through the lens of Communities of Practice (CoP) theory (Lave and Wenger, 1991). In particular, the role of PASS in enabling international students to establish a CoP was explored in-depth, focusing particularly on how PASS supported international students' transition, participation and learning in Higher Education (HE). The following research question informed this study:

Drawing from CoP theory, how do exploring themes of community, practice and participation enable a greater understanding of the role of PASS in supporting international students' transition and learning in HE?

In the context of the growing internationalisation of HE (DeVita and Case, 2003), there is a large body of research showing that international students can experience a variety of challenges in their transition into HE in the UK and abroad. These can include homesickness, culture shock, loneliness and difficulties learning in English as a Second Language (ESL) (Jones and Fleischer, 2012; Caruana and Spurling, 2007; Burns, 1991). These difficulties have been identified as barriers for international students' participation in HE learning activities (Krause, 2005), which exacerbate the process of transition and learning. This highlights the need for increased support for international students in HE, particularly in their first year of study (Anderson et al, 2009; Krause, 2005; Forland, 2006).

Research evidences the cultivating of student learning communities as an effective approach for supporting students in their academic, social and emotional adjustment to studying in HE (Zhao and Kuh, 2004; Lenning and Ebbers, 1999). This in turn positively impacts students' engagement, retention and overall satisfaction with their student experience (Zhao and Kuh, 2004; Tinto et al, 1994). Learning communities have been described as comprising students who have regular contact with one another for the purpose of active, collaborative learning and social activities (Zhao and Kuh, 2004). These learning communities can typically be built around the curriculum, classroom, halls of residence or a particular need such as an interest or disability (Lenning and Ebbers, 1999). One mechanism that aims to foster a course-based learning community and is

evidenced for supporting international students in their transition and adjustment into university is the PASS programme for peer-assisted learning (Schmidt and Miller, 2009).

PASS is aimed at enhancing the learning and student experience of undergraduates (Martin and Blanc, 1981; Wallace, 2003) and derives from the American Supplemental Instruction (SI) model (Martin and Blanc, 1981) driven by HE agendas for improving student retention, progression and achievement (Martin and Blanc, 1981; Blanc et al, 1983). Typically, PASS is led by second and third year student volunteers, who are trained and supervised by a member of staff to facilitate weekly, extra-curricular, small-group study sessions for first year students (Ody and Carey, 2009; Wallace, 1995). PASS leaders work in pairs to plan engaging sessions which address students' needs and foster collaborative learning through the use of interactive games, small group discussions and problem-solving scenarios. PASS leaders, who have previously experienced the first year of study, have a wealth of experience and knowledge to share about their course, study strategies, and broader experience of university life.

There is a large body of literature evidencing PASS as improving first year students' transition and adjustment to learning in HE; helping students to develop confidence, friendships, study skills and their understanding of course material, whilst providing a supportive environment to ask questions (Fostier and Carey, 2007; Coe et al, 1999; Arendale, 1994). Research suggests that PASS leaders also benefit highly from their involvement because they develop confidence, personal and professional development and a host of transferable skills for employment (Donelan, 1999; Coe et al, 1999).

Drawing on CoP Theory (Lave and Wenger, 1991), this research rescrutinises data generated from a previous research study that responded to the low participation of international students in a PASS scheme and explored the factors influencing participation. The previous study used the Theory of Planned Behaviour (TPB) (Azjen, 1991) as a theoretical framework for exploring the factors that influenced the participation of international students in PASS (Chilvers, 2013a). This current paper focuses on the overarching theme that emerged from that previous study – the role of PASS in facilitating international students in developing a CoP on their course (Chilvers, 2013a).

Literature Review

Communities of Practice

The social learning theory Communities of Practice (CoP) (Lave and Wenger, 1991) describes a community of people, joined together by shared interests and a mutual participation in a particular practice. Newcomers to a CoP can learn a broad range of values, repertoires and practices from more established members of the community including:

Who is involved; what they do; what everyday life is like; how masters talk, walk, work, and generally conduct their lives; ... what other learners are doing; and what learners need to do to become full practitioners. It includes an increasing understanding of how, when and about what the old-timers collaborate....and what they enjoy, dislike, respect, and admire. (Lave and Wenger, 1991, p.95)

