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Students do not always read what is expected in college courses (Berry, Cook, Hill, & Stevens, 2010; Phillips & Phillips, 2007; Sikorski et al., 2002) or they read to cram for an exam or quiz (Clump, Bauer, & Bradley, 2004). The Reading Retention Strategy (RRS) is designed to motivate students to read and assist students in understanding the main points of the readings. The RRS includes students interacting with peers to reinforce and check their responses to prompting questions. Participants included two education professors and their 54 students enrolled in two sections of a four week summer course. The results of the study indicate that when the RRS was employed students recalled more information on essay and short answer questions than when the strategy was not implemented. In addition, only 2% of students reported that they did not complete the course readings.

**Keywords**
Classroom assessment techniques, Reading, Student learning, Concept retention, College teaching

**Title**

"Read the Text, as if!" The Reading Retention Strategy

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**Abstract**

Students do not always read what is expected in college courses (Berry, Cook, Hill, & Stevens, 2010; Phillips & Phillips, 2007; Sikorski et al., 2002) or they read to cram for an exam or quiz (Clump, Bauer, & Bradley, 2004). The Reading Retention Strategy (RRS) is designed to motivate students to read and assist students in understanding the main points of the readings. The RRS includes students interacting with peers to reinforce and check their responses to prompting questions. Participants included two education professors and their 54 students enrolled in two sections of a four week summer course. The results of the study indicate that when the RRS was employed students recalled more information on essay and short answer questions than when the strategy was not implemented. In addition, only 2% of students reported that they did not complete the course readings.

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## Introduction

Requiring students to read outside of class time is typical in college courses. However, students do not always read what is expected (Berry, Cook, Hill, & Stevens, 2010; Phillips & Phillips, 2007; Sikorski et al., 2002) or they read to cram for an exam or quiz (Clump, Bauer, & Bradley, 2004). In fact, only 20% to 30% of students tend to read the course material on a regular basis (Burchfield & Sappington, 2000; Marshall, 1974; Self, 1987). In an attempt to motivate students to read, graded quizzes or assignments are commonly used to encourage students to read the course material (Carney et al., 2008; Conner-Greene, 2000; Sappington, Kinsey, & Munsayac, 2002). Further complicating this issue, students were able to find success without completing the readings in their courses prior to college (Wade & Moje, 2001). Additionally only about 50% of the students graduating from high school have the necessary skills to read effectively (Kuh, Kinzie, Schuh, Whitt, & Associates, 2005) and between 50% to 75% of undergraduate students lack the ability to complete complex literary tasks (Baer, Cook, & Baldi, 2006). Simply motivating students to read is not enough. Thus, if faculty expect students to learn from the course readings, professors should use reading strategies that are designed to motivate them to complete the course readings, reinforce the important concepts, and help students retain the main points.

## Theoretical Framework

Even though research indicates that students typically do not read all assignments (Burchfield & Sappington, 2000; Berry, Cook, Hill, & Stevens, 2010; Phillips & Phillips, 2007; Sikorski et al., 2002), professors rely on outside reading assignments to provide important information necessary to be successful in the course. Students must be able to read for conceptual understanding, but professors cannot assume that students can effectively extract the important information from the readings (Nilson, 2010). To help students construct meaning from written materials, Haas and Flower (1988) posit that professors "rethink how we teach college students to read texts and suggest useful parallels between the act of reading and more intensively studied process of writing" (p. 167).

Classroom assessment techniques provide an avenue to assist students in making sense of important concepts from the reading material. Classroom assessment techniques (CAT's) are quick, formative evaluation methods that help instructors assess students' understanding of course content and provide evidence of the effectiveness of teaching methods. According to Angelo and Cross (1993), over 50 CAT's are available, and many of these deal with reading material. For example, the one sentence summary "requires students to summarize a large amount of information within the grammatical constraints of a single sentence" (Angelo & Cross, 1993, p. 183). Another example is the reading rating sheet, which consists of students providing professors with an evaluation of course readings. However, many of the CAT reading strategies focus on assessment and/or the professor obtaining information for future class design. Although the focus of CATs is to "help teachers find out what students are learning in the classroom and how well students are learning it" (Anglo & Cross, 1993, p.4), the link between CATs and student learning is mixed or lacking (Anglo & Cross, 1993; Kelly, 1991; Olmstead, 1991; Shelton, 1991; Stetson, 1991; Walker, 1991; Simpson-Beck, 2011).

