Running head: Title V Research Summary

Research Summary of Title V Pilot Projects at Norco

Greg Aycock

6/26/2009

Executive Summary

The goal of the Title V grant for RCC-Norco was to identify interventions that improved outcomes for low income, at-risk, and Hispanic students. In addition, Title V was supposed to support institutionalization efforts for interventions that were shown to be effective through empirical evidence. Because the Title V population was well represented in basic skills courses, this became the focus of the Title V pilot studies. Title V interventions included learning communities, tutor-assisted courses, the math intervention project, and the student educational plan (SEP) study. Each of these interventions were repeated over successive semesters and research designs were selected that would best identify the effect of the intervention on student outcomes.

Learning communities were student cohorts who were co-enrolled in two or three courses concurrently. The instructors integrated curriculum and coordinated efforts in order to show the connection between various disciplines. Six learning communities were compared to similar comparison groups and the aggregate results showed that student success, retention and persistence were all significantly higher in the learning communities than in the comparison groups. In addition, students in learning communities showed some increase in intrapersonal awareness and greater increase in institutional awareness over the comparison groups. Although learning communities were not institutionalized, their presence at RCC-Norco resulted in the Success Track program which changed scheduling for many basic skills classes to be more convenient for students.

Tutor-assisted (TA) classes were based on an integrated model of supplemental instruction. Initially, TA classes were used solely by the math discipline but soon spread

to many other disciplines over time. The TA model intersperses lecture and group activity throughout the class. When a group activity commences, the tutors (1-4 depending on the size and requests of the instructor) help facilitate groups or answer questions of individual students. To make sure the intervention was had a chance to take effect, only classes that utilized tutors 20 hours or more over the entire semester were included in data analysis. Results of TA classes were somewhat mixed. Over the 60 classes within a three-year period, all TA outcomes including success, retention, and persistence were significantly higher than the comparison groups. However, contrasting patterns occurred with some subpopulations. When restricted to basic skills classes, retention was significantly higher in the TA group. When looking at the subpopulation of TA and comparison groups who shared the same instructor, none of the outcomes were significantly different between groups. Recommendations for TA classes are that they probably are not appropriate for basic skills students, but should continue with non-basic skills classes. Allowing TA classes to continue will provide a positive intervention for the growing number of instructors who are looking for innovative ways to help students.

The math intervention (MI) project was an optional way students scoring low in math could repeat the math placement test. In order to repeat the test, students were required to complete a refresher course. Upon satisfactory completion of the refresher course, students were then permitted to take the math placement exam again. Five MI cohorts provided data for outcomes in the following areas: retest placement, success in math taken in following semester, and successful completion of Math 35 (Intermediate Algebra). Retest placement was as follows: 30.3% stayed at same level, 21.2% went up one level (elementary algebra) and 48.5% went up two levels (intermediate algebra).

When comparing all students who went on to the math in which they retested in the following semester there was no difference in their success or retention rates compared to everybody else who was in the class. This indicated that the retest placement was valid. Successful completion of Math 35 for MI students was 51%, the comparison group was 12.7%. This represented not only statistical significance, but profound impact in increasing movement of these students through math, one of the 'gatekeeper' courses of higher education. Given these outcomes, the math intervention is recommended to be institutionalized. At present, efforts by math faculty and the district are being made to institutionalize the math intervention program at two of the three campuses.

The student educational plan (SEP) study was designed to evaluate the impact SEP development has on basic skills student outcomes. A rigorous research design was employed to minimize certain confounding variables and thereby isolate the effect of the SEP. By targeting an entire class to be 'blanketed' with SEPs, a motivational selection bias was avoided that is inherent in any study of centralized counseling programs. The motivational selection bias involves studying students who choose to go in to see a counselor, and navigate various obstacles along the way, thereby selecting only the most motivated and persevering students who coincidentally receive SEPs. Also, SEP blanketed classes were compared to other sections taught by the same instructor, thereby mitigating 'teacher effects'. Finally, the study was repeated in two successive semesters to minimize any influence anomalous data might have had on outcomes in any single semester. Course outcomes were compared between blanketed and comparison groups in the English 60A course as well as for all enrollments in the semester. Success, retention and persistence were not significantly different between students in the SEP blanketed

and comparison groups when only looking at the English 60A grades. When comparing success and retention for all enrollments for the two groups, there was a significant difference in both outcomes. However, the difference showed that the SEP blanketed group was significantly lower than the comparison group in both success and retention. The exact reason for these surprising outcomes unknown, but recommendations include exploring new counseling models with basic skills students.

Introduction

The Title V (Developing Hispanic-Serving Institutions) grant for the Norco Campus of Riverside Community College (RCC-Norco) was tasked with improving student success at RCC-Norco for low income, high risk and Hispanic students. However, since it was an institutionalization grant, the focus was not large numbers of students. Rather, by implementing pilot projects and gathering rigorous research data, Title V was to provide conclusive information on interventions that work. It was the responsibility of the institution to decide which projects appeared most effective and then work with Title V to establish them as standard practice for the institution.

During the tenure of Title V at RCC-Norco, four general categories of pilot projects were implemented: learning communities, tutor-assisted classes, the math intervention program, and the student educational plan (SEP) study. For all of these projects, pilots were implemented multiple times; sometimes amassing up to eleven terms of data. These pilots were replicated over several terms in order to ensure that data informing institutionalization decisions were reliable. The purpose of this report is to summarize these data for the pilot projects. The format for presenting this information is to provide a short literature review for each of the areas, describe the intervention as implemented at RCC-Norco, show data summarizing the multiple terms of pilot projects, and make conclusions and recommendations based on these data.

Learning Communities

Background and Literature

Several studies on the effectiveness of learning communities with an at-risk, low income student population has shown that this type of intervention works (Astin, 1993;

Boylan, 2002; Tinto, 2004). Definitions of vary, but Barbara Leigh Smith (1991) offers the following insight into understanding the essence of a learning community:

> …a variety of curricular models that purposefully restructure the curriculum to link together courses or coursework during the same quarter or semester so that a group of students finds greater coherence in what they are studying and experience increased intellectual interaction with faculty members and other students. In learning communities, students and faculty members experience courses and disciplines as complementary and connected enterprises. (p. 42)

Tinto (2004) echoes Smith's definition thirteen years later, stating that three characteristics are essential to any learning community. First, students must co-enroll in two or more courses. Though this may seem obvious at first, it is still necessary to establish this criterion. For instance, stand alone classes that are made to feel like a "community of learners" through various support mechanisms would not fit the definition of a learning community. The second characteristic is that courses (i.e. faculty) participating in the learning community need to be connected by some theme, problem or other conceptual "hook" that connects the disciplines in a meaningful way. The final characteristic Tinto promotes as essential to a learning community is being "intentionally designed to promote both social and academic connections that are not possible when students enroll in separate courses whose content is disconnected from one another" (2004, p. 4).

Learning communities may take various forms depending on the nature of the class or institution involved. Usually they will fall into one of two groups: linked-classes or

community-within-a-class. Linked classes are two or more classes all populated with the same students. These courses may be taught by separate instructors or may be team taught, but should still be characterized by an integrated curriculum. The community within a class is structured with one or more large classes containing the learning community students as well as other non-learning community students. Associated with the large class(es) is another smaller class comprised only of the learning community students. The smaller class may be a study skills course, freshman seminar, extended orientation, or other format facilitating supplemental skills and knowledge necessary to success in the larger class(es).

Description of Intervention

Title V sponsored six learning communities (LCs) that were replicated over three separate semesters. The LCs usually involved a combination of basic skills courses or a pairing of basic skills and appropriate general education courses together. Access to the LC classes was limited in order to verify that students would co-enroll in all courses constituting the LC. On rare occasion, students were allowed to not enroll in one of the LC courses if they had already completed it previously. After some initial difficulties were encountered with co-enrollment, coordination with admission and records was necessary in order to establish a smooth process for students who were interested in enrolling in all courses in the learning community, and not allowing enrollment to students who weren't.

Most faculty involved tried to integrate their curriculum. Some faculty implemented a common theme (e.g. social class & mobility) that they would integrate into lecture and course readings. Other faculty shared assignments or texts to integrate curriculum. In

addition, extracurricular activities were occasionally offered, such as university tours or potlucks. Several faculty identified these activities as essential in creating a sense of connection within the learning community. For participating in the learning community faculty were paid a stipend in addition to their regular teaching load to compensate for the extra time involved in coordinating curriculum.

All learning communities lasted for one semester and upon end of term the learning community was disbanded. One attempt was made to create a year-long learning community that facilitated quicker progress through remedial course sequences in reading and English. However, from the first to the second term, all but a few students were unable to continue with the successive learning community due to schedule conflicts and the effort was abandoned.

Data and Results

The data used for learning communities were derived from MIS referential files and from surveys created and administered by this researcher. Referential files are used by the California Community College Chancellor's Office to identify the various statewide, district, and college outcomes accessible to the public through the Data Mart website: http://www.cccco.edu/SystemOffice/Divisions/TechResearchInfo/MIS/DataMartandReports/tabid/282/Default.aspx.