Wenger (1998) argues that learning as social participation consists of four aspects which are “deeply interconnected and mutually defining” (p.5) including practice (learning by doing); meaning (learning as experience); community (learning as belonging) and identity (learning as becoming). Exploring the intricacies and nuances of CoP and each of these themes is beyond the scope of this study, so for the purpose of addressing the research question, focus shall be restricted to themes of community, practice and participation. Whilst the meanings of each of these terms within CoP theory are complex, for the purpose of clarification for this study these terms shall be defined. ‘Community’ refers to a special type of community whereby “practice is the source of coherence” (Wenger 1998, p72). ‘Practice’ is defined as “a way of talking about the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action” (Wenger, 1998, p.5). Finally, ‘participation’ is defined as “a process of taking part and also... the relations with others that reflect this process. It suggests both action and connection” (Wenger, 1998, p.53).

CoP originated out of Lave and Wenger’s (1991) Situated Learning theory and is heavily informed by Vygotsky’s (1978) Zone of Proximal Development. CoP theory highlights the significant role of learning relationships within the context of practice for newcomers’ learning and belonging to the community. More knowledgeable existing members or experts of a community take on an apprenticeship-type relationship with

newcomers or novices (Lave and Wenger, 1991). It is argued that receiving support from the experts enables newcomers to adapt to the culture and practice of the community, developing from legitimate peripheral participation (LPP), through to full participation (Wenger, 1998).

CoP theory has been used in literature for exploring a number of dimensions of HE including adult education (Merriam and Caffarella, 1999); students' transition into HE (Tobell and O'Donnell, 2005); adult students' shifting identity formation throughout transitions in HE and their perceptions of their participation (O'Donnell and Tobell, 2007); and the student experience of SI from the perspective of SI leaders (Couchman, 2008). CoP theory can be useful for informing educational practitioners' understanding of the student experience and the benefit of learning relationships between peers. This understanding can inform the development of effective support mechanisms for supporting transition and learning, such as ensuring students have frequent opportunities to build relationships and engage in peer learning. Research suggests that establishing learning communities can have a positive impact on learning, achievement and consequently progression and retention (Zhao and Kuh, 2004; Thomas, 2012; Tinto et al, 1999). Building on Couchman's (2008) findings in which SI was likened to the development of a CoP, this research uses CoP theory as a lens for understanding the role of PASS in supporting international students in two ways: constructing a CoP in their PASS group, whilst also adjusting to the CoP on their course and discipline more broadly. This in-depth exploration will focus particularly on the impact of belonging to a PASS CoP on international students' transition and learning experiences.

PASS offers a rich opportunity for the development of CoP, involving the mutual engagement of attendees and leaders, in developing a shared understanding and practice of discipline and learning specific language, and shared sense-making of their university experiences. PASS provides new students with active and collaborative learning experiences in a supportive environment, under the facilitation and guidance of more experienced students (List and Miller, 2013; Couchman, 2008). CoP theory is helpful in understanding both the significant role of PASS Leaders and their relationship with first year students participating in PASS. PASS leaders are more experienced members of the degree course's CoP, having experienced the first year of

university, the variety of learning, teaching and assessment styles, and have learned the course content. Sharing these experiences with newcomer-students supports them in their LPP through to fuller participation in their course and discipline community (Couchman, 2008). PASS leaders play a vital role in planning, structuring and facilitating sessions for attendees; sessions can include students learning and practicing how to plan an essay; why and how to reference correctly; how to give presentations or how to develop critical thinking. Couchman (2008) identified leaders' use of empathy, collaborative techniques and an inclusive approach as having a significant impact on developing a CoP. In response, student attendees develop their academic, subject-specific and professional skills and knowledge, whilst building friendships and receiving support in adjusting to university life (Couchman, 2008).

It is agreed in literature that CoP are not cohesive homogenous units, but rather fluid and heterogeneous (Handley et al, 2006; Wenger, 1998) which is demonstrated in the context of this research. On arrival at university, there are a number of CoP that international students in this study could participate in including their PASS group (Couchman, 2008), their course (O'Donnell and Tobell, 2007), their wider subject discipline (Parker, 2002), friendship groups with co-nationals (McDowell and Montgomery, 2009), and many others depending on their other interests (Wenger, 1998). The CoP in students' PASS group is intrinsically linked to their practice on their course and discipline.

