



**Research Brief**

# Relationship of Supplemental Instruction (SI) to Course Success for Students In the Title V STEM SI Program

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### About this Brief

The aim of this brief is to summarize the relationship between supplemental instruction (SI) and classroom achievement for those students in the Title V STEM (Science, Technology, Engineering and Mathematics) SI program at Crafton Hills College. Overall, the findings indicate that SI is related to student course success.

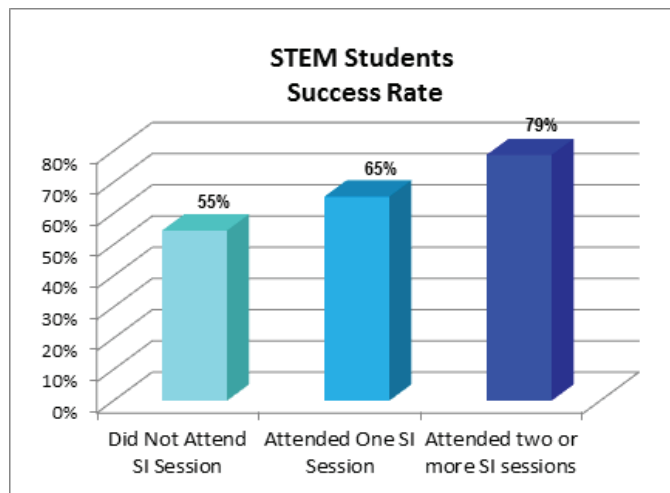
### Summary of Findings

- 72 students attended one or more SI sessions and earned a Grade on Record (GOR) in Fall 2012
- 65% of students who attended a SI session attended two or more sessions
- 49% of the students who were enrolled in a section where SI was offered attended a SI session at least once
- Students who attended one or more SI sessions had a statistically significant and substantially higher success rate (74%) than students in the same section who did not attend at least one SI session (55%)
- Students who attended two or more SI sessions had a statistically significant and substantially higher success rate (79%) than students in the same section who did not attend at least one SI session (55%)

### Findings

An examination of the students who did not attend SI and those who attended a session one or more times or two or more times was performed. Students who attended one or more SI sessions had a statistically significant ( $p=.013$ ) and substantially higher ( $ES=0.40$ ) success rate (74%) than students in the same section who did not attend at least one SI session (55%). Similarly, students who attended two or more SI sessions had a statistically significant ( $p=.006$ ) and substantially higher ( $ES=0.50$ ) success rate (79%) than students who did not attend at least one SI session (see Figure 1, Table 1, Table 2 and Table 3).

**Figure 1:** Fall 2012 Supplemental Instruction Success Rate by Number of Sessions Attended.



**Table 1:** Fall 2012 Success Rate of Students Who Did Not Attend and Attended One or More SI Sessions by Program.

SI Course	Success Rate							
	Did Not Attend SI Session			Attended One or More SI Sessions			ES	P Value
	#	N	%	#	N	%		
MATH+250	28	49	57	12	16	75	0.36	.208
MICRO-102	14	28	50	22	34	65	0.30	.250
PHYSIC-200	0	0		20	23	87		
<b>Total</b>	<b>42</b>	<b>77</b>	<b>55</b>	<b>54</b>	<b>73</b>	<b>74</b>	<b>0.40</b>	<b>.013</b>

Note: Students were included even if they were not enrolled in a section where SI was offered.

**Table 2:** Fall 2012 Success Rate of Students Who Did Not Attend and Attended Two or More SI Sessions by Program by Course.

SI Course	Success Rate							
	Did Not Attend SI Session			Attended Two or More SI Sessions			ES	P Value
	#	N	%	#	N	%		
MATH-250	28	49	57	8	10	80	0.46	.183
MICRO-102	14	28	50	10	15	67	0.33	.306
PHYSIC-200	0	0		19	22	86		
<b>Total</b>	<b>42</b>	<b>77</b>	<b>55</b>	<b>37</b>	<b>47</b>	<b>79</b>	<b>0.50</b>	<b>.006</b>

Note: Students were included even if they were not enrolled in a section where SI was offered.

### Methodology

The success rate<sup>1</sup> of students who utilized SI was compared to students in the same section who did not utilize SI. Students who attended a SI session one or more times or two or more times were compared to students who did not attend a SI session and were enrolled in the same section. Because SI benefits are more likely to occur with students who participate in SI two or more times, students who attended two or more times were also compared with students who did not attend at least one SI session.

The effect size statistic was used to indicate the size of the difference on success between those who did and did not attend SI. A method of interpreting effect size was developed by Jacob Cohen, a renowned statistician and psychologist. Jacob Cohen defined “small”, “medium”, and “large” effect sizes. He explained that an effect size of .20, .50, and .80 can be small, medium, and large, respectively. An effect size of .20 or higher is considered meaningful. It is important to mention that the number of students in each group does not influence effect size; whereas, when statistical significance is calculated, the number of students in each group does influence the significance level (i.e. “p” value being lower than .05).

### Participation

In Fall 2012, 72 students attended at least one SI session. Of those, 72 (100%) students earned a GOR in one of the sections in which SI was offered. Moreover, 47 of the 72 (65%) students attended two or more SI sessions.

Table 3 illustrates the number of students who attended at least one SI session and earned a GOR in one of the sections where SI was offered. Students were excluded if they attended an SI session for a section where SI was not offered. Accordingly, 49% of the students who were enrolled in a section where SI was offered attended a SI session at least once.

**Table 3:** Percent of Students Attending One or More SI Sessions by Section.

Course Section	Percent of Students who Used SI		
	#	N	%
MATH-250-15	1	32	3
MATH-250-50	15	33	45
MICRO-102-35	13	23	57
MICRO-102-36	17	30	57
MICRO-102-38	1	2	50
MICRO-102-39	3	7	43
PHYSIC-200-20	6	6	100
PHYSIC-200-21	4	4	100
PHYSIC-200-22	1	1	100
PHYSIC-200-23	5	5	100
PHYSIC-200-24	7	7	100
<b>Total</b>	<b>73</b>	<b>150</b>	<b>49</b>

\*The data accounts for those same students who attended more than one section and some students who attended SI even though they were not in a section that offered SI. Note “#” represents the number of students who attended at least one SI session and earned a GOR, “N” represents the total number of GOR earned in the SI section, and “%” represents the percent of students who attended at least one SI session.

<sup>1</sup> Success rate is defined as earning a grade of A, B, C, or P divided by the number of grades earned on record (GOR; A, B, C, D, F, P, NP, I and W).