In designing any research study it is important the outcomes logically follow from the nature of the intervention. Since LCs involved innovative approaches to curriculum, it made sense to select course success and retention as a measure of learning community effectiveness. For this study, success is defined as the percentage of students who receive a grade of A, B, C, or CR; retention is defined as the percentage of students who do not

receive a W. Also, since the LC also involves the element of connection to fellow students and the college, it was natural to look at student persistence and self-report of student gains in intrapersonal and institutional awareness. Persistence is defined as the percentage of students receiving a valid grade notation (A, B, C, D, F, NC, CR, W, I) in the following semester. Intrapersonal and institutional awareness was identified through a self-rating scale in comparison to others of similar age. For specific items, please see Appendix A.

The research design for course outcomes was a treatment group/comparison group evaluation. For evaluation of intrapersonal awareness, the treatment group was given a pre- and post-survey to determine if significant shift had occurred through the course of the semester. In selecting a comparison, it is imperative to identify students that are as similar in all ways to the treatment group as possible. The more similar the comparison group, the more confidence we can have in attributing the difference in outcomes to the intervention. For this reason, the comparison group chosen was students who had enrolled in all of the same courses (not the same classes) that were involved in the LC during that semester. As the reader may have anticipated, there was not always a sufficient number of students who had coincidentally enrolled in all of the same courses, so in many cases the comparison group was comprised of students who had enrolled in most but not all of the courses.

The following data summarize 6 learning communities and 6 comparison groups representing a total of 396 students and 1386 course enrollments. Courses involved were: English 60A, 60B, and Eng 50 (basic and intermediate English composition); Math 51, 50, and 52 (arithmetic, pre-algebra, and elementary algebra); Reading 81, 82, and 83

(reading-all levels); Guidance 47 (career exploration), PHP 4 (nutrition), and CIS 1A (introduction-computers).

Table 1

Learning Community Outcomes

	Learning Community	Comparison Group	Sig. Level (2-tailed)
Success	65%	58%	<.001
Retention	91%	84%	<.001
Persistence	76%	69%	<.001

The above outcomes were derived through a t-test of independent groups and significance was achieved at a very rigorous level of .001.

Intrapersonal and institutional awareness were evaluated through survey items that were common to the LCs receiving the survey. Items showing significant gain from pre-test to post-test are highlighted in yellow as shown in Table 2 below. As indicated by the mean difference, students increased in all ratings for awareness items. However, two intrapersonal awareness items and six institutional awareness items showing significant increases may have reflected a common influence. This influence was the inclusion of English and guidance courses in most LCs, and the Title V counselor who stressed career and academic issues in individual appointments. It is no wonder that student services represented in the group with significant gains were those to which counselors common refer new students. The only common student service used by new students that was missing from the group was financial aid. Lack of awareness about financial aid may indicate a focus for future learning communities given the significant obstacle finances pose to many first time college students.

Table 2

Intrapersonal and Institutional Awareness Gains of Learning Community Students

		F	t	df	Sig. (2-tailed)	Mean Difference
Intrapersonal Awareness Items	Self Rating-Academic Ability	.151	1.393	70	.168	.249
	Self Rating-Creativity	3.214	.111	72	.912	.021
	Self Rating-Drive to Achieve	1.824	1.378	73	.173	.256
	Self Rating-Mathematic Ability	.195	.632	73	.529	.172
	Self Rating-Writing Ability	1.227	2.450	72	.017	.417
	Decided About Career?	8.635	1.424	68.363	.159	.149
	Decided About Major?	1.174	2.604	71	.011	.315
Institutional Awareness Items	Familiarity With Tutoring	.010	2.338	73	.022	.525
	Familiarity With Counseling	2.924	2.486	73	.015	.497
	Familiarity With Library	.001	.481	73	.632	.116
	Familiarity With Financial Aid	.380	1.218	73	.227	.283
	Familiarity With Transfer/Career Center	1.017	2.558	73	.013	.555
	Familiarity With Title V	2.473	2.558	73	.013	.715
	Familiarity With DSPS	.431	.901	72	.371	.180
	Familiarity With EOPS	1.579	1.007	73	.317	.190
	Familiarity With Puente	.698	2.907	73	.005	.637
	Familiarity With Student Activities	3.702	3.239	72	.002	.713
	Familiarity With Writing Center	8.493	1.911	72.692	.060	.328

Discussion & Conclusions

Clearly, in reference to course outcomes, LCs are effective. The difference between groups was significant at such a rigorous level that it is extremely unlikely it was due to chance. Also, given the repetition involved, these outcomes are not confounded by teacher effectiveness or historical issues since many different faculty were involved over the course of the three semesters. So, given the research methodology and results from data, there is conclusive evidence that LCs work with basic skills students.

If data were the only consideration, the decision to institutionalize LCs would have been easy. However, there are other considerations which enter into the decision. LC faculty provided feedback that given the time required coordinating curriculum and activities, they would rather have had release time than overload pay. To them, time to

create a quality LC was more important than earning some extra money and adding one more project to an already full load. The response from RCC-Norco administration, though, was that release time was not a possibility. In addition, faculty had some misgivings about learning communities as well. After the third semester, the English discipline told Title V that they were not interested in continuing with learning communities unless further training of faculty took place. No learning communities continued under Title V after this. A positive influence of learning communities at RCC-Norco was the creation of the Success Track project. This project focused on scheduling all levels of basic skills courses in such a manner that anyone wanting to complete a math, English, and appropriate general education course could do so without major gaps of time in their schedule. This scheduling approach created de facto learning communities in the sense that some students were co-enrolled in all of the same classes and could form relationships supportive to their academic success.

Recommendations for LCs based on data and faculty feedback are that they need time and planning in order to be successful. If full-time faculty are going to be motivated to get involved in LCs, they will need release time from their teaching assignment. It should be noted that there were few part-time faculty involved and they are not eligible for release time. Perhaps, a stipend would be more enticing to these faculty members if LCs were considered in the future. Another recommendation would be that learning communities should involve curricular integration. Consistent feedback from faculty was that as this type of integration increased, the success of the LC increased. Finally, if LCs were ever reconsidered in the future, it is recommended there be a designated coordinator. Although, much of the curricular work is with faculty, coordination is

needed in order to recruit students, create a smooth registration process, train faculty, deal with student problems, and liaison with administration. Without a coordinator, these duties are either neglected or taken on by various faculty or staff from semester to semester and communication is usually poor in this situation. Ultimately, it is a combination of compelling evidence and fit with institutional culture that influences the adoption of any new approach to higher education. With learning communities, the evidence was clearly compelling, but the institutional culture could not accommodate the requisite changes for them to be adopted at this point.

Tutor-Assisted Classes

Background and Literature

Initially, Title V identified this intervention as supplemental instruction. However, after some investigation it became clear that supplemental instruction had a specific definition as will be explained below. Since this intervention was quite different than the traditional supplemental instruction model, it was decided that it would be called tutor-assisted (TA) classes instead. However, since the TA idea was spawned by supplemental instruction, that will be the focus of the literature review.

Supplemental Instruction (SI) is an approach developed by Deanna C. Martin at the University of Missouri-Kansas City (UMKC) in 1973 using peer-facilitated study groups to increase student performance and retention (Hensen & Shelley, 2003). Although SI may use cooperative learning strategies or activities, it is different than cooperative learning in that groups are usually used as an adjunct, normally outside of class, to supplement the learning in class. It has been utilized in many colleges and universities and has morphed into a variety of forms which will be discussed shortly. However,

regardless of its form, SI usually has the following six core characteristics: 1) SI targets at-risk courses (i.e., D, F, W rate is greater than 30% (Arendale, 1997)) instead of at-risk students, thereby avoiding stigmatizing individuals, 2) SI (student) leaders must have successfully completed the course and must be caring, sensitive individuals, 3) SI leaders participate in all class sessions and required assignments as models to students in class, 4) SI leaders are trained to view themselves as facilitators, 5) SI leaders are given intensive training and supervision weekly to continue their learning, and 6) all students in class are encouraged to participate in SI (Ochse, 1995; Zaritsky, 1994). Within these core characteristics we see the instructor, SI leader, and students emerge as key members in SI. However, in addition to these members there is one more key staff person: the SI supervisor. This person is a trained professional who is responsible for identifying targeted courses, gaining faculty support, selecting and training SI leaders, and monitoring the progress of the program (Arendale, 1997). An interesting finding regarding SI leader qualifications for developmental math was that although they needed to have been successful when they took the course, the best (i.e., most sympathetic) tutors usually were not math majors (Patterson & Sallee, 1986). It should also be noted that training SI leaders involves facilitating knowledge in content area, and also in study strategies (Arendale, 1997).

The math discipline has a long history implementing supplemental interventions. One groundbreaking study in math was conducted by Uri Treisman in 1983 who was troubled by the low performance of black students in his calculus courses at UC Berkeley. After observing the behavior of Asian students, he decided to implement a "math workshop" which would create structured study groups for black students. The

result was that success and progression of black students participating in the math workshop were vastly greater than black non-participants in UC Berkeley calculus courses (Fullilove & Treisman, 1990). These outcomes, including higher grades, success and persistence rates regardless of ethnicity or prior academic history, have been validated in many other SI programs (For some examples, see Alexander *et al.*, 1997; Bonsangue & Drew, 1995; Duncan & Dick, 2000; Murphy *et al.*, 1998) and by the Department of Education (Arendale, 1997).

