CLASS PARTICIPATION OF SECONDARY STUDENTS AND DAILY ART HISTORY TEST SCORES IMPROVED WHEN STUDENTS USED WRITE-ON RESPONSE CARDS

A Thesis
Presented in Partial Fulfillment of the Requirements
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By

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ABSTRACT

This thesis analyzed the effects of write-on response cards on class participation and daily test performances. An Art I public school secondary classroom with an enrollment of 15 boys and 10 girls served as the research setting. One condition (A), of an ABAB experimental design, used the instructional method of teacher lecture, student note taking, and teacher guided single-student oral responding. The other condition (B) changed single-student oral responding to all students responding with write-on response cards. All other setting variables remained constant. In both conditions, students completed a ten-point daily test on the lecture material. The format and level of difficulty of all the tests remained identical throughout the experiment. All students improved their daily test performances during both response card phases.
This thesis is dedicated to my family and friends.
ACKNOWLEDGMENTS

I offer my thanks and appreciation to Dr. John Cooper, for his support and encouragement throughout this study and my graduate work. I would also like to thank Dr. William Heward for being my second reader. I would also like to thank the faculty of the Special Education Department for inspiring me to take all I have learned in the field and apply it to my Art Education classroom.

Thanks to my family and friends for supporting my studies and schedule during the duration of thesis.
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CHAPTER 1

INTRODUCTION

Why do people create art? The reasons that people have made objects of
great beauty may include functional considerations, religion, politics, education,
aesthetics, and humanity’s inborn desire to create (Brommer, 1981). While artists
use art forms to express their thoughts, feelings and insights, their work serves as
an image of the times in which it was created (Brommer, 1981). Social scientists
and historians have learned valuable information about the history of cultures by
studying artwork (e.g., cave paintings from Lascaux, France) (Brommer, 1981).

According to Gardner, (1991) “The goal of art history is the discerning
appreciating and enjoyment of art, from whatever time and place it may have
come, by whatever hands it may have been made” (p.3). By developing an
understanding and appreciation of art and the history of art, students gain insight
into the roots of their culture by identifying ancient civilizations, studying their
technical and aesthetic developments, and tracing the influences on American
culture (Brommer, 1981).
The study of art history also provides students with invaluable tools for living and prospering in the contemporary world. Some of these tools include knowledge of art theories and applications that are very functional for various professions and areas of study such as graphic design, architecture, product and industrial design, medical illustration, and advertising. Art history also serves as a vehicle for the development of expression, and evaluation of ideas and processes. It teaches children the abilities to produce, read, and interpret visual symbols. It facilitates the assimilation of information needed to recognize and understand the artistic achievement and expectations of various societies (Ragans & Rhoades, 1992). Art history should help students understand concepts and see relationships, recognize trends, feel emotions, and understand visual communication (Brommer, 1982). Many parents and general educators recognize that art and art history education is an essential subject to foster a comprehensive understanding of the importance of art in the lives of children.

Instruction in art history in the art classroom can be approached in several ways. There is the traditional method of whole group instruction with single-student responding. In this method, the teacher poses a question and calls upon one student to answer from the students that raised their hand. The most frequent responses are usually by the high-achieving students and less frequent responses are made by the lower-achieving students (Maheady, Mallette, Harper, & Sacca, 1991).
Thurlow, Ysseldyke, Graden and Algozzine (1983) conducted a study with student with learning disabilities in an elementary resource room. Their results showed that students were only actively engaged in instruction for only 29 of the 190 minutes they were observed.

Another instructional option is a method that uses active participation by all students.

Research (Fisher & Berliner, 1985; Greenwood, Delquadri & Hall, 1984) shows that when a student actively responds and often to ongoing instruction, they learn more than when they are just passive recipients of instruction. Examples of passive responding are sitting in a seat and paying attention, listening to the teacher or watching other students respond. An active response is one that produces movement or change in the environment that can be detected by someone who can provide feedback to the student (Heward, 1994). Examples of active responses/participation are: answering a teacher posed question, holding up a response card, making a model, or running an experiment. Engaging students in activities that encourage active student responding (ASR) is an educational tactic that increases direct student participation and interaction with the material being presented.

