Preliminary Report: Summary of RA Research

(Fall 2011 – Spring 2013)

The following represents a brief synopsis of several case studies of independent classroom research conducted at Santa Ana College. This research is an ongoing project that follows from the initial Reading Apprenticeship (RA) Report compiled in Spring 2011. A more thorough report will come at the conclusion of the Spring 2013 semester and will include the current Spring semester research being conducted not presented here.

Major Points:

- There is continued evidence to support that some Reading Apprenticeship strategies are effective and do increase student performance when compared to scenarios where students do no use any study strategy
- Although there is ample evidence suggesting that RA strategies do work, not all results showed this pattern. Several explanations are offered and will be further investigated, but most related to the implementation of the RA strategy into the classroom, and perhaps not the overall effectiveness of the strategy itself
- Implementation of RA strategies into the classroom with can be relative easy for both the instructor and the students—as seen in some examples where strategies were used in lecture and assessed on the exams.
- There is some preliminary evidence suggesting that RA strategies work better than no strategy at recalling information on a more long-term basis (rather than the immediate effect shown in a single testing time).

Anthropology 101 (Fall 2012)

Two different course sections of Anthropology 101 were used in comparing student pass rates on a several quiz and exam questions between the class that did not use the RA strategy (non-intervention group) and the class that did use the RA strategy (intervention group). A z-test analysis of porportions was used to compare the pass rates and the result indicated no significant difference in the pass rates of the non-intervention group (72.36%) and the intervention group (68.29%). Several explanations may account for the lack of significant findings. First, there were a limited number of questions used to assess the strategy. Four exam questions were used in testing the effectiveness of the RA strategy which may decreased the chances of finding an effect. Students need ample opportunity to illicit the knowledge they have acquired, and four exam questions simply may not be enough- a restriction of range issue. Restriction of range is a common issue in research methodology, but sometimes unavoidable in applied settings (i.e. like on a predefined exam covering large sections of a course). Another fact that may contribute to these results was that the final assessment took place a month after the intervention was given. So, the time lapse may have also contributed to the lack of significant findings.

Psychology 219 (Fall 2012)

Two different course sections of Psychology 219 were used in comparing student quiz scores before and after an intervention was given on the same day in class. All students from both sections were used in a within-subject design.

Students were given a passage to read and then given a quiz about the passage without any use of an RA strategy. Then same students were given an alternate passage with instructions on how to use the RA strategy (E/I log) while reading this second passage. After, students were given a second quiz relating to this passage. The mean quiz scores were compared for the non-strategy quiz ($\bar{X}_1$ = 14.08) and strategy quiz ($\bar{X}_2$ = 19.62) using a t-test and the results indicated a significant difference t (24) = 4.04, $p < .01$. In other words, the RA strategy significantly increased student quiz scores compared to when no strategy was used.

Psychology 219 (Spring 2012)

Two different course sections of Psychology 219 were used in comparing student quiz scores before and after an intervention was given on the same day in class. All students from both sections were used in a within-subject design. Students were given a passage to read and then given a quiz about the same passage without any use of an RA strategy. Then same students were given an alternate passage with instructions on how to use the RA strategy (E/I log) while reading this second passage. After, students were given a second quiz relating to this passage. The mean quiz scores were compared for the non-strategy quiz ($\bar{X}_1$ = 16.43) and strategy quiz ($\bar{X}_2$ = 18.53) using a t-test and the results indicated a significant difference t (26) = 2.09, $p = .047$. In other words, the RA strategy significantly increased student quiz scores compared to when no strategy was used.

Psychology 219 (Fall 2011)

Two different course sections of Psychology 219 were used in comparing student quiz scores before and after an intervention was given on the same day in class. All students from both sections were used in a within-subject design. Students were given a passage to read and then given a quiz about the same passage without any use of an RA strategy. Then same students were given an alternate passage with instructions on how to use the RA strategy (E/I log) while reading this second passage. After, students were given a second quiz relating to this passage. The mean quiz scores were compared for the non-strategy quiz ($\bar{X}_1$ = 45.00%) and strategy quiz ($\bar{X}_2$ = 69.12%) using a t-test and the results indicated a significant difference t (26) = 4.38, $p < .01$. In other words, the RA strategy significantly increased student quiz scores compared to when no strategy was used.