Arendale initially asserted that SI was not appropriate for students who had lower skills (Arendale & McLaren, 1998). However, in a later conference he spoke on the positive applications of SI to developmental education (Arendale, 2002), so one can only assume he observed evidence to change his position. Recent applications of SI models to developmental courses have modified the model somewhat. One modification generating excellent outcomes is integration of the SI leader into the classes instead of making the SI activity external (Brittenham *et al.*, 2003; Finkelstein, 2002; Wright *et al.*, 2002). In all of these studies, the professor would alternate lecture with SI leader-facilitated groups. Another study found that nontraditional students in a college algebra course with supplemental instruction (structured in a paired-class format) resulted in significantly higher success rate and course grades, decreased math anxiety, and more positive attitudes toward math in general (Stratton, 1996). In the original model, attendance is voluntary in SI sessions. However, since at-risk students do not typically seek out help such as SI on their own, it becomes necessary adapt SI for this population. Making SI mandatory has been shown to have major impact when the majority of students involved are at-risk (Commander & Smith, 1995; Ramirez, 1997).

Description of Intervention

TA classes were initiated with the math discipline and consisted of 2-4 tutors integrated into class activities. Faculty would usually intersperse lecture with group work facilitated by the in-class tutors. In so doing, the subject of lecture would be applied to specific problems and students would find solutions through the collective knowledge of the group. Eventually, TA classes spread to other disciplines including anatomy and physiology, anthropology, Arabic, biology, chemistry, economics, English as a second language, French, history, Japanese, physics, and Spanish. When TA classes began, a math faculty member taught tutors specific approaches to facilitate learning in that discipline. However, as the TA approach began to spread to other disciplines this type of tutor training did not continue. In general, responsibility for the tutor's approach in the classroom was left with the individual faculty member. Although this seemed to work well from a faculty perspective, standardization was lessened as individual faculty determined the role and scope of duties for the tutor in their classroom. Students enrolled in TA classes were not informed prior to the first day of class that tutors would be integrated into the classroom.

Data and Results

In-class tutor data were derived from internal files gathered by tutorial services. These files contained course name, total hours tutors spent in class and tutors' names. These tutor files were then merged with MIS student enrollment data, and outcomes data were obtained from these merged files.

The research design was quasi-experimental in nature since the treatment and comparison groups could not be randomly assigned. However great care was taken to

assure that treatment and comparison groups were as similar as possible. When choosing comparison groups, the ideal was to select the same course with the same instructor as the treatment (i.e., tutor-assisted) group. Unfortunately, having the same instructor for both treatment and comparison groups was not a frequent occurrence, so comparison/treatment groups were matched as closely as possible in the following areas (in descending order of importance): class time (day/evening), gender, age, ethnicity, class size, and campus. The order of importance for these areas was guided to some extent by Adelman's work on community colleges (2006; Adelman *et al.*, 2003). Although there was variability between treatment and comparison groups in any specific semester, the overall difference between groups was minimal when observing summary data over the three-year period (see Table 3 below). Of course, the more similar the groups, the more confidently one can attribute difference between groups to the intervention rather than to some other intervening influence. In an effort to assure tutor-assisted classes had adequate exposure for the intervention to affect student outcomes, only classes utilizing tutors for a total of 20 hours throughout the semester were used in this study.

Table 3

Demographics of TA and Comparison Groups

	TA Group	Comparison
% Hispanic	35.9%	37.2%
% Male	46.5%	46.6%
Avg. Age	22.3	22.2

In terms of growth, participation in TA classes increased greatly over each academic year. This increasing participation measured by number of TA class sections and total number of students per academic year is displayed in Figures 1 and 2 below.

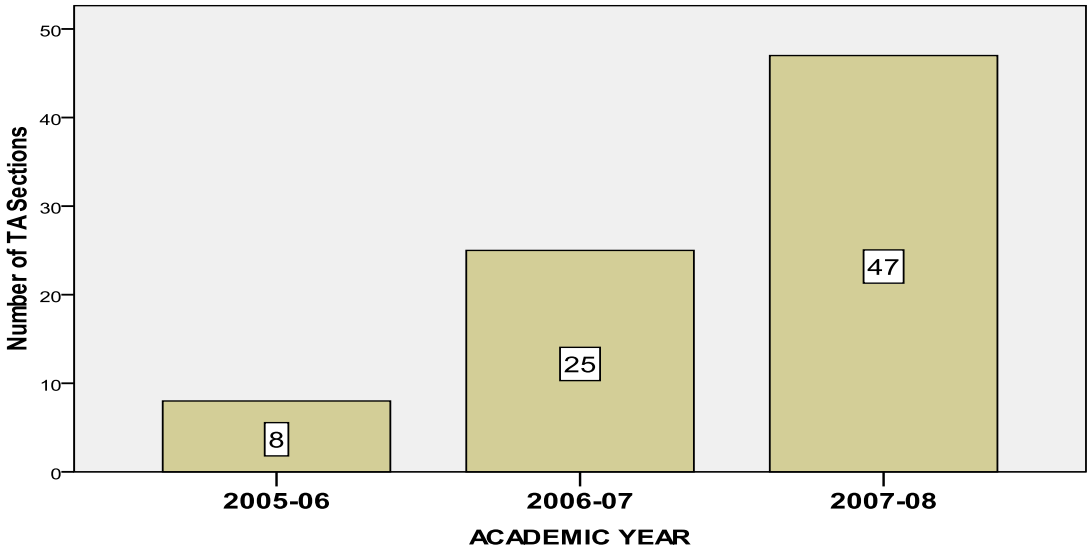

Figure 1. Number of TA classes offered each academic year

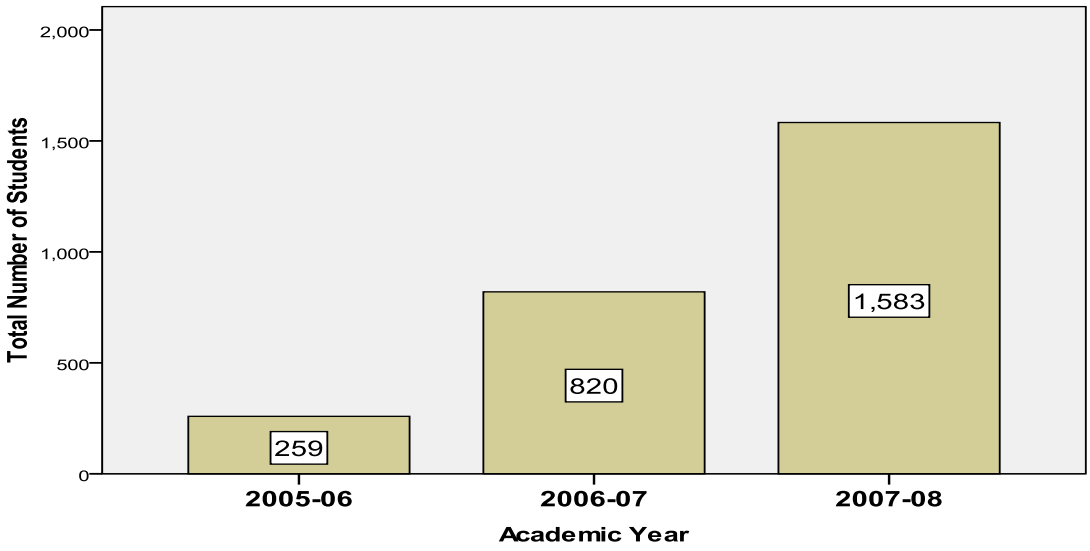

Figure 2. Number of students involved in TA classes per academic year.

Both charts identify roughly the same growth pattern with more than a tripling from the first to the second year, and almost a doubling from the second to the third year.

As of Fall 2008, the interest in and utilization of tutors in the classroom continued to remain high with RCC Norco Faculty.

Comparison between groups: t-test of independent groups

To determine the effectiveness of TA courses versus comparison groups, t-tests of independent groups were applied to three groups of courses. First, a t-test was administered to all valid TA courses (i.e., at least 20 hours of tutor activity during the term) over the three year period. Next, basic skills courses (i.e. math, English, and/or reading courses at or below the AA degree requirements) were analyzed for significant difference between groups. Finally, TA and comparison group courses sharing the same instructor were analyzed for significance. Significance between groups was established as $p < .05$.

Table 4

T-Test Results of TA and Comparison Groups

	Tutor Assisted	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Success	Yes	2843	.7344	.44171	.00828	6.822	5661.723	.000
	No	2851	.6514	.47663	.00893			
Retention	Yes	2843	.8639	.34298	.00643	2.891	5662.273	.004
	No	2851	.8365	.36984	.00693			
Persistence	Yes	2844	.72	.450	.008	2.666	5688.258	.008
	No	2851	.69	.464	.009			

Table 4 shows the descriptive statistics and t-test results for all courses involved over the three-year period. Clearly, significance was achieved in all outcomes measures with success exceeding a p level $< .001$. Of course, significance levels are a threshold phenomenon indicating whether or not they were significant, not the strength or power of

the relationship. However, with all outcomes measures exceeding at least the .01 level, we can be sure that the difference between groups was not due to chance.