The 3R or read-recite-review strategy has been shown to be more effective than reading a text multiple times and as effective as note taking (McDaniel, Howard, & Eistein, 2009; Roediger & Karpicke, 2006). Although the 3R strategy takes less time than taking

notes while reading (McDaniel, Howard, & Eistein, 2009; Roediger & Karpicke, 2006), it still takes time to read and pause to recite and review. Strategies that are time consuming are problematic due to students' negative attitudes toward reading assignments (Berry, Cook, Hill, & Stevens, 2010; Clump, Bauer, & Bradley, 2004; Phillips & Phillips, 2007; Sikorski et al., 2002). Another possibility is to use focused questions to improve comprehension of reading material. The use of focused reading questions has been well documented for several years (Anderson & Biddle, 1975; Nilson, 2010; Wong, 1979). Using focused questions to improve student retention of concepts presented in college level courses has been shown to be effective (Divoll & Browning, 2010; Divoll, Browning, & Vesey, 2012a; Divoll, Browning, & Vesey, 2012b). Specifically, the ticket-to-retention (TtR) strategy combined "the benefits of the ticket to leave, the one minute paper, half-sheet response, the post-write strategy, and think-pair-share strategies" (Divoll & Browning, 2010, p. 2-3). The TtR uses three to five focused questions and peer interaction to increase students' retention of concepts that are taught during college class sessions. Research on the TtR has shown that the strategy increases students' retention of concepts (Divoll & Browning, 2010; Divoll, Browning, & Vesey, 2012a; Divoll, Browning, & Vesey, 2012b).

As an attempt to solve some of the problems that using course reading presents, the authors of this paper adapted the TtR so that it could be used for course readings. This new strategy is called the Reading Retention Strategy (RRS). RRS is rooted in CATs, the ticket-to-retention, brain research, reading strategies, and retention of concepts. The RRS is designed from the perspective that college professors are facilitators of learning (Barr & Tagg, 1995; Blumburg, 2009; Wlodkowski, 2008) and should focus more on strategies that increase student learning (Blumberg, 2009; DeZure, 2000; Fink, 2003; Gardiner, 1994; Weimer, 2002). This philosophical shift makes the RRS a unique reading strategy. The RRS is designed to assist students in understanding the main points of the readings and includes students interacting with peers to reinforce and check their responses to prompting questions. With a reading assignment, students are given two to five questions about important concepts from the reading. During the next class session, students share their answer to the questions with another student, listen to the other student's explanation of their answers to the questions, and make any needed corrections to their original answers (i.e., compare and contrast). This process is then repeated with a second student with the new information from their two peers and the refinements of their original answers, each student answers the two to five questions on the RRS sheet.

Furthermore, the RRS adheres to the recent philosophy derived from brain research, i.e., that learning should be an active experience (Slavin, 2003; Sousa, 2001; Zull, 2011). Zull (2011) states "In education, the brain perspective helps us realize once again that learning is not something directly transferred by instruction. Rather it is the brain's natural response to changes in signaling produced by experience" (p. 195). Talking is engaging and a fundamental form of action that increases learning (Zull, 2011). In active learning classrooms, students discuss ideas and information deeply. Additionally, students writing and reflecting on information with the overt purpose of thinking encourages careful contemplation of the material to be learned (Sousa, 2001; Zull, 2011). According to Zull, "The individual interacts to the content, and that interaction changes the individual's mind, qualitatively and quantitatively" (p. 232). Despite this, lecture style teaching continues to dominate college classrooms (Bligh, 2000; Lammers & Murphy, 2002; Sousa, 2001; Wang & Farmer, 2008). The RRS was designed to increase student retention by having the student discuss the reading and be actively engaged in the process of learning about the concepts from the course readings.