To date, Lave and Wenger (1991) have mainly focused on professional practice and emphasise that the goal of participation in a CoP is not purely for the sake of learning, but rather for participating in practice. In this research, students participate in PASS in order to develop their practice of studying in HE. This can encompass a breadth of activities ranging from academic undertakings such as attending lectures and seminars; studying independently; conducting research online and in the library; completing assignments; and taking part in group work; through to the more social activities of sharing student accommodation; living away from family and friends; and socialising through membership of student clubs and societies. The large body of literature researching student transition into HE illuminate two reasons why PASS can be helpful in supporting students in developing these practices: 1) students have varying levels of skills, experience and preparedness

from their educational backgrounds and therefore need support in developing these practices (Haggis, 2006), and 2) the transition into these HE practices can be challenging, particularly for international students (Sovic, 2008; Caruana and Spurling, 2007).

International Students and PASS

International students have been identified as a subgroup, for whom there are challenges to participating and engaging with learning and studying in HE (Anderson et al, 2009; Krause, 2005). Jones and Fleischer (2012) reported in research at the host institution of this enquiry, that factors influencing poor international student retention included high ESL-induced stress, adjustment to cultural expectations of the UK HE system, students' personal experiences of their learning environment and a lack of emotional or academic support. Burns' (1991) research identified international students can experience significantly higher difficulties in adjusting to academic requirements, language skills and independent study compared to home students. When international students start university they have to adjust to "multiple cultural frameworks: the host nation culture, the multicultural student cohort, the institutional culture of the university and the disciplinary culture" (Schmidt and Miller, 2009, p.13).

These cultural adjustments, can lead to some students experiencing what has been defined as learning shock (Krause, 2005; Gu, 2005). Learning shock is experienced due to differences between students' home and host countries' educational approaches resulting in confusion and frustration at the different pedagogic methods (Gu, 2005). This can create a potential barrier for academic engagement and negatively impact on learning (Forland, 2006). Learning in ESL can also be problematic and cause difficulties in understanding lectures or participating in classroom discussions (Kingston and Forland, 2004; Burns, 1991).

While there is much research into international students' learning (Caruana and Spurling, 2007; Burns, 1991) and transition experiences (Anderson et al, 2009; Sovic, 2008), there appears to be little literature covering international students' participation in PASS or CoP. Schmidt and Miller (2009) investigated the impact that participation in PASS had on the transition experience of international Masters students from Asian and Hong Kong backgrounds studying at an Australian university. International students reported

improved English language skills, developing friendships and receiving support in their adjustment into the Australian and university culture. Zaccagnini and Verenikina (2013) explored postgraduate international students' perceptions of PASS, finding very positive experiences of all students surveyed. Students valued the importance of the learning environment in providing opportunities for interacting and asking questions in small groups with native students and their more experienced leaders. These studies suggest that schemes dedicated to supporting students' development in a learning community oriented context, such as PASS, can help integrate international students into the student learning community in these courses. Other research investigated social learning taking place in friendship groups of international students, suggesting an additional CoP (Montgomery and McDowell, 2009). This research sought to contribute to this gap in literature by exploring the role of PASS as a CoP in supporting international students' transition and learning experiences.

Research Methods

Methodology

This research is informed by a previous study which was underpinned by a social constructivist paradigm (Guba and Lincoln, 1994) in which knowledge is co-constructed through interaction between the active researcher and participant, and the researcher's interpretations of these interactions (Creswell, 2009). In this study, the rescruiting of data was guided by an interpretivist epistemological stance, since I was exploring the subjective lived experiences of individual students and held an active role in shaping the data generation and analysis (Mason, 2002). The methodological approach for generating and analysing the data in the original research employed the Theory of Planned Behaviour (TPB) (Ajzen, 1991) constructs as a theoretical framework. This current study used themes from CoP theory as a theoretical framework for analysis.

Interviews

In the original study a small-scale qualitative approach was taken, using semi-structured interviews, as opposed to a questionnaire or focus group, to facilitate in-depth exploration of participants' individual perceptions and experiences (Ashley, 2012; Mason, 2002). A random sample of three interview participants

were sought from the second year international students on the relevant course, recruited by email and lecture announcements. The small sample did limit the study to only exploring the lived experiences of a small number of students and therefore the generalizability of this research (Cohen et al, 2000); however this was intentional as it allowed for the analysis to provide “thick rich descriptions to convey findings” (Creswell, 2009, p.191). Participants included 2 males and 1 female, and were originally from Portugal, Germany and China. All spoke English as their second language, and had spent time in the UK before studying at the host institution.