To determine the effectiveness of the TA approach with developmental education, t-tests were applied to all basic skills classes that participated over the three-year period. Interestingly, the majority of TA classes were not basic skills. However, the 12 basic skills courses representing 358 students provided an adequate sample size for generating meaningful outcomes. Also, juxtaposing demographics for TA & comparison groups revealed both groups were fairly similar. Tables 5 and 6 below summarize demographic comparison and all outcomes for basic skills TA courses over the three-year period.

Table 5.

Demographics of TA and Comparison Groups-Basic Skills

	TA Group	Comparison
% Hispanic	44.7%	46.1%
% Male	38.0%	41.0%
Avg. Age	22.6	22.6

Table 6.

T-Test Results of TA & Comparison Groups-Basic Skills Classes

	Tutor Assisted	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Success	Yes	358	.5307	.49975	.02641	-1.232	728.689	.218
	No	375	.5760	.49485	.02555			
Retention	Yes	358	.7849	.41146	.02175	-2.819	695.787	.005
	No	375	.8640	.34325	.01773			
Persistence	Yes	358	.67	.470	.025	.870	731	.385
	No	375	.64	.480	.025			

In comparison to the entire population of TA courses, a different pattern of significance emerges for the TA basic skills courses. Success and persistence revealed no significant difference between groups. However, retention did show significant differences between groups, but not in the direction anticipated. The TA groups were significantly lower in retention than the comparison groups. Reasons for these outcomes are not clear at present, but what is clear is that the TA approach did not generate any positive outcomes for basic skills students.

Table 7. Demographic comparison between TA and comparison groups-same instructor

	TA Group	Comparison
% Hispanic	32.0%	35.4%
% Male	47.2%	45.1%
Avg. Age	22.1	22.0

Table 8.

T-Test Results of TA & Comparison Groups-Same Instructor

	TUTOR ASSISTED	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
SUCCESS RATE	YES	625	.7488	.43405	.01736	1.813	1250.579	.070
	NO	630	.7032	.45722	.01822			
RETENTION RATE	YES	625	.8656	.34135	.01365	.191	1253	.849
	NO	630	.8619	.34527	.01376			
PERSISTENCE RATE	YES	625	.72	.452	.018	.346	1253	.730
	NO	630	.71	.456	.018			

The last subpopulation subjected to t-test analysis was TA courses and comparison group courses taught by the same instructor. This analysis provided arguably the strongest research design since similarity between groups existed both in student demographics and in teacher effectiveness. Tables 7 and 8 above show demographics

and outcomes for courses with the same instructor in both TA and comparison groups. Since this subset of TA classes is very similar to the overall group, it may have generalizability to the larger population. As can be observed from Table 8, there are no significant differences between groups on any of the outcomes for these students. This suggests that something other than the TA intervention was responsible for the significant outcomes in the overall dataset as will be discussed below.

Discussion and Conclusions

As identified in the increase of TA classes and students involved from 2005-06 through 2007-08 academic years, faculty are embracing this new approach to teaching. According to staff in Tutorial Services, faculty feedback has been positive regarding the in-class tutors, and tutors are likewise positive about their experience in TA classes.

Also, student outcomes are excellent when aggregating all courses over the three-year period. Differences in success, retention, and persistence between TA and comparison groups were clearly not due to chance. Outcome differences were also not due to comparison groups that were not representative of the TA groups as demonstrated in the very close demographics between the two groups presented in Table 3. Given this evidence, it would seem on the surface that the TA intervention is making the difference. If this were true, all subpopulations would demonstrate similar outcomes, but this was not the case.

Since demographic makeup is not a direct indicator of academic ability, it was necessary to select a subpopulation that shared ability more directly. This was the rationale for examining the TA basic skills courses. As indicated in Table 6, students of similar ability (i.e. basic skills) didn't show any differences in outcomes, except for

retention which was negative (comparison groups did significantly better). The TA approach requires active learning on the part of students involved in these classes. It is possible that basic skills students have not yet acquired these skill sets and therefore found these classes somewhat intimidating. This is not complete conjecture since studies have cited that underprepared and remedial students tend to also be more passive learners (Lee & Meyer, 1994; Pitts & White, 1996; Saumell *et al.*, 1999).

Another unmeasured variable that could affect student outcomes is the effect the teacher has on a class. It is possible that student outcomes could be significantly different because of teacher effectiveness and not the impact of the TA intervention. This was the rationale for selecting TA and comparison groups with the same instructor. When keeping 'teacher effect' constant, there was no difference between groups in any outcomes. This may indicate that differences between groups in the overall dataset could possibly be due to systematic differences between the teachers who participated in the TA intervention and those who didn't. It is certainly possible that those instructors who sought out the intervention were more motivated about increasing student success or possibly had more time on campus (i.e. full-time) to implement this. In any case, this does introduce some question about whether the difference in outcomes for the three-year dataset was due to the intervention or possibly due to other factors like teacher effects.

Recommendations for TA intervention would be to not use it as a basic skills approach. However, the TA intervention does not necessarily need to be scrapped as inconsequential to student success. Although an intervention may seem to be better suited for a 'non-at-risk' student population, this still indicates applicability for student success, just not basic skills student success. Knowing this allows the institution to

better apply the TA intervention for maximum impact on student outcomes. In addition, since utilization of tutors in class is increasing, there is a possibility that this intervention may impact a larger group of students and instill active learning as a technique for future classes.

Math Intervention Project

Background and Literature

Since the math intervention project utilized the TA approach, much of the basis for its creation was derived from the literature in the TA section. However, in addition to this literature, there were some studies indicating problems in math placement.

The first problem concerns the alignment of high school and community college math content involved in the placement process. The most concerning statistic is that 60% of the remedial population in college is made up of students attending directly from high school (Oudenhoven, 2002). Although the initial response is to blame poor preparation from the K-12 system, some studies have identified misalignment as another contributor to remedial placement. In California, a study was conducted whereby math content for standardized math tests taken by 99.2% of high school students was matched to the 'de facto' standards within community college placement tests. The results found that the alignment of content between these segments was not adequate (Brown & Niemi, 2007). In fact, most of the upper-level content areas including Algebra 1 and Geometry were misaligned, but the lower-level General Mathematics area did demonstrate alignment (Shelton & Brown, 2008). This may not only indicate problems of placement into algebra and geometry courses, but also hints of a possible bias in placement toward the lower levels in mathematics. Furthering the argument that community colleges are

not aligned with high schools is the study comparing students who had completed the same ‘college prep’ curriculum in high school. The results of this study showed that the percentage of college-prep students requiring remediation was dramatically higher for those who attended community college than those who attended the four-year university (Merisotis & Phipps, 2000). The argument could be made that a selection bias existed of lower prepared college-prep students going to the community college, but that would be somewhat mitigated in this sample by the fact that they all had successfully completed a college prep curriculum. Regardless, there is definitely some evidence to suggest misalignment of content in math placement.

Related to this, but not entirely the same, is the consistency of placement scores. The lack of consistency in placement, and resulting number of required remedial courses from one community college to the next is notable. In a very recent article of *Inside Higher Education*, community colleges in states such as Minnesota and North Carolina are dealing with students who engage in ‘cut-score shopping’ (Moltz, 4/14/2009). This is the practice of seeking institutions with the lowest benchmarks or cut-scores on placement tests in order to minimize or possibly eliminate the requirement for remedial education courses. What this speaks to is the need for a more standardized process in determining placement cut-scores for remedial English, reading, and math courses. The notion of standardizing placement testing for an entire state is not completely new. Presently, 21 states specify placement exam for their community colleges and 19 of the 21 states set a standard cut-score or range for remedial courses (Collins, 2008). In California, however, there is no standardization at the state-level for placement tests or cut-scores at community colleges. Matriculation regulations set parameters for choosing

an assessment test and validating cut-scores, however the validation of those cut-scores remain an institution-specific task (*Standards, policies and procedures for the evaluation of assessment instruments used in the California Community Colleges (4th ed.),* 2001). So, although there may be a systematic process for validating placement tests, the determination of a remedial student as defined by the cut scores is arbitrary. If there is little agreement throughout the state as to what a remedial student is, then we may be dealing with a problem in construct validity. Another aspect of validity is whether the assessment instrument is placing students adequately into courses. In the 2004 Academic Senate Basic Skills Survey, 25% of the colleges responding indicated their placement was not adequate (Academic Senate for California Community Colleges, 2004). This possibly could have translated to over 300,000 students being misplaced into inappropriate basic skills courses for that year. The idea is that placement tests are supposed to be valid instruments for predicting the course level at which students will be most successful. However, some factors affect the predictive validity of math placement tests. When there is a gap between college enrollment and high school graduation, the validity of math placement is greatly reduced (Armstrong, 1994). This matches most peoples' experience of the 'use-it-or-lose-it' phenomenon with math when trying to return to math concepts after a lapse. It usually takes some time and practice to refresh math knowledge, but going into a math placement test 'cold' generally does not yield the best results. Another factor affecting predictive validity of math placement tests is the teacher in the math class. In other words, the teacher has a big impact on student outcomes in math. In fact, Armstrong found in another study that placement test score

was a very weak predictor of final grade in math class, but the largest amount of variance in the final grade was explained by teacher effects (Armstrong, 2001).