An active student response is defined as “an observable student response made to and instructional antecedent (Barbetta, Heward, & Heron, 1993). ASR can take several forms such as choral responding, guided notes or the use of
response cards. Some response cards are preprinted cards, signs, or items that all students hold up simultaneously to display their response to a question or cue posed by the teacher (Heward, 1994). Other response cards require written statements from individual students. The use of response cards provides an opportunity for all students to respond to a question during instruction. The use of response cards produces a high rate of ASR by students. “Providing students with frequent opportunities to respond is one of the most powerful means teachers have for increasing academic achievement” (Heward, Gardner, Cavanaugh, Courson, Grossi, & Barbeta, 1996. p.9).

Skinner (1968) states “It is possible that students may be induced to learn by making material not only attractive but memorable and that an obvious example is to make material easy (p.106). Using response cards can not only make the material memorable and easy, but can also have the effects of increased academic achievement. The use of response cards during instruction has been shown to have a correlation with higher student academic achievement.

Purpose of the Study

The purpose of the study was to analyze the effects of using response cards during review sessions on art history quiz scores and student participation. This thesis provided a systematic replication of the procedures used by Cavanaugh, Heward, and Donelson (1996), and King (1996) in a regular education classroom with high school students. It was conducted to further evaluate the use of response
cards as an instructional technique to increase ASR and academic performance in a regular secondary classroom setting.

The present study was conducted in a community with a similar student population used for the Cavanaugh et al. and King studies. This thesis, however, was in an area of the arts wherein the King study was in world history and the Cavanaugh et al. study was performed in an earth science course. Some other similarities to the Cavanaugh et al. study include the use of an alternating treatment design, the use of the response cards during end-of-lesson review, and the analysis of two different review conditions on student’s responses on tests of key points from class lecture. The Cavanaugh et al. study evaluated the techniques of active responding with response cards during review alternated with passive attending and listening to the teacher led review. In contrast, this thesis alternated single-student responding review sessions with response cards review sessions. Both studies evaluated the effect of the use response cards during review sessions on academic performance.

The King study also investigated the effects of write-on response cards during review but also performed a comparative study with single student responding on the academic performance and student participation. King performed the study across three classrooms, totaling 73 students. This thesis also investigated student participation with response cards with high school students in a regular education classroom, but focused on the data of five targeted students.
King’s study was composed of a review of facts and concepts covered over 5 to 10 days of instruction. Half of the review was conducted with the single-student response condition and the other half with write-on response cards. This thesis used daily review sessions.

Although this thesis is a systemic replication of several previous studies, it is the only study researching active student responding in the area of the arts.

**Review of the Literature**

This review of literature presents and discusses the literature pertaining to Active Student Response (ASR) and how it has had an impact on the academic achievement of students. It also presents a review of various tactics to increase ASR, focusing on the instructional technique of Response Cards.

In order to help students learn, teachers need activities to use measurably effective instructional procedures. What teaching activities are needed for effective instruction? Heward (1994) reports that although teaching activities can be organized under four basic functions: assessment, planning, instruction, and evaluation, that students only come into actual contact with the teaching program during instruction.

It is the teacher who influences student achievement by carrying the content of the curriculum to the students, personally, rather than depending on the curriculum materials alone (Brophy, 1986). Active student participation can be difficult to accomplish in group instruction. There has been research in the past 20
years in the area of the relationship between active student response and academic achievement.

In a study of six elementary schools, Hall, Delquadri, Greenwood and Thurston, (1982) reported that up to 45% of the time available for instruction per day was spent passively attending to the teacher. When passively attending to the teacher, students do not answer questions, practice problems or actively engage with the material being presented. Active Student Response (ASR) addresses this issue by providing the needed opportunities for students to be actively engaged with the material while assisting the teacher with issues of time on task and multiple practice sessions.

**Active Student Response**

ASR is defined as a direct measure of student participation in the classroom that occurs every time a student makes an observable response to ongoing instruction (Heward, Gardner, Cavanaugh, Courson, & Grossi (1996). According to Heward (1998), the basic measure of ASR is the number of student responses, which are as varied as the kinds of lessons that are taught. Some examples of ASR responses is the number of words read, problems solved, angles dissected, words spelled, or sentences written (Heward, 1998).

Heward (1998) states five advantages of ASR as a measure of instructional effectiveness:

- It is a direct measure of the primary behavior of interest: the occurrence of
student’s specific responses to the lesson.