Retention of reading material is necessary for successful completion of coursework in preparation for a career. When a student actively interacts with the content in various formats, such as orally and visually, learning and retention of concepts is more likely to take place. Retention, as defined by Sousa (2001) is "the process whereby long-term memory preserves a learning in such a way that it can locate, identify, and retrieve it accurately in the future" (p. 86). The longer something is in working (short term) memory, the more likely it will move to long-term memory. The method of keeping information in working memory is called rehearsal (Baddeley, 1999; Slavin, 2003; Sousa, 2001). Elaborate rehearsal (Sousa, 2001) involves the learner processing the information a number of times to connect the new information with previously learned materials. Elaborate rehearsal strategies include paraphrasing, note taking and discussion, questioning, and summarizing, all of which are included in the RRS. Almost no long-term retention occurs without rehearsal (Slavin, 2003; Sousa, 2001). To increase retention of concepts, teachers should provide class time for rehearsal. According to Slavin (2003), "Instructional strategies that actively involve students in lessons contribute to long-term retention" (p. 182). The RRS uses the aforementioned principles to improve long-term retention of concepts from the course readings.

## Methodology

Fifty-four undergraduate students in two sections of an education course participated in this mixed methods study. The setting included two four-week summer undergraduate college level classroom management courses at a southern university. The four-week summer semester included 15 two-hour 50 minute sessions Monday through Thursday. Professor A taught one section of the course (section one) and Professor B taught the other section (section two). The professors, who are the authors of this paper, created the RRS.

In each course, the students were assigned readings during weeks two through nine, and eleven through thirteen. For each reading, the students participated in two RRS questions. In addition, two concepts from each week that were not reinforced using the RRS were identified as comparison questions. The RRS reinforced concepts and the concepts not reinforced using the RRS from each week were assessed on the pre and post-test using one of three types of questions: multiple choice, short answer, or essay. In an attempt to ensure similar levels of difficulty of the RRS and non-RRS questions, for each RRS question from a chapter a corresponding non-RRS question was created using the same type (i.e., multiple choice, short answer, or essay). For example, students were given two questions that they needed to respond to for chapter one on the RRS sheet. If these concepts were assessed with one multiple choice question and one essay question, then the non-RRS key concepts from chapter one were assessed with a multiple choice question and an essay question on the pre-test and post-test. Thus, each question on the RRS had a corresponding non-RRS question that was from the same chapter and the same type of question. This process also ensured that each type of RRS and non-RRS question compared information that was assigned with the same amount of time between the readings and the post-test.

A pre-test was administered during the first class and included 64 multiple choice questions, 12 short answer questions, and 12 essay questions. Of these questions, 32 multiple choice questions (16 were reinforced with the RRS and 16 were not reinforced with the RRS), 6 short answer questions (3 were reinforced with the RRS and 3 were not reinforced with the RRS), and 6 essay (3 were reinforced with the RRS and 3 were not reinforced with the RRS) were used for this study. The remainder of the questions focused on concepts that were discussed in class, but were not used for this study.

**Data Collection and Analysis**

Data collection methods included: (a) a pre-test, (b) a post-test, and (d) a student questionnaire about the RRS. The pre-test and post-tests were used to determine if the students retained the concepts, but did not count as a grade in this course. Thus, students were not given advanced notice of the pre-test or post-test.

The authors of this paper knew which of the multiple choice, short answer, and essay questions were reinforced using the RRS. Therefore, it would be possible for the professors to unintentionally skew the results by grading the questions reinforced using the RRS more favorably. This issue was addressed by creating an answer key and using two scorers (professor A and an outside scorer). The two scorers graded the short answer and essay questions, but not the multiple choice questions. The multiple choice questions were computer-graded using scantron software. The interrater reliability between the scorers for the pre-test was 94.60% (97.20% on the short answers questions and 91.98% on the essay questions), while the interrater reliability for the post-test was 84.26% (89.51% on the short answers questions and 79.01% on the essay questions). The pre-test reliability rating is high in part because many students earned zeros on these questions due to leaving the questions blank. The total interrater reliability rating for both the pre-test and post-test was 89.43 (93.36% on the short answers questions and 85.49% on the essay questions). For each question where the score differed, the two scorers discussed the reason for their initial score and agreed on a final score. These final grades were used as the data reported in this study.