This discussion should illuminate the inherently vague definition of 'remedial' or 'basic skills' since little agreement exists from one college to the next how to quantify it. Within this context, math placement and the entire placement process should be scrutinized and possibly completely overhauled. Certainly, there is the danger of throwing out the proverbial baby with the bath water, but in this researcher's experience, test scores and the placement process have been imbued with a level of infallibility that is unwarranted. Given these questions regarding math placement test validity coupled with the Title V objective to improve students movement through the 'math pipeline', the math intervention (MI) was created.

Description of Intervention

In essence, the MI was a volunteer program consisting of low-scoring students in math who wanted a chance to repeat the math placement test. In order to repeat the test, students were required to complete a refresher course. Upon satisfactory completion of the refresher course, students were then permitted repeat the math placement test again. Given the fact that 'bottoming out' in math placement means that students are required to complete four classes before reaching college-level, repeating the test was very attractive to students who felt their background and knowledge incongruent with their initial placement.

The first pilot of the MI was recruited by Title V staff and met with the Title V counselor prior to enrolling in class. However, after this initial recruitment subsequent pilots were not recruited. Students in these later pilots were informed of the program by

assessment staff or through counselors who referred eligible participants to the department office. Also, the course was printed in the schedule of classes with a description and contact information for interested students.

Eligible participants were students who assessed into lowest levels in math (Math 63-Arithmetic or Math 64-Prealgebra) and had never enrolled in a math class at RCC. Once enrolled in the refresher class, the text, *Fast Track: A Review of Prealgebra & Elementary Algebra*, was provided to all students through the Title V program. The course was conceptualized as a refresher for students and presented as such. It was not assumed that students were being exposed to the math concepts for the first time in this class. Because of this, the pace of the course was fast and it integrated frequent hands-on activities. This was facilitated through the use of in-class tutors as described in the TA section above. The instructor would review a specific math concept and then divide the class into groups for problem solving. Tutors would then help facilitate groups either by answering questions or actively participating to get them started. The MI model gave students exposure to math they had forgotten and also hands-on practice solving problems. On paper, the six-week 'course' was actually a combination of two, ½ unit classes, each spanning three weeks. Students were given the option to retest after the first class. However, if they opted to do so, they would not be able to continue with the next class and then retest again. Whether at the three- or six-week point, only one chance at retest was allowed for each student. Most students went through the entire six weeks before repeating the math placement test since they wanted to go through all the class material in order to maximize their chances for a higher placement upon retesting. Upon

retesting, students were immediately informed of their retest placement level and were encouraged to enroll in the appropriate math course in the next semester (usually Fall).

Data and Results

Two datasets were used in analyzing the outcomes for the MI project. Placement data, provided by the assessment (placement) center, consisted of placement results and background information such as high school GPA, highest math course completed, time since last math class, and first generation status. Course outcomes were acquired from MIS referential files generated by the California Community College Chancellor's Office.

The data represented five separate cohorts, four during the summers between 2005 and 2008, and one winter cohort in 2007. The total number of students in the five cohorts was 84. Table 9 identifies the number and percentage of students retesting at the lowest level, one level higher, or two levels higher than initial placement. For those who placed two levels higher, the MI saved these students the equivalent of one-and-a-half year's worth of remedial math coursework.

Table 9

Retest Placement for All 5 Student Cohorts

Retest Placement	# of Students	% of Students
Lowest-Level (Stayed at Arithmetic/Pre-Algebra)	20	30.3%
One Level Higher (Elementary Algebra)	14	21.2%
Two Levels Higher or more (Intermediate Algebra or higher)	32	48.5%
Total	66	100%

The fact that about 70% of MI students retested up one or two levels higher was one of the unexpected outcomes of this study. With this many students making dramatic improvements, it emphasized the need to establish accuracy of retest placement levels. To verify retest placement, success and retention for MI students taking math classes immediately following the refresher were compared against the non-MI students in class with them. In essence, non-MI students provided a good comparison group (CG) since they shared the same instructor and very similar class experiences as the MI students. If MI students differed significantly either from the CG, other factors such as test effects or selection bias may have tainted the research project. However, no significant differences between groups would support the retest placement as valid. In this analysis, t-test results supporting the null hypothesis (i.e. no difference between groups) corroborate students being well prepared for courses identified in the retest math placement. The results in Table 10 below indicate no difference between MI and CG group which supports the null hypothesis.

Table 10

Comparison of Success and Retention Between MI and CG

	GRP	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
SUCCESS RATE	Intervention	40	.65	.483	.076	.639	1242	.523
	Comparison	1204	.60	.490	.014			
RETENTION RATE	Intervention	40	.83	.385	.061	-.234	1242	.815
	Comparison	1204	.84	.368	.011			

As mentioned previously, some students opted to repeat the math test at the three-week point. The retest placement for these students is presented in Table 11. At three weeks into the refresher course, students have had minimal exposure to intermediate algebra concepts. So, the high percentage of students retesting into intermediate algebra without any support from class is surprising. Clearly, these students' initial placement was not accurate and they were confident of their ability to improve placement if given a chance.

Table 11

Placement for Students Retesting at Three Weeks

Retest Placement	# of Students	% of Students
Lowest-Level (Stayed at Arithmetic/Pre-Algebra)	5	35.7%
One Level Higher (Elementary Algebra)	1	7.1%
Two Levels Higher or more (Intermediate Algebra or higher)	8	57.2%
Total	14	100%

Reflecting on the MI cohorts, certain points in the process were openings for attrition. As mentioned previously, 84 students registered for the refresher course, but only 66 retested, so the first of these attrition points was the retest. Usually the retest was on the last day of the refresher course, but some students had dropped by that time or could not make it. The next attrition point was getting students from retesting to enrolling in math classes. Since no special process was established for MI students to get into math classes after receiving their retest placement, whether they took the math

immediately or delayed was their own decision. So, of the 66 students retesting in math, 40 of them enrolled in the term immediately following the retest. This highlights an inevitable trend of attrition from enrollment in refresher course to enrollment in math course. Some attrition can threaten the validity of a study, particularly when it is systematic and not random. Mortality is the term for the systematic dropping out of subjects in a study, usually the low-performing subjects (McMillan & Schumacher, 2001). To determine if mortality had impacted the validity of this study, low retest students were compared to the highest retest students in delaying math. Attrition from retest to enrollment in math was found to be comparable between low and high retest students at 47.4% and 41.9%, respectively. So although not a threat to validity, attrition was one of the main reasons pilots had to be replicated in order to achieve a sample size that would have some generalizability for the future.

To assess persistence through the math pipeline toward college level math, Title V tracked MI students for successful completion of Math 35 (Intermediate Algebra) through Fall 2008. As a comparison for this outcome, a cohort of first-time college students in Math 63 was tracked from Fall 2004 through Summer 2008. Table 12 below shows the difference between the MI and CG in successful completion of Math 35.

Table 12

Successful Completion of Math 35 for MI and CG Students

	MI Students	Comparison Group
Math 35	51.0%	12.7%
N	48	252

The difference between groups was not only statistically significant at the $p < .001$ level, but it was also 'ecologically significant'. In other words, this difference represents something profound to any observer regardless of statistical knowledge. It should be noted that although the majority of MI students did not start at arithmetic or prealgebra, had it not been for the program, they would have been forced to start at that level. Therefore, the CG and MI students were ostensibly taken from the same population. One difference between groups was that the CG came from a year previous to the first MI. This was done purposely since selecting a comparison group from the same year as any of the MI's would have systematically biased the groups with volunteers in the MI and non-volunteers in the CG.

Discussion and Conclusions

Clearly, the MI project produced outcomes that would be judged by any observer as successful. The majority of students who retested went up one or more levels of math; students persisting on to math were as successful as their peers in the class; and MI students were much more likely than students in a comparison group to successfully complete intermediate algebra. The question is, what does this success indicate?

One might say that this indicates the MI was successful, but again the question is, what about the MI was successful? We might assume that the MI refresher course was mainly responsible for these outcomes and this certainly might be the case. The only caveat to this assumption would be that there was not a comparison group for the MI class. For instance, if we had taken some of the students who had volunteered for the class and simply let them retest without the refresher course, there would have been more conclusive evidence about whether the class was responsible for these outcomes. Caveat

notwithstanding, the MI project definitely indicated that a population of students exists who can profoundly shorten their path through the remedial math pipeline without impacting their success in the process.

Given the above facts, some recommendations should be considered for the future of the MI program. First, the MI as a process should be institutionalized at RCC-Norco. This, in fact, is being done not only at the Norco campus, but also at the Riverside campus. After presenting the outcomes outlined in this paper to the Basic Skills Committee at the Riverside campus, they have made plans to incorporate the MI process as part of a summer bridge program. The Math Department at Norco campus is fully integrating the MI program into their curriculum. They are now in the process of identifying a cut-off score for the final exam that would essentially function as a challenge exam for placement into Math 35. Another way to institutionalize the MI would be to integrate it into the placement process. It is possible to program an algorithm that would identify potential students and automatically alert them on their placement sheet that they are eligible for the MI course. A second recommendation is for further research to be conducted identifying more precisely the reason(s) for these phenomenal outcomes. The present research indicates that certain students who test low in math, take a math refresher course, and then subsequently retest in math are able to profoundly improve their placement in math. What we don't know is whether the reason for this improvement is the refresher course or if these students would have done better upon retesting regardless of the intervention. The data on those testing at three weeks suggest that a group of students exist who retest into intermediate algebra without being exposed to any algebra curriculum. Reasons for this are unknown at this point. It could be due to

a lack of motivation in the students at the time of testing; or a lack in the assessment process or instrument; or numerous other reasons. Answers might be found by implementing a research design including random assignment to groups including at minimum a 'no-intervention' group and the MI group, and both groups would retest. Finally, it is recommended that data continue to be gathered on subsequent MI cohorts to determine if outcomes remain consistent. Also, as more data are gathered it would be ideal to determine a more precise profile of what type of student is benefitting from the MI program.