Analysis

For the first study, interview transcripts were analysed using the process of directed content analysis (Hsieh and Shannon, 2005) using the TPB categories to code the transcripts which were recorded in a coding manual (Saldana, 2013). In this current study rescutinising this data, the transcripts were thematically analysed using themes of community, practice and participation from CoP theory. Key quotes interpreted as representative of emerging findings were selected for discussion; details regarding participants and frequency of the code are referred to, for example (P1,2,3; F7), to demonstrate the commonality of emerging themes.

Ethics

In the original study ethical considerations were particularly important due to the implications of my dual role as an academic member of staff and an insider researcher at the host institution. It was considered that participants might have felt concerned about the potential disclosure of their responses to the PASS Supervisor, who was one of their course tutors and also my colleague. In accordance with BERA (2011) and the host institution’s guidance (University of Brighton, 2011), the confidentiality and anonymity of student participants’ identities and their responses was guaranteed as much as possible, although limitations to this were made clear in the information and consent form. Acquiring participant consent was not deemed necessary for this current study due to the similar nature of enquiry.

Interviewing international students raised questions about cultural differences in communication and language barriers (Kvale and Brinkman, 2009; Holstein and Gubrium, 2003). Levels of directness in

conversation, modes of questioning and eye contact can all vary between cultures (Holstein and Gubrium, 2003). In view of these potential cultural differences, I tried to remain mindful throughout the interviews of potential issues. The layout of the furniture in the interview room intentionally avoided direct body language and eye contact which is viewed as being uncomfortable and disrespectful in some cultures (Holstein and Gubrium, 2003). Additionally at the start of the interviews, potential language barriers were addressed by inviting participants to draw a mind-map of their PASS experience in their first language; this aimed to trigger their memories which they could refer to throughout the interview (Wheeldon and Faubert, 2009).

Findings

The following findings result from rescutinising the data, using the following question to inform the analysis: *Drawing from CoP theory, how does exploring themes of community, practice and participation enable a greater understanding of the role of PASS in supporting international students' transition and learning in HE?*

Overall, findings suggest that PASS provides international students with the opportunity to establish a CoP on their course for transition and learning support. In support of theories developed by Wenger (1998), who identified that people belong to many CoP at one time, it is apparent that PASS not only facilitates a CoP in itself, but also supports international students' transition into the broader CoP on their course and discipline. This research focuses mainly on the CoP established in students' PASS groups, which is explored using the themes of community, practice and participation.

Community

Developing friendships. PASS facilitates the mutual engagement of student attendees and leaders in a shared learning community in which relationships are fostered. Wenger (1998) argues that at the heart of a CoP can exist a "very tight node of interpersonal relationships" (p.76). Participants in this study described PASS as enabling them to develop friendships on their course (P1,2,3; F7):

We also meet other class mates, because we all new here so we didn't know each other very well so we started talking to each other. (P2)

The recent ‘What Works Report’ (Thomas, 2012), identified students developing stable, ongoing friendships on their course as a significant contributor to having a strong sense of belonging to a community, consequently having a positive impact on students’ retention. Highlighting the role of PASS in developing friendships, one participant observed how the formalities of the classroom can be a barrier to students developing genuine friendships, highlighting the need for additional chances to socialise on their course:

Normally in lessons you wouldn’t really talk to people that much because you’re sitting there and the teacher doesn’t really like you talking to your neighbours all the time. (P3)

A strong sense of belonging to a community is argued by Thomas (2012) to “be most effectively nurtured through [students’ engagement in] main stream activities with an overt academic focus” (p.12). This accurately describes PASS and demonstrates the role of PASS in providing students with an academically-focused community to belong to.