The pre-test and post-test data were analyzed by assessment types and course sections. The pre-test and post-test were compared to each other to determine if there was a difference between the concepts reinforced using the RRS and those not reinforced using the RRS for each type of question. These comparisons resulted in the creation of a change score with the intervention and one without (the difference between the pre-test and the post-test) for each type of question. The change scores were compared to determine the difference between the students' prior knowledge (pre-test) and what they recalled (post-test). The mean was generated for each data set.

A paired-sample *t* test was used to determine if the distribution of scores for the individual sections significantly differed. However, this test could not be run for the averages of both sections because of the different variables (professor and students). The RRS and non-RRS post-tests were not compared to each other in this study because doing so would not create a true indication of the effectiveness of the RRS. A more accurate comparison would be comparing the change scores (the difference between the pre-test and post-tests) of the RRS to the non-RRS questions. This comparison considered the students starting point (the pre-test) and how much the students increased their score (the post-test). In addition to the students' pre-test and post-test, the students were asked opened questions about their reading practices for the course and how they found the answers to the questions on the RRS sheet. Fifty-one of the 54 students completed the questionnaire. The questionnaire data were analyzed by question using open coding to create categories and patterns. A constant comparative approach was used to determine patterns across the questions and axial coding was applied to each data source to make connections (Creswell, 1998; Rossman & Rallis, 2003).

## Results

Quantitative data were organized by assessment (pre-test and post-test) for each section, type of question (multiple choice, short answer, and essay) and compared between questions reinforced using the RRS and those that were not reinforced using the RRS.

### Pre-test Scores

The mean for section one was 63.32 ($n$=30) on RRS multiple choice questions and 57.29 on non-RRS questions, while the mean for section two section two was 61.72 ($n$=24) on RRS multiple choice questions and 58.59 on non-RRS questions. Section one had a mean of 15.11 on RRS essay questions and 5.56 on non-RRS questions. Section two had a mean of 9.37 on RRS essay questions and a 2.08 on non-RRS questions. On RRS short answer questions, section one had a mean of 6.65 on RRS questions and 3.89 on non-RRS questions, while section two had a mean of 8.33 on RRS questions and 7.99 on non-RRS questions.

### Post-test and Change Scores

The mean post-test score for section one was 73.75 on RRS multiple choice questions and 68.88 on non-RRS questions, while the mean for section two was 66.15 on RRS multiple choice questions and 63.28 on non-RRS questions. The difference between the pre-test and post-test or the change score for section one's RRS multiple choice questions was 10.43 and 9.58 for non-RRS questions. The change score for section two's RRS multiple choice questions was 4.43 and 9.58 for non-RRS questions. Section one had a mean of 45 on RRS essay questions and 15.28 on non-RRS questions, a difference of 29.72. Section two had a mean of 40.62 on RRS essay questions and a 13.89 on non-RRS questions, a difference of 26.73. On RRS short answer questions, section one had a mean of 63.33 on RRS questions and 30.56 on non-RRS questions (a difference of 32.78), while section two had a mean of 45.14 on RRS questions and 21.18 on non-RRS questions (a difference of 23.96). This resulted in change scores of 10.43 on RRS multiple choice questions, 9.58 non-RRS multiple choice questions, 29.89 on RRS essay questions, 9.72 on non-RRS essay questions, 56.68 on short answer RRS questions, and 26.67 on non-RRS short answer questions for section one. Section two had change scores of 4.43 on RRS multiple choice questions, 9.58 on non-RRS multiple choice questions, 31.25 on RRS essay questions, 11.81 on non-RRS essay questions, 36.81 on short answer RRS questions, and 13.81 on non-RRS short answer questions. Section one's change score difference between using the RRS and not using RRS was: 0.85 on multiple choice questions, 20.16 on essay questions, and 30.01 on short answer questions. Section two's change score difference between using the RRS and not using RRS was: -5.16 on multiple choice questions, 19.44 on essay questions, and 23.61 on short answer questions.