Student Educational Plan Study

Background and Literature

Counseling in California community colleges has always been integral to student success. With the advent of matriculation regulations in 1989, the connection between counseling and student success was engrained even deeper. In Section 55520 of Title V regulations governing community colleges, certain matriculation services are minimally required to ensure student success: application assistance, orientation services, assessment, counseling/advisement, student educational plan (SEP) development, post enrollment evaluation of student progress, and referral to appropriate services ("California Code of Regulations, Title 5"). In terms of involvement in matriculation, counselors take an active role in all of these services, except for application assistance. However, SEP development seems to be the ultimate counseling goal for new students. The SEP is an embodiment of the agreement between the student and the institution regarding necessary steps to achieve the individual student's goals ("Student educational plan"). It is supposed to represent a 'path' or a 'roadmap' outlining not only courses, but

also the responsibilities, essential services and programs necessary to the students' success in attaining their educational goals (Academic Senate for California Community Colleges, 2003).

Historically, the perception has been that Title 5 matriculation regulations require counselors to get SEPs into the hands of every new student through face-to-face contact. At RCC, this takes the form of an appointment where a counselor produces a written form outlining placement results and necessary coursework for the student's declared goal. Interestingly, while stressing the importance of the SEP, Title 5 regulations implicitly indicate that something else should be first priority: "Each community college district shall establish a process for assisting students to select a specific educational goal within a reasonable time after admission...Once a student has selected a specific educational goal, the district shall afford the student the opportunity to develop a student educational plan..." ("California Code of Regulations, Title 5", Section 55525). The mandated assistance is in the area of selecting an educational goal. Once this is established, the student is afforded an *opportunity* to develop an SEP. This indicates that whether an SEP is developed or not is up to the general student. However, students who experience academic difficulty are required to develop an SEP and they fall into three main categories: 1) undecided students, 2) probation students, and 3) basic skills/ESL students.

With increased student enrollment in the California Community Colleges, requiring every student to see a counselor is becoming an increasingly unrealistic task. Almost a decade ago, a statewide survey was conducted to determine the corrected ratio of general counseling faculty to students (counselors and students in special programs

removed from calculation) and it was found to be 1:1918 (Academic Senate for California Community Colleges, 2003). This is more than 1000 students greater than the Title 5 recommended ratio of 1:900. In addition, this study showed that students rated satisfaction with academic counseling lowest, while they also rated importance of counseling as one of the three highest areas. Given the overload on counselors due to high student-counselor ratios combined with unmet student expectations regarding counselor availability, an inevitable impasse occurs between student need and counselor capacity. The Statewide Academic Senate recommends that SEPs and other academic information utilize technology in order to increase access and accuracy for student use (Academic Senate for California Community Colleges, 2008). In the South Orange County Community College District (SOCCCD), students have online access to SEPs that are integrated with the latest articulation information and are regularly updated with coursework completed. The students are allowed to create these plans, but plans are not considered official until a counselor signs it (Gaston, 2007). Through the use of technology, less time can be spent needlessly filling out paper forms and more time can focus on the essential needs of the student. Ideally, every student would have some interaction with a counselor, but as above ratios indicate, student-counselor interaction is simply not possible for every student, every semester, especially in districts where the ratios can be as high as 1:5000 (Lorimer *et al.*, 1994). Given the overwhelming ratios of counselors-to-students for most California community colleges, technology may be able to alleviate some of the overload on counselors.

Fueling the urgency for students to receive an SEP is the assumption that it will increase their likelihood of college success. There are some data to support the

connection between matriculation services and successful outcomes (i.e. persistence). One study of a California community college found that matriculation services had a significantly positive impact on persistence when given before or after enrollment in the first semester (Spurling, 2000). Persistence in California community colleges is generally defined as receiving a valid grade in one term and then also receiving a valid grade in the following term ("RP Group Operational Definitions"). At Riverside Community College, studies have been done both locally (within the district) and regionally to determine the impact of matriculation services on student persistence. The services studied in the RCC study were assessment, orientation, SEP, and counseling (excluding SEP). The results of both the local and regional study showed that students receiving matriculation services tended to persist at higher rates than those who did not receive these services. In addition, the combination of assessment and counseling seemed to have the strongest impact on student persistence (Martinez, 2003).

Description of Intervention

This SEP study was designed to identify the effect that SEP development has on student success, retention, and persistence for basic skills students. The counseling department at RCC-Norco is similar to most counseling programs in California community colleges. It is centralized within student services with counselors available for students who choose to utilize their services, but there is a selection bias involved when studying a service or program that systematically selects volunteers by its structure. If one thinks of the entire population of community college students, there is a very heterogeneous mix of various student characteristics. In terms of motivation, the community college student population represents a very wide range of levels from high to

low. When a counseling program structures the availability of services in such a manner that the onus is on the student to find out where, when, and how to make a counseling appointment, a selection bias is in effect for the students who actually make it into the counseling office. As example, visualize a group of students who decide they need to see a counselor (this has already reduced the group from those who don't think they need to see a counselor or don't know how to see a counselor or those that are too intimidated to take the first step). Some of these students decide to call to make an appointment. The counseling department message has approximately six different options to select, one of which is making an appointment (some people hang up during the phone call, reducing the group a little more). Eventually, the student gets to a 'real person' and they are told that all counselors have been booked, but if they call early the next day there may be openings. A group of students who hang up from this phone call will never call again (further reducing the size of the group who will from here on be called persisters). There is also a group of students needing appointments who decide they will make the appointment in person. Some of these students never find the counseling department or get distracted which reduces the persisters even more. The persisters who are successful in making an appointment in person or by phone are told that their appointment will be two weeks in the future. Between the time the appointment is made and the actual appointment date, another group of students will never show up, further reducing the group of persisters. Finally, there is a group of remaining persisters who show up to their appointments and complete an SEP with the counselor. This group represents students who have encountered a gauntlet of obstacles and continued to persist until they reached their goal of seeing a counselor in person. It should be evident that the group receiving

an SEP are the most motivated and persistent students from the initial group. Any study comparing outcomes of students receiving counseling to students who didn't receive counseling may simply be comparing persisters to non-persisters. In this type of study, outcomes may be inaccurately attributed to counseling services when in fact it was a confounding factor of motivational differences between the groups. In other words, it is likely that these students would have persisted to the next term, regardless of counseling.

To mitigate this selection bias, the present study will compare entire basic skills classes against each other. The assumption is that the spectrum of motivation is equally represented between the two classes and each classes' high and low motivated student outcomes will cancel each other out. By 'blanketing' one of the classes and comparing success, retention, and persistence between classes as a whole, a more accurate picture of SEP impact will be determined. In addition, to mitigate against differences in course outcomes due to differences in teacher effectiveness, both the blanketed class and the comparison class will be taught by the same instructor. Since continuing students are by definition persisters from the previous semester, the study will be limited to only first-time college (FTC) students. FTC students should represent the most heterogeneous subgroup of the basic skills population. Specifically, this study will compare FTC students in one basic skills course that is 'blanketed' with SEPs against FTC students in another class that is not. Also, to control for any anomalous differences between classes, the study was replicated over two successive semesters. So, by designing the research to control for selection bias, teacher effects, and anomalous data, the effects of SEPs should be isolated in this study.

In the blanketed classes, Title V counselors were given the goal of getting SEPs into the hands of all FTC students. To achieve this, these counselors visited classes and made presentations, set counseling appointments during class presentations, and followed up with phone calls. In actuality, it was not possible to get every FTC student in to see a counselor since some of them dropped before the counselor could make contact. Other students simply would not keep appointments even with the intensive efforts of counselors. However, the percentage of FTC students receiving SEPs was drastically higher in the blanketed classes than comparison classes (60% and 19.5%, respectively). This difference should be large enough to allow data to show if SEPs have a significant influence on student success, retention and persistence.

Data and Results

The outcomes for the SEP study were derived from several sources. Counselors kept a spreadsheet of students enrolled in the blanketed classes and recorded SEPs and date received. To avoid duplication, the spreadsheet was also cross-checked with the scheduling grid for all Norco counselors to identify students in the blanketed classes receiving SEPs from other counselors. In addition to this source of data, MIS files were used for class outcomes and to determine SEPs received for students in comparison classes.

The study was repeated in the Fall 2007 & Spring 2008 semesters using FTC students in basic skills classes with the same instructor for both blanketed and comparison classes. Initially, the study included both English and math classes. However, it wasn't possible to have the same instructor teach both blanketed and comparison classes in math, so the study only included English courses. All English

courses were the lowest in the basic skills sequence (English 60A-English Fundamentals: Sentence to Paragraph). The demographics below in Table 13 compare the blanketed group to the comparison group in gender, ethnicity (Hispanic), and age.