Learning relationships. Within PASS, the relationships between attendees and leaders are pivotal to the establishment of a CoP (Zaccagnini and Verenikina, 2013; Couchman, 2008). Lave and Wenger (1991) describe how newcomers learn from experts’ who share their experiences and how they have overcome problems through story-telling (Lave and Wenger, 1991). PASS leaders are encouraged in training to share their experience of their course and university life with PASS attendees, to share the barriers to learning that they have overcome, the strategies used to do so and to answer attendees’ questions. Demonstrating this, participants in this research valued their relationships with their leaders and the advice they gave, describing them as approachable and reassuring (P1,2,3; F5):

At the start it was just cool that second years would... I thought that if you go along you can ask about how it’s like at the beginning because when you start you don’t really know how uni is gonna be. (P3)

New students be scared facing new things and the course is harder, but the leaders would say 'it’s alright'. (P2)

Transition into Community. As previously discussed, for International students' transitioning into UK HE there can be a number of challenges such as language barriers, cultural differences, loneliness and stress (Anderson, 2009; Sovic, 2008; Burns, 1991). As supported by literature (Schmidt and Miller, 2009), participants described the support they received from leaders sharing their experience and advice, supporting them in orientating themselves to life in the UK and at the host institution (P2,3;F3):

I can say the PASS sessions is not only helpful for the academic stuff it's also about your life, how to live in [town] and study in the uni. For example where can you rent a property in the vicinity of [town] instead of student accommodation....also where can you shop. (P2)

When you start you don't really know how uni is gonna be so...you can ask them a bit and... get a bit of information about uni in general...(P3)

This highlights the role of PASS in supporting students' LPP in university life, to fuller participation; for international students this is increasingly helpful as they adjust to the cultural norms, expectations and practices of the course, institution and country.

Social Integration. PASS is also helpful for facilitating international students' social integration into a diverse student body (Zaccagnini and Verenikina, 2013; Schmidt and Miller, 2009). A common observation made by the participants was international students' tendency to befriend co-nationals and be less likely to socially integrate with students of other nationalities (P1,2,3;F4):

Usually international students they love to stick together and I think that's what I sort of realised last year that it's actually quite hard to get to know people or find new friends because Cyprus people would only stick together or Spanish people would only stick together. (P1)

This is a theme supported by literature which argues that, whilst co-nationals can provide comfort and a support network, not integrating with home students can prevent international students improving their English or adapting to the new culture (Maundeni, 2001). Wenger (1998) identifies that CoP are diverse, consisting of people with different personalities, nationalities, beliefs and backgrounds, which brings richness. This

reinforces the value of PASS facilitating international students' social integration, improving ESL and better preparing them to integrate with the CoP on their wider course and for future employment beyond university.

Practice

Shared Language. The development and practice of a shared language has been identified as a key aspect of CoP (Lave and Wenger, 1991), which for newcomers involves “the process of learning to speak as a full member of a community” (Lave and Wenger, 1991, p.106). Whilst language can be used in a didactic way to transfer knowledge between expert to novice, Lave and Wenger (1991) make the important distinction between “talking about and talking within practice” (p109) whereby through demonstration from and mutual practice with old-timers, newcomers can contextualise, apply and fully participate in the practice of the community.

PASS provides a safe and supportive environment for new students to learn and practice talking in a number of new languages including a learning language used at university, the subject-specific language and discourse, and specifically for international students, the added complexity of learning in ESL. PASS Leaders model these languages and discourse, and are also able to translate more complex terminology and concepts from the discipline using student-friendly language that staff might not use, enabling a shared understanding with student attendees. This was referred to by P2 who compared the support received from both their PASS leaders and their Personal tutor, describing the common language he had with his peers:

When I studied the foundation it was just like personal tutor but it's not really helpful because your teacher has got this level and you this level and you be scared to talk to them, but if you talk to the same age then you have common language. (P2)

For some international students, studying in ESL and speaking in ESL in front of peers can cause stress and anxiety (Kingston and Forland, 2004; Burns, 1991). PASS offers the opportunity for international students to practice and build confidence in speaking in ESL (Zaccagnini and Verenikina, 2013; Schmidt and Miller, 2009) as supported in this study (P2,3; F4):

Other international students- they're quite worried about actually talking English...and don't really know how to say stuff so rather don't say stuff and I think for themit's quite good if you have the chance to have conversations in a relaxed atmosphere. (P3)

However language barriers can still be a challenge for international students in PASS sessions, as P2 from China explains:

Some students have got accents I don't know and I don't quite understand when they're talking...they talk too quick and I don't know what they talk. I try to pick out main point and understand what they talk. (P2)