### Paired-Sampled *t* Test

A paired-sampled $t$ test was conducted to determine whether the difference between the change scores on the RRS questions and non-RRS questions were significantly different. The results for section one indicated that the mean difference between the change score for both the essay ($M$ = 20.16, $SD$ = 22.38, p=.00) and short answer ($M$ = 30.01, $SD$ = 27.71, p=.00) questions were significantly greater when the RRS was implemented. Yet, no significant difference was found for the mean difference between the change score on RRS and non-RRS multiple choice questions ($M$ = 0.849, $SD$ = 18.35, p=.802). The results for section two indicated that the mean difference between the change score for both the essay ($M$ = 19.44, $SD$ = 15.81, p=.00) and short answer ($M$ = 23.61, $SD$ = 25.37, p=.00) questions were significantly greater when the RRS was implemented. Yet, no significant difference was found for the mean difference between the change score on RRS and non-RRS multiple choice questions ($M$ = 0.156, $SD$ = 17.71, p=.966).

### Questionnaire Data

Using open ended questions, students were asked about their reading habits and what they did to find the answers to the questions assigned as part of the RRS. Students ($n$=51) indicated that 15.7% of them read all of the time, 25.5% read most of the time and scanned some of the time, 11.80% read some and scanned some, 45.1% only scanned for answers, and 2% did not read at all, but googled the answers. Students were asked what strategy they used when they did not find an answer, were unsure, or did not read. Of the students who responded ($n$=24), 45.83% suggested that they checked answers with peers when they were not sure of an answer, 45.83% suggested that they copied answers when they did not read, and 8.33% used the computer for help.

## Discussion

### Student Reading Behaviors

One of the challenges to using reading in college courses is motivating students to read the assigned texts (Berry, Cook, Hill, & Stevens, 2010; Burchfield & Sappington, 2000; Phillips & Phillips, 2007; Sikorski et al., 2002). Previous research on students' reading behaviors indicated that only 20% to 30% of students complete the course readings on a normal basis (Burchfield & Sappington, 2000; Marshall, 1974; Self, 1987). These statistics are concerning if professors are using readings to enhance their instruction, but the statistics are not surprising (Berry, Cook, Hill, & Stevens, 2010; Clump, Bauer, & Bradley, 2004; Phillips & Phillips, 2007; Sikorski et al., 2002). In this study, the RRS resulted in 15.7% of the students reading all of the time, 37.8% either reading most of the time and scanning some or read some and scanning some, and 45.1% of the students only scanning the readings for the answers. Thus, only 2% of the students did not read at all. The low percentage of students who did not read could have resulted from students knowing that they would have to share their answers with two peers during the next class. Our attempt to hold students accountable to their peers, which can result in motivating students to complete the course readings (Nathan, 2005; Nilson, 2010), rather than to motivate students to read due to fear of earning a bad grade is an area that should be further investigated. Alternatively, students might have been motivated because the RRS also gave the students a purpose to read the chapters, which can improve reading comprehension (Anderson & Biddle, 1975; Nilson, 2010; Wong, 1979) and is a factor in increasing the likelihood that students read (Nilson, 2010). Using the RRS sheet, the purpose for reading was to find the answers to the questions that were highlighted as the important points that the students should learn from the readings, rather than because students feared that they would earn a bad grade. Although the students were not asked if they would have read if the RRS was not implemented, the fact that 20% to 30% of students typically read allows us to speculate that the RRS might improve students reading habits.

When students did not read, 45.83% of our students indicated that they copied answers from their peers. Normally, this type of cheating would not be tolerated. Although we would have preferred that the students read and find the answers on their own, the RRS was designed to assist students' retention and students copying answers resulted in them still finding the key concepts that we wanted them to learn from the chapter, which was the point of the RRS. Additionally, students regardless of their method to find the answers, still participated in the classroom active learning, peer discussion, writing, and elaborate rehearsal portion of the RRS which have been shown to improve learning (Slavin, 2003; Sousa, 2001; & Zull, 2011). Thus, the process of sharing answers with two peers, comparing and contrasting answers, and writing a final answer to the RRS questions might be more important than the act of reading or as many students did, scanning for the

answers (Bransford, Brown, & Cockering, 2000; Davis, 2009; Donovan, Bransford, & Pellegrino, 1999).