Table 13

Demographic comparison between blanketed and comparison groups-same instructor

	Blanketed	Comparison
% Hispanic	54.3%	54.5%
% Male	39.7%	45.5%
Avg. Age	19.0	18.8

To determine impact of SEP on success, retention and persistence, t-tests for independent groups were applied to the blanketed and comparison classes over the two semesters. The results in Table 14 show the significance tests for these student outcomes.

Table 14

T-Test Results of Blanketed & Comparison Groups-Same Instructor

	Groups	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
SUCCESS RATE	Blanketed	70	.4857	.50340	.06017	-1.779	141.997	.077
	Comparison	76	.6316	.48558	.05570			
RETENTION RATE	Blanketed	70	.7429	.44021	.05262	-1.917	129.703	.057
	Comparison	76	.8684	.34028	.03903			
PERSISTENCE RATE	Blanketed	70	.67	.473	.057	-.560	145	.576
	Comparison	77	.71	.455	.052			

Although there was a fairly large difference between the blanketed and comparison means for success and retention rates, it wasn't large enough to meet the

criteria ($p < .05$) for considering it significant. The surprising trend was that the mean difference was negative in all outcomes (i.e. blanketed group always had lower mean). Since it didn't meet significance, it wasn't a trend requiring further explanation, but it was surprising nevertheless. Also, not showing a significant difference between groups indicates the SEP as not significantly influencing student outcomes for English 60A.

The case could be made that by looking at outcomes only for English, especially for students placing low in English, the study focused on an area of weakness which negatively skewed outcomes. However, by expanding the focus to all enrollments in the semester, one might expect to see a different trend unfold. So, in further analysis (see Table 15 below) success and retention rates were compared for all enrollments in the term for students in the blanketed and comparison groups. Persistence rate was not included since it would be the same as in Table 14 (i.e. student has persisted regardless of the number of classes enrolled during the current and subsequent semesters).

Table 15

T-Test Results of Blanketed & Comparison Groups-All Semester Enrollments

	Groups	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
SUCCESS RATE	Blanketed	217	.4977	.50115	.03402	-2.406	449.441	.017
	Comparison	243	.6091	.48897	.03137			
RETENTION RATE	Blanketed	217	.8295	.37695	.02559	-2.243	411.055	.025
	Comparison	243	.9012	.29896	.01918			

As indicated by the p-values in yellow highlight, both success and retention rates were significantly different between the blanketed and the comparison groups. However,

in observing the group means, a significantly negative trend emerged for the blanketed group. So, surprisingly, when expanding focus to all enrollments, students in blanketed classes did significantly worse than students in comparison classes ($p.<.05$).

Discussion and Conclusions

The results of this SEP study are somewhat mixed, but SEP development clearly did not have a positive effect on success, retention, or persistence for basic skills students. Whether observing outcomes in the particular English course or when expanding to all enrollments for the semester, outcomes for the blanketed classes were lower overall than for the comparison classes. Inquiries regarding reasons for these trends are inevitable, particularly why significantly negative differences existed between the blanketed and the comparison groups. Given the research controls for selection bias, teacher effectiveness, and anomalous data, it is hard to identify variables other than the SEPs for these outcomes. Perhaps, students in their first semester are not ready to begin long-term planning during this transitional time. With the many adjustments required for success in this new environment, planning out one's academic future may actually have a dampening effect on motivation. Given that these students are at the bottom of the English 'ladder' and may also be near the bottom in math, seeing the sequence of required remedial courses between them and college level may be a daunting reality.

One overall conclusion for counseling is that there should be a shift from SEP development as the best approach for basic skills students. As mentioned in Title 5 regulations, the primary focus for counselors should be assisting students in making a decision regarding educational goals. This may require shifting away from academic counseling and toward some other model in order to effect better outcomes for basic

skills students. In addition to academic counseling, community colleges should provide counseling services in several other core areas: career counseling, personal/crisis counseling outreach, college governance, program evaluation, and professional development (Academic Senate for California Community Colleges, 2008). Due to the perception that matriculation demands it, most counseling programs tend to devote the majority of their time to academic counseling. An analysis of reason codes for student appointments at RCC-Norco during Fall 2007 and Spring 2008 found that 99.4% were for academic reasons and 0.6 were for career-oriented reasons. Of academic appointments, almost 41% of that time was devoted to SEP development. It should be noted that these statistics do not represent the entirety of counselors' time since committee work, preparation time, and other non-student contact was omitted from the analysis. Clearly, there is an overwhelming focus on academic counseling and SEP development, but does this necessarily indicate the wishes of counseling faculty? According to a survey of 649 counseling faculty statewide, close to half of the respondents desired more emphasis on career and personal counseling and also felt they needed more time in counseling appointments (Academic Senate for California Community Colleges, 2003). Given this evidence, career exploration might be a more appropriate counseling approach for new or undecided students who are trying to get a focus on educational goals. It could be asserted that counselors who focus on SEPs with students who have not done appropriate career exploration, are putting the proverbial cart before the horse.

Alternative counseling models that might be considered for basic skills or at-risk students can be found in the comprehensive literature review on this topic from Levin, et al., (2008). In addition to recommendations for increased career counseling and

structural changes such as one-stop centers, the overarching concept that emerged from this review was the need for 'intrusive counseling'. Since the students who need services most are least likely to seek them, counseling needs to change its paradigm from the typical passive model to more of an outreach or intrusive approach. One practice embodying the intrusive approach is case management counseling. Case management is a comprehensive service approach where the counselor identifies obstacles to student success and works with the student to ameliorate these roadblocks. Community College of Denver has applied this approach to counseling and in part it has resulted in a 45% increase in graduation rates for students of color and a 14% increase in graduation rates overall for the institution (Laden, 2004). Given the intensive nature of this counseling approach, it becomes necessary to identify students who will benefit most from these 'wrap-around' services. Through a variety of methods including regression, discriminant function analysis, or other data mining processes, populations with the greatest potential for improvement could be identified before they become critically at-risk. With this model, counselors would no longer have the goal of serving all students, but rather, would focus on the students within their caseload. This would increase the sense of responsibility and investment in students by the counselor. In addition to resulting in better outcomes for students, there most likely would be an increased sense of fulfillment for counselors.

Final Summary and Conclusions

The goal of this paper was to record the background, facts, data and results of these four main pilot interventions from the Title V grant: learning communities, tutor-assisted classes, the math intervention project, and the SEP study. The Title V grant

afforded RCC-Norco the rare opportunity to replicate pilots, follow them with research, and create a repository of institutional knowledge. Whether or not these interventions are institutionalized, the hope is that the knowledge obtained from this research will inform future decisions and influence the culture of RCC-Norco to remain data oriented.

References

Academic Senate for California Community Colleges, S. (2003). *Consultation council task force on counseling*.

Academic Senate for California Community Colleges, S. (2004). *Issues in basic skills assessment and placement in the California Community Colleges*. Sacramento.

Academic Senate for California Community Colleges, S. (2008). Standards of practice for California community college counseling faculty and programs.

Adelman, C. (2006). *The toolbox revisited: Paths to degree completion from high school through college*: US Department of Education.

Adelman, C., Daniel, B., & Berkovits, I. (2003). *Postsecondary attainment, attendance, curriculum, and performance: Selected results from the NELS:88/2000 Postsecondary Education Transcript Study (PETS), 2000. E.D. Tabs*. Washington D. C.: National Center for Education Statistics.

Alexander, B. B., Burda, A. C., & Millar, S. B. (1997). A community approach to learning calculus: Fostering success for underrepresented ethnic minorities in an Emerging Scholars Program. *Journal of Women and Minorities in Science and Engineering, 3*(3), 145-159.

Arendale, D. (1997). *Supplemental Instruction (SI): Review of research concerning the effectiveness of SI from the University of Missouri-Kansas City and other institutions from across the United States*. Missouri.

Arendale, D. (2002). History of Supplemental Instruction (SI): Mainstreaming of developmental education. In D. B. Lundell & J. L. Higbee (Eds.), *Histories of Developmental Education. CRDEUL Monograph* (pp. 15-27). Minnesota.

Arendale, D., & McLaren, A. (1998). Supplemental instruction: Variations on the basic model, *Selected Proceedings from the Annual Conferences of the Pennsylvania Association of Developmental Educators (PADE)* (pp. 74). Pennsylvania.

Armstrong, W. B. (1994). *Math placement validation study: A summary of the criterion-related validity evidence and multiple measures data for the San Diego Community College District*.

Armstrong, W. B. (2001). *Explaining student course outcomes by analyzing placement test scores, student background data, and instructor effects*.

Astin, A. (1993). *What matters in college?* San Francisco: Jossey-Bass.

Bonsangue, M. V., & Drew, D. E. (1995). Increasing minority students' success in calculus. *New Directions for Teaching and Learning*(61), 23-33.

Boylan, H. (2002). *What works: Research-based best practices in developmental education*. Boone, NC: National Center for Developmental Education.

Brittenham, R., Cook, R., & Hall, J. B. (2003). Connections: An integrated community of learners. *Journal of Developmental Education, 27*(1), 18-20, 22, 24-15.