Shared Study Practice. Engaging in a CoP is a joint enterprise with shared values, repertoires, and practices (Lave and Wenger, 1991). In order for PASS leaders to plan engaging sessions that introduce students to the values and practices of their discipline, leaders are equipped with a set of 'strategy cards' (University of Manchester, 2009) and employ a variety of facilitation techniques to foster collaborative learning (Couchman, 2008). Session activities can include sociable icebreakers, interactive games, small group discussions, group debates and problem-solving exercises. These enable students to develop a shared understanding and development of subject knowledge, academic skills and study techniques. This was supported by participants in this study who described the value of revisiting course material (P1,2,3; F3) and practicing and revising for exams (P1, F1) in PASS:

To recap on what we've been doing for each module, sort of practising or having a go at it or if we had questions then ask. (P1)

Before the exams we were given practical help and we use to practice with previous exam questions...they did sort of meetings with all the groups and we had a go at previous exam questions and that was quite interesting I have to say. (P1)

Cultural Practice. Some international students might have to make cultural adjustments in order to adapt to potentially different pedagogic practices, cultural norms and expectations in UK HE (Gu, 2005). Lave

and Wenger (1991) describe this process as “both absorbing and being absorbed in – the ‘culture of practice’”. An extended period of legitimate peripherality provides learners with opportunities to make the culture of practice theirs” (p.95). The potential mismatch between the culture, practices, norms and expectations of a student’s background with their institution’s, has been identified as a key factor that can influence students’ sense of belonging and, consequently, retention (Thomas, 2012). This is supported by Situated Learning theory (Lave and Wenger, 1991) which suggests that people bring into a CoP their own personal values, experiences and backgrounds which are either contradictory or supportive of the norms of the CoP, which influence their sense of belonging.

These adjustments have been found in literature to cause international students high levels of stress (Jones and Fleischer, 2012; Handley et al, 2006, p.650) and culture shock (Gu, 2005). This is echoed by participants in this study, one of whom describes international students’ sense of culture shock (P2,3; F8) on arrival at university:

The PASS sessions always happen in first year as students come here and probably they didn’t live here before so they feel strange, everything is strange here, everything is new. (P2)

This highlights the importance of supporting international students in making these adjustments to the cultural practices of the institution. PASS can provide a safe place for these students to address these tensions through dialogue with peers, as supported in literature (Zaccagnini and Verenikina, 2013; Schmidt and Miller, 2009).

Participation

Fostering Participation. CoP theory describes participation in a practice in which knowledge exists, as an “epistemological principle of learning” (Lave and Wenger, 1991, p.98), highlighting the beneficial impact of participating in PASS for international students’ learning. Students’ participation in formalised curricular sessions such as lectures and seminars has been identified in literature as a common problem across HE (Moore et al, 2008; Massingham and Herrington, 2006). In light of this, students’ participation in weekly extra-curricular sessions can be seen as a valuable approach to fostering students’ engagement with their courses and effective study habits.

Motivation. Due to the voluntary nature of participation in PASS, students who do participate are speculated in literature as being more motivated in their studies generally (McGee, 2005). Both P1 and P2 who participated in all of the PASS sessions available to them both referred to perceiving themselves as motivated to learn (P1,2,3; F7). However, CoP theory identifies motivation as a by-product of participation in a CoP, which suggests the potential benefit of PASS for motivating less enthused and engaged students. Whilst staff have been shown in literature to employ a number of techniques to increasing attendance at PASS (Chilvers, 2013a; 2013b; White et al, 2008), this still raises questions around how to encourage the more unmotivated students to participate in PASS, particularly for international students who might be unfamiliar with the practice of peer learning or group work.

Barriers to Participation. P3 who stopped participating in PASS after a couple of sessions, identified a number of factors influencing her decision to stop participating including awkward social dynamics, her perception that the PASS leaders were not being helpful and that she was not gaining anything from the sessions. This is supported by literature in which Wenger, McDermott and Snyder (2002) identify there can be a number of barriers to participating in CoP and that designing attractive, vibrant CoP is vital in keeping members participating. This highlights both the continual challenge for PASS leaders in designing sessions which are relevant to the students' needs, whilst remaining fun, engaging and beneficial for their learning; as well as the importance of ongoing support and supervision of PASS leaders in their roles.

Discussion

Returning to the research question: *Drawing from CoP theory, how does exploring themes of community, practice and participation enable a greater understanding of the role of PASS in supporting international students' transition and learning in HE?* The overarching findings and arising questions that have emerged from this research for each of the key themes of community, practice and participation shall be discussed.