**Student Reading Retention**

One reason for designing the RRS was to motivate students to read the text, yet simply reading the text is not enough. Students also need to understand and retain the important information. Using the change score data on multiple choice, essay, and short answer questions, this study investigated the effectiveness of the RRS as a reading retention strategy. Analyzing data from the posttest on RRS and non-RRS questions would not be effective because the scores on the pretests for each differ. For example, some students scored higher on the pre-test on RRS questions (15.11 on essay questions) than on non-RRS question (5.56 on non-RRS questions). Using the change scores, shows a difference between where the students were at the beginning of the semester versus at the end of the semester. Comparing the data between change scores for the RRS and non-RRS questions no significant difference was found when the students were tested using multiple choice questions. However, there was a significant difference between the change scores for RRS and non-RRS questions on both the short answer and essay questions. The data reported here suggests that the RRS results in improved retention of concepts when tested using both short answer and essay questions. We theorize that the RRS was more effective on short answer and essay questions because they are more difficult than multiple choice questions since students need to generate their own answer rather than having answers from which to choose (Biggs, 1999; Carvalho, 2009; Gay 1980; Nickerson, 1989). Although the higher multiple choice pre-test scores left less room for growth on the final, the lack of a statistical difference for the difference between the change scores on the RRS and non-RRS multiple questions indicate that the strategy was not effective for the multiple choice questions. We were not surprised by the lack of a positive effect on multiple choice questions because our work with the TtR found similar results (Divoll, Browning, & Vesey, 2012a; Divoll, Browning, & Vesey, 2012b).

The change score difference between using and not using the RRS resulted in a mean increase of approximately 20 points on essay questions and between 23 to 30 points on short answer questions. These results indicate that the RRS could be an effective strategy for students' retention of reading concepts. The design of the RRS, which includes providing an active experience (Slavin, 2003; Sousa, 2001; & Zull, 2011), incorporating higher level thinking skills and providing feedback, practice, and review (Bransford, Brown, & Cockering, 2000; Davis, 2009; Donovan, Bransford, & Pellegrino, 1999), active learning (Flint, Zakos, & Frey, 2002; Ginsberg, 2010; Ginsberg & Wlodkowski, 2009; Grubb,1999; Grubb & Byrd, 1999; Hackathorn, Solomon, Blankmeyer, Tennial, & Garczynski, 2011; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005; McGlynn, 2001; Meyers & Jones,1993; Sorcinelli, 1991; Wlodkowski, 2008; Woolfolk, 2011), and involving different parts of the brain (Kress, Jewitt, Ogborn, & Charalampos, 2006; Verkiri, 2002) are all recommended to improve student learning. Yet, the significant difference between the change scores for RRS and non-RRS questions on the short answer and essay questions could have resulted due to the percentage of students who scanned for RRS questions in their text, but did not read the parts of the chapters that related to the non-RRS questions.

## Conclusion

Using out of class readings is an essential part of the college classroom. However, students do not put much emphasis on these out of class reading (Berry, Cook, Hill, & Stevens, 2010; Phillips & Phillips, 2007; Sikorski et al., 2002). Traditional recommendations for motiving students to read include graded assignments and quizzes (Carney et al., 2008; Conner-Greene, 2000; Sappington, Kinsey, & Munsayac, 2002). These strategies are

designed with the professor as provider of knowledge model in mind. Conversely, the RRS is designed with the professor as facilitator of learning model of teaching in mind (Barr & Tagg, 1995; Blumburg, 2009; Wlodkowski, 2008). The focus of the RRS is to ensure that students learn the important concepts from the readings; it is not an assessment strategy to determine what student can recall from the readings. Furthermore, using the RRS on reading assignments resulted in improved scores on short answer and essay questions, but does not seem to have the same effect on multiple choice questions. In addition, the RRS resulted in a high percentage of students reading the texts. The effectiveness of the RRS on essay and short answer questions suggests that students have a deeper level of understanding of concepts when the RRS is used because of the difficult of essay and short answer questions (Biggs, 1999; Carvalho, 2009; Gay 1980; Nickerson, 1989). Although more research is need on the RRS, the results suggest that this strategy has promise to improve student reading habits and student retention concepts. Limitations of this study include the number of students in each section and the number of questions used as a comparison for the RRS and non-RRS essay and short answer questions (i.e., three each). Future research using more students and more questions is needed.

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