- Unlike time-based measures of student engagement that are reported in minutes or as a percentage of observed intervals, ASR data are reported by frequency counts: a standard and absolute measure of behavior that is sensitive to changes in the instructional environment and unlimited by ceilings.

- It is an appropriate and effective measure across all types of instruction (including discrete trial, incidental teaching, free operant).

- It is a simple measure practicing teachers can use to assess how much active instruction their students are receiving.

- It reveals not only how much instruction has been delivered, but also how much learning has occurred.

ASR sets the scene for students to interact with the material being presented by providing multiple opportunities to respond. Research (e.g., Fisher & Berliner, 1985; Greenwood, Delquardi & Hall, 1984) shows that when students respond actively and often to ongoing instruction they learn more than when they are just passive recipients of instruction.

Barbetta, Heward and Heron (1993) examined the effects of ASR during error correction on the acquisition, maintenance and generalizing of sight words by students with developmental disabilities. Using an alternating treatment design, they compared the effects of ASR error-correction verses no-response error
correction. A set of 20 unknown words was provided with one-to-one instruction. Each set was randomly separated in half. On one group of words, the teacher modeled the correct word and the student repeated it following student error. This stage was considered the active student response instruction. On the other set of words, errors were followed by the teacher modeling the correct word while the student attended to the word card. This stage was considered the no-response instruction. Results showed that for all six students, the active student response error-correction procedure produced more words read correctly during instruction, same-day tests, next-day test, two-week maintenance tests, and generality tests.

Data from a study by Sterling, Barbetta, Heron, and Heward (1997), suggest that ASR instruction assisted elementary special education students with learning disabilities on learning health facts. The study compared student test scores on daily and two-week maintenance tests. The five students were presented with a weekly set of 20 health facts in small group lessons that lasted approximately 15 minutes daily. During each session, ten facts were taught using On-task Instruction and 10 by ASR Instruction. Results showed that all five students answered more health facts correctly on daily tests that were taught using ASR Instruction. The average total number of facts learned with On-task Instruction was 11.8 verses 22.8 for ASR Instruction. Students also performed better on facts previously learned with ASR Instruction on two-week maintenance tests.
If ASR is such a powerful tool in the education of students, why do more teachers not use it? Heward (1998) lists several reasons for low usage of ASR by teachers: (a) teachers are unaware of the importance of ASR in the classroom, (b) school policies to “cover the curriculum” inhibit high levels of ASR, (c) increasing the rates of ASR may be punishing to teachers who use typical teaching methods because of the initial investment of time in developing ASR materials and training students to use them, and (d) a general lack of attention to classroom arrangements inhibits the use of ASR.

One easy way to have students actively respond with material in the classroom is to plan more ASR into daily lessons. The role of the teacher is to provide the students with numerous opportunities to make these academic responses. A teacher can plan a lesson with ASR by dividing it into two areas: (a) academic engaged time and (b) opportunity to respond.

**Academic Engaged Time**

Berliner, (1979) calls the total time available for students to work in class the allocated time. The part of the allocated time that students are engaged in learning is termed Academic Engaged Time (AET) (Berliner,1976). Rosenshine and Berliner (1978) defined AET as the amount of time a student spends engaged in academically relevant material. Studies in the 1970's looked at time-on-task and attention to task (Gambrell, Wilson, & Gantt, 1981; Good & Becermank, 1978; Sanford & Evertson, 1983). Since then, there has been an increasing body of
research on the relationship between student participation and academic achievement.

Educational researchers, Rosenshine and Berliner (1978) found that the time students are engaged in relevant content correlated highly with academic achievement; the greater the engagement the greater the achievement. They made a distinction between AET and allotted time, stating that the total amount of time allotted to spend on a particular subject is different from the amount of time actually used in the active engagement of the students in the study of that subject (King, 1998; Rosenshine & Berliner, 1978). Actively engaging students in an activity involves putting students in contact with curriculum materials and finding ways to maintain this contact.

Thulow, Ysseldyke, Graden, and Algozzine, (1983) found that students with learning disabilities in an elementary resource room were actively engaged in instruction for only 29 of the 190 minutes during which they were observed.