Brown, R. S., & Niemi, D. N. (2007). *Investigating the alignment of high school and community college assessments in California.*: National Center for Public Policy and Higher Education.

California Code of Regulations, Title 5, 55525, 55523, 55034.

Collins, M. L. (2008). *It's not about the cut score: Redesigning placement assessment policy to improve student success. An Achieving The Dream policy brief*: Jobs for the Future.

Commander, N. E., & Smith, B. D. (1995). Developing adjunct reading and learning courses that work. *Journal of Reading, 38*(5), 352-360.

Duncan, H., & Dick, T. (2000). Collaborative workshops and student academic performance in introductory college mathematics courses: A study of a Treisman model math excel program. *School Science and Mathematics, 100*(7), 365-373.

Finkelstein, J. A. (2002). *Maximizing retention for at-risk freshmen: The Bronx Community College Model*. New York.

Fullilove, R. E., & Treisman, P. U. (1990). Mathematics achievement among African American undergraduates at the University of California, Berkeley: An evaluation of the Mathematics Workshop Program. *Journal of Negro Education, 59*(3), 463-478.

Gaston, J. (2007). *MAP: My Academic Plan.* Paper presented at the Tech Ed 2007, Pomona, CA.

Hensen, K. A., & Shelley, M. C. (2003). The impact of supplemental instruction: Results from a large midwestern university. *Journal of College Student Development, 44*(2), 250-259.

Laden, B. V. (2004). Serving emerging majority students. *New Directions for Community Colleges*(127), 5-19.

Lee, Y.-b. B., & Meyer, M. J. (1994). *Learning Style Differences between Developmental Studies and Academic Core College Students: Implications for Teaching*.

Levin, J. S., Cox, E. M., Kisker, C., Cerven, C., Chang, Y.-C., Beach, J., et al. (2008). Community college policy research: Counseling literature review. *C4 iJournal, 1*(2), 16-28.

Lorimer, S., California Community Coll. Counselors Association, S., & et al. (1994). *California Community College Counselors Association Report on the Results of the 1992-93 Statewide Counseling and Advising Services Survey. Revised*.

Martinez, D. (2003). [Matriculation outcomes: A local and regional study]. Unpublished manuscript.

McMillan, J. H., & Schumacher, S. (2001). *Research in Education* (5th ed.). New York: Addison Wesley Longman, Inc.

Merisotis, J. P., & Phipps, R. A. (2000). Remedial education in colleges and universities: What's really going on? *The Review of Higher Education, 24*(1), 67-85.

Moltz, D. (Insider Higher Education4/14/2009). Shopping for Cut-Scores. *Inside Higher Education* Retrieved 4/14/2009

Murphy, T. J., Stafford, K. L., & McCreary, P. (1998). Subsequent course and degree paths of students in a Treisman-style workshop calculus program. *Journal of Women and Minorities in Science and Engineering, 4*(4), 381-396.

Ochse, R. (1995). *Writing partners: Improving writing and learning through supplemental instruction in freshman writing classrooms*. South Dakota.

Oudenhoven, B. (2002). Remediation at the community college: Pressing issues, uncertain solutions. *New Directions for Community Colleges, 2002*(117), 35.

Patterson, D., & Sallee, T. (1986). Successful remedial mathematics programs: Why they work. *American Mathematical Monthly, 93*(9), 724-727.

Pitts, J. M., & White, W. G., Jr. (1996). *The Impact of Underprepared Students on Regular College Faculty*.

Ramirez, G. M. (1997). Supplemental instruction: the long-term impact. *Journal of Developmental Education, 21*, 2-4+.

RP Group Operational Definitions. (Research and Planning Group of California Community Colleges). Retrieved 5/19/2009, from http://www.rpgroup.org/resources/definitions.html

Saumell, L., Hughes, M. T., & Lopate, K. (1999). Underprepared College Students' Perceptions of Reading: Are Their Perceptions Different Than Other Students'? *Journal of College Reading and Learning, 29*(2), 123.

Shelton, A. R., & Brown, R. S. (2008). *Measuring the alignment of high school and community college math assessments*: Online Submission.

Smith, B. L. (1991). Taking structure seriously: The learning community model. *Liberal Education, 77*(2), 42-48.

Spurling, S. (2000). The effect of process interventions and matriculation services on student persistence and success. *Journal of Applied Research in the Community College, 8*(1), 31.

Standards, policies and procedures for the evaluation of assessment instruments used in the California Community Colleges (4th ed.). (2001).). Sacramento: California Community College Chancellor's Office.

Stratton, C. B. (1996). Effects of learning support on college algebra. In J. L. Higbee & P. L. Dwinell (Eds.), *Defining Developmental Education: Theory, Research, and Pedagogy* (pp. 29-37). Cold Stream, IL: National Association for Developmental Education.

Student educational plan. (California Community College Chancellor's Office). Retrieved 5/19/2009, from http://www.cccco.edu/LinkClick.aspx?fileticket=OP9fGsZp5tE%3d&tabid=628&mid=1718

Tinto, V. (2004). *Educating intentional learners: New connections for academic and student affairs.* Paper presented at the American Association of Colleges and Universities Autumn Conference, Philadelphia.

Wright, G. L., Wright, R. R., & Lamb, C. E. (2002). Developmental mathematics education and supplemental instruction: Pondering the potential. *Journal of Developmental Education, 26*(1), 30-35.

Zaritsky, J. (1994). *Supplemental instruction: A peer tutoring program at LaGuardia Community College*. New York.

Appendix A

CLEAR DIRECTIONS PRE-SURVEY

Please answer the following questions for research purposes only. This survey will only take a few minutes to complete and your responses will be kept strictly confidential. Thank you for your time.

1. Your present living arrangements are (choose one answer only):
   - ❒ Live with parents
   - ❒ Live with a relative
   - ❒ Live with a friend
   - ❒ Live alone
   - ❒ Live with spouse/significant other

2. What is your marital status?
   ❒ Single ❒ Married ❒ Separated ❒ Divorced ❒ Widow(er)

3. How many children do you have? _____

4. Did either your mother or father finish college (community college or four-year)? ❒ No ❒ Yes

5. Which high school did you last attend? _____

6. Did you graduate from high school? ❒ No ❒ Yes If yes, what year did you graduate? _____

7. Approximately what was your high school grade point average (GPA):

4.0 - 3.5	3.4 - 3.0	2.9 - 2.5	2.4 - 2.0	Below 2.0
❒	❒	❒	❒	❒

8. Rate yourself in each of the following areas**:**

	Low	*Below Average*	*Average*	*Above Average*	*High*
Writing Ability	❒	❒	❒	❒	❒
Mathematic Ability	❒	❒	❒	❒	❒
Critical Thinking	❒	❒	❒	❒	❒
Overall Academic Ability	❒	❒	❒	❒	❒
Social (People) Skills	❒	❒	❒	❒	❒
Drive to Achieve	❒	❒	❒	❒	❒
Self-Confidence	❒	❒	❒	❒	❒
Creativity	❒	❒	❒	❒	❒
Time-Management	❒	❒	❒	❒	❒
Study Skills	❒	❒	❒	❒	❒
Happiness	❒	❒	❒	❒	❒

9. How familiar are you with the following campus resources?

	Not Familiar	*Somewhat*	*Familiar*	*Very Familiar*
Tutoring	❒	❒	❒	❒
Counseling	❒	❒	❒	❒
Library	❒	❒	❒	❒
Financial Aid	❒	❒	❒	❒
Transfer/Career Center	❒	❒	❒	❒
CLEAR Directions Program	❒	❒	❒	❒
Disabled Students Program/Services (DSPS)	❒	❒	❒	❒
Extended Opportunities Program/Services (EOPS)	❒	❒	❒	❒
Puente	❒	❒	❒	❒
Student Activities	❒	❒	❒	❒
Writing Center	❒	❒	❒	❒

10. On average, how many **hours per week** do you spend <u>outside of class</u> doing the following activities:

Studying with other students _____ Studying by yourself _____

Reading your textbooks _____ Writing/editing papers _____

Doing homework _____ Using a computer for school work _____

Socializing with friends _____ Working at a job _____

11. On average, how many **times per month** do you spend <u>outside of class</u> doing the following activities:

Speaking with your instructors _____ Speaking with a counselor _____

Working with a tutor _____ Using the Math Lab _____

Using the Writing Lab _____

12. At this point, what is your academic goal? (Choose only one)
    - ❒ Obtain an associate's degree and transfer to a university
    - ❒ Transfer to a university without an associate's degree
    - ❒ Obtain an associate's degree
    - ❒ Obtain a vocational certificate
    - ❒ Personal enrichment
    - ❒ Other _____

13. At this point, have you made a decision about your career field? ❒ No ❒ Yes

    If yes, what career is your top choice? _____

14. At this point, have you made a decision about your major at RCC? ❒ No ❒ Yes

    If yes, what major is your top choice? _____

15. If you are considering transferring to another school later, what kind will it be?
    - ❒Another two-year community college
    - ❒A four-year college or university
    - ❒Not planning to transfer
    - ❒Undecided about transfer

COMMENTS:

_____

_____

_____

Thank you for completing this survey!