Psychology 100 (Fall 2012)

Two different course sections of Psychology 100 were used in comparing student scores, derived from a subset of exam questions, between the class that received no intervention and the class that did received the intervention. Two different content areas were used to assess the RA strategy (E/I log). The intervention class used the RA strategy with both topics (Anxiety Disorders and Psychotherapies). Both classes were presented with this content in the usual lecture style format, however the intervention class were instructed to use the E/I log during the presentation of the material. Both classes were presented with the material a week before the assessment (final exam) and there were four total exam questions used to assess the first topic (Anxiety Disorders) and eleven total exam questions were used to assess the second topic (Psychotherapies). An independent t-test was used to analyze both assessments. For the first topic (Anxiety), the mean scores for the intervention class ($\bar{X}_1$ = 5.15) and non-intervention class ($\bar{X}_2$ = 4.24) was not significantly different . For the second topic (Psychotherapies), the means cores for the intervention class ($\bar{X}_1$ = 7.10) and non-intervention class ($\bar{X}_2$ = 6.10) was significantly different, t (59) = 2.02, $p = .048$. The results indicated that the RA strategy had no effect for the first topic (Anxiety), but did increase student scores for the second topic (Psychotherapies). One possible explanation for the discrepancy in effectiveness between the two topics could be the number of assessment questions used. Only four questions were used to test student knowledge compared to eleven questions for second topic. The restriction range in question may explain the lack of significant results.

Chemistry 219 (Spring 2012)

Two different sections of Chemistry 219 were used to compare quiz scores at two different time periods. The non-intervention class was studied a topic (scientific method) through traditional lecture, homework readings, and media source (video). The intervention class also studied the topic through same methods but had to use the E/I log for during

each of the delivery methods. In addition, a single posttest immediately after the delivery of the content, a second posttest was administered two weeks after the instruction to test for retention. The series of testing for both classes were as follows, excluding an initial pretest given prior to any instruction on the material:

Non-Intervention Class (NO RA Strategy)		Intervention Class (RA Strategy)	
Posttest 1 at Time 1	Posttest 2 at Time 2	Posttest 1 at Time 1	Posttest 2 at Time 2

A t-test was used to assess four main comparisons defined below:

1. The first comparison was between the control group and experimental group on the pretest. No significant differences were found $t(62) = .15$, $p = .88$. non-interv mean = 4.63 intervention mean = 4.58

2. The second comparison was between the control group and the experimental group on the posttest at Time 1. No significant differences were found $t(65) = -1.78$, $p = .08$ non-interv mean = 6.17 intervention mean = 6.87

3. The third comparison was between the control group pretest and the control posttest. A significant mean difference was found $t(66) = -4.18$, $p < .001$. non-interv mean = 4.63 intervention mean = 6.17

4. The last comparison was between the control and experimental group on the posttest at Time 2. A significant mean difference was found $t(62) = -3.63$, $p = .001$. non-interv mean = 5.63 intervention mean = 6.90

So it appears that initially, the E/I log had the same impact as the traditional pedagogy for both the intervention and non-intervention classes. In other words, traditional teaching methods seemed just as effective as using the RA strategy at Time 1, and that impact was statistically significant at improving test scores from pretest to posttest. In other words, both the non-intervention and intervention class improved in quiz scores after the initial delivery of the content. However, the retention of the content was to a greater degree, statistically, for students who used the E/I chart. In other words, students who used the E/I log performed better two weeks later on quiz scores. One explanation for the equivalent performance of both classes at Time 1 could the various methods the instructor used to expose the students to the content (lecture, readings, and videos). While one explanation students retaining the information longer is the use of RA strategy.