Barbetta and Heward, (1993) conducted a study on the effects of ASR during error correction on the acquisition and maintenance of geography facts by elementary student with learning disabilities. Their findings showed that on same-day and next-day tests, students scored higher with ASR error-correction than with No-Response error correction. The results suggest that the addition of ASR error-correction may contribute positively to student achievement.
Opportunity to Respond

The Juniper Gardens Children's Project started the term "opportunity to respond" (OTR) as the reference to the frequency of student engagement in specific academic responses (Stanley & Greenwood, 1983). Greenwood et al. (1984) define opportunity to respond as the interaction between the antecedent instructional stimuli presented by the teacher and the academic responding established by the stimuli. This then takes into account academic responses as well as the instructional condition.

The Observation Code for Instructional Structure and Student Academic Response (CISSAR) is a comprehensive classroom observation system designed to assess academic instructional opportunities provided to students (Greenwood, Delquadri, & Hall, 1980). In a 1978 pilot study in an inner-city Title 1 school in Kansas City, Kansas, CISSAR was used to record instructional activities and student responding. Data showed that approximately 75 percent of the day was devoted to the codes of academic activities, but only 25 percent of the day were students engaged in academic responding (Hall, Delquadri, Greenwood, & Thurston, 1982).

Stanley and Greenwood's (1983) study found little difference in time allocated for academic subjects in Title 1 and non-Title 1 classes. However, academic response time in the Title 1 class was approximately 11 minutes less per day.
In another study of Title 1 and non-title 1 students, Greenwood, Delquadri, Stanley, Terry and Hall (1984) observed and compared teacher and student behavior in Title 1 and non-Title 1 fourth-grade classrooms. The Title 1 classrooms were in inner city schools with a large percentage of low socioeconomic, minority students. The non-Title 1 schools were in a suburban district with a larger percentage of white students. Results showed that the students in the Title 1 schools were provided a minimal number of opportunities to respond to academic material. The students in the Title 1 school were given approximately 11 minutes less of response time than the students in the Non-Title 1 school. The researchers associated the lower academic achievement of the Title 1 students with their low rate of opportunities to respond.

Maheady, Mallete, Harper, and Sacca, (1991) found that calling on individual students during group instruction only provides that one student a learning opportunity to respond. This results in the higher frequency of response by higher achieving students and fewer or no responses by the lower achieving students.

An alternative to the one-student-at-a-time response method, teachers can increase student participation by using a variety of ASR techniques.

Tactics to Increase ASR

Benefits for increasing ASR during instruction include that it generates more
learning, it provides important feedback to the teacher, and it is correlated with increased on-task behavior (Heward, 1994).

There are many tactics available to increase ASR. Four of these tactics that are easy to implement in large groups will be discussed in this section: guided notes, structured worksheets, choral responding and response cards. This section looks at the research on these four strategies.

**Guided Notes**

Guided Notes are teacher prepared handouts that contain all the important information needed from the day's lecture. Courson (1989) defines guided notes as handouts that 'guide' students through a lecture, presentation, or demonstration by providing a format that includes basic information and cues students to key points.

According to recent research, students that take accurate notes during lecture and study them later, score higher on tests than students that only read the test and listen to the lecture (Baker & Lombardi, 1985; Carrier, 1983; Heward, 1998; Norton & Hartley, 1986). Students taking notes are actively responding to the lesson’s content, thereby increasing their rate of ASR.

Examples of increased ASR and higher test scores with guided notes can be seen in several studies. For example, Kline (1986) compared the use of guided notes and students own note taking with ten students with learning disabilities in a secondary history classroom. In the first condition, students took their own notes
on regular lined notebook paper during a teacher lecture. In the second condition, students were given a set of guided notes to complete during the teacher’s lecture. Following each lecture, a ten-item daily quiz was administered. Results showed that all ten students scored higher on quizzes following the lectures with guided notes.

Pados (1988) also compared the use of guided notes verses students own note taking procedure with 20 fifth grade students. Two students were classified as learning disabled and seven were enrolled in a gifted and talented program. On the ten-item next day quizzes, the mean score for the entire class using their own notes was 7.0 verses 8.6 for the guided notes condition. The mean score for the student with learning disabilities was 6.4 with their own notes and 9.3 with guided notes. Overall, 19 out of 20 students scored higher in the guided notes condition than when they took their own notes.