Community

PASS facilitates international students in belonging to a CoP, in which they mutually engage with other new students and their more experienced leaders, in order to develop a shared language, values, practices and friendships. This supports international students in their transition and social integration into the broader CoP on their courses, university and disciplines.

Transitioning into UK HE can be difficult for some international students due to cultural differences, homesickness, language barriers and learning in ESL (Jones and Fleischer, 2012; Sovic, 2008; Burns, 1991). These tensions can cause challenges for international students in negotiating their place in the CoP on their course and discipline (Handley et al, 2006). Similar to O'Donnell and Tobbell's (2007) observations about the challenges for mature students' transition into HE, for some international students, legitimate peripheral participation is not necessarily a positive construction as implied by Lave and Wenger (1991), but can potentially be a tense and stressful experience. This reinforces the benefit of PASS providing a CoP for international students to discuss these difficulties with other students in an inclusive and supportive environment.

Practice

PASS supports international students in developing their English in a supportive environment, whilst also using a shared language of learning in HE, the language of the discipline and provides an open space for dialogue between peers to practice their discourse (Bohm, 1996). The practice students develop in the PASS CoP relating to their studies and university life will positively impact their practice and participation on their courses and disciplines as all are intrinsically linked. PASS also provides an opportunity for international students to ask questions and clarify understanding in order to adjust to the cultural differences to UK HE compared to those of their home country. These cultural adjustments highlight the importance of educational practitioners taking an inclusive approach in the classroom, like PASS leaders do (Couchman, 2008), to ensure international students fully understand the reasons for UK HE practices and the expectations upon them.

Participation

PASS leaders play a vital role as established members of the CoP in supporting newcomer international

students in their legitimate peripheral participation, through leaders sharing their experiences, and designing and facilitating engaging sessions for shared learning (Wenger et al, 2002). PASS leaders are advised in training to plan their sessions thoroughly at the beginning of the academic year, as new students on the periphery of participating in PASS will not be sure about what topics and skills they want to cover in sessions. Throughout the academic year, as teaching and assessments progress, student attendees are invited by leaders to have increasing involvement in setting the agenda for PASS, moving from LPP to fuller participation in PASS. This demonstrates students developing confidence in self-directed independent study.

Participation and practice can be difficult to distinguish between when understanding CoP (Handley et al, 2006). This is a challenge that I have encountered in this research due to participation in learning activities being a key element of a student's practice when studying in HE. CoP theory claims that newcomers' participation develops from LPP to full participation over time; and whilst Wenger (1998) identifies a number of different trajectories that a person can have in their participation, the notion of defining 'full participation' is not addressed. This research raises questions about how we define this notion of 'full participation' in the context of studying in HE, and particularly for international students?

SEEC descriptors (SEEC, 2010), which are ways of defining and categorising learning on accredited modules at each level, might be one way of defining what 'full participation' looks like. Theoretical models such as Astin's (1984) Student Involvement theory or Arnstein's (1969) Ladder of Citizen Participation might shed light on other dimensions of understanding participation in HE, such as levels of partnership and power dynamics within communities, although an analysis of this is beyond the scope of this study. However 'full participation' might be defined, an additional issue is that it might look differently for individual students depending on their circumstances, or might not meet their aspirations (Handley et al, 2006)—a complexity that CoP theory does not seem to address.

Conclusions

Limitations

This research used a small data sample which had the benefits of providing thick, rich data from in-depth interviews, but does limit the transferability of the findings. However this research could be done on a larger scale and has raised a number of questions for further research.

Further Research

Due to the scope of this study, there were a number of themes from CoP theory that were not covered in this exploration of PASS as a CoP, such as meaning (learning by experience) and identity (learning as becoming). The impact that engaging in PASS as a CoP has on students, and specifically international students' constructions of their identities could be explored. Similarly the role of PASS in enabling international students to make meaning of their experiences and adjustments, in the context of their transition and learning, could be further explored. Additionally, further research could investigate the impact of regular participation in a PASS CoP on international students' achievement, progression and retention. Finally, some of the barriers highlighted for international students in their participation in PASS, such as awkward social dynamics and language barriers, could be explored further with suggestions made for PASS practitioners and leaders for enhancing international students' experiences of and participation in PASS.

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