In a similar study, Beckley, Al-Attrash, Heward, & Morrison, (1996) also compared the use of guided notes and students taking their own notes. The subjects were 18 students in an eighth grade social studies classroom. This included three students with learning disabilities. Higher quiz scores were achieved by all 18 students when using guided notes than when they took their own notes.
Choral Responding

Heward (1996) states that choral responding, where each student in the group or class responds orally, in unison, is an easy and proven method for increasing ASR during group instruction. Choral responding also provides the teacher with immediate feedback as to the effectiveness of the lesson. The teacher can then adapt their instruction to student needs without wasting valuable time and energy.

Sainato, Strain, and Lyon (1987) used choral responding to increase student participation with preschool children with disabilities during group instruction. Findings revealed that all of the ten students increased their level of participation when engaging in choral responding. The results also showed a decrease in off-task behavior.

Response Cards

The ASR strategy addressed by this study is the use of response cards during review sessions on the acquisition of art history facts and concepts. Response cards are cards, signs or items (such as hard laminated boards) that are simultaneously held up by all students in class to display their responses to a teacher posed question or problem (Heward, 1996). The response cards provide the opportunity to think about and respond to each question to every student in the class. As the teacher reads the answers, he/she is able to give immediate feedback to students.
Gardner, Heward and Grossi (1994), and Heward, (1994) report that the use of response cards yield higher ASR and improved test scores in a variety of classrooms and age groups.

**Pre-printed response cards.** Pre-printed response cards are cards prepared in advance and are easily seen by the teacher. When used during group instruction, each student has a personal set of cards with the answers to questions written on them. Some examples of pre-printed response cards are Yes/No and True/False cards, color cards, punctuation marks, or months of the year. Students respond to teacher posed questions by selecting an answer from their given cards and holding up the card with the correct answer.

There are several advantages to using pre-printed response cards. These include that pre-printed response cards include the high rate of ASR they produce and they are easy for the teacher to see. Disadvantages of pre-printed response cards: the student response is limited, and instruction is limited to recognition tasks (Heward, Gardner, Cavanaugh, Courson, Grossi, & Barbeta, 1996).

**Write-on response cards.** Write-on response cards require students to write the answer onto an erasable card that can be changed each learning trial. Write-on response cards can be made from a variety of materials such as chalkboards or white, glossy, laminated boards. Marking devices used may be china markers, dry erase markers or some other erasable substitute.

Advantages of using write-on response cards is the availability of using
curriculum content and questions in which there are multiple correct answers and a more difficult recall response is required instead of a simple recognition type response (Heward, Gardner, Cavanaugh, Couros, Grosssi, & Barbetta, 1996).

Berg (1994) compared the use of pre-printed response cards with a type of manipulative response cards to teach relational concepts (e.g., on, beside, in) to five preschool children with developmental disabilities. She created manipulative response cards that required the children to respond to a direction (e.g., Put your fish next to the castle) by placing a Velcro-backed marker (e.g., a little yellow fish) on various places on a felt background scene. Results showed that the children were actively participating no less than 80% of the time for all sessions. The mean participation rate for the pre-printed response cards was 87% and 92% for the manipulative cards. In an interest survey, the students preferred the manipulative response cards over the pre-printed cards.

Cavanaugh, Heward, and Donelson (1996) compared response cards and passive listening during review sessions in an earth science class in a large suburban high school. The participants were 23 ninth-grade students. Eight of these students were identified as having learning disabilities, behavior disorders, mental retardation, or were enrolled in supplementary programs for students at risk for not completing high school. The study used an alternation treatment design to examine the effects of the two conditions on students’ responses and their performance on next-day and weekly tests. The lesson followed the procedure of
teacher lecture, a hands-on demonstration or experiment, and a teacher-led review of the lesson’s main points and concepts. In one condition, the review had a passive format, with the teacher covering each key point on the overhead projector and the students passively listening. In the response card review condition, the teacher wrote a sentence or key point on the overhead with a term, process, or concept left blank. Students responded by writing the correct term to complete the point. When cued by the teacher, students held up their cards for the teacher to see. The teacher provided praise or correction and moved on to the next point. On next-day tests, mean scores by 13 of the 15 general education students and all eight of the special education students were higher for key points reviewed with the response cards than with the points reviewed with the passive condition. On weekly tests, those items reviewed with response cards also were higher than the passive review items. The teacher also noted that on several occasions, that what he had perceived to be an effective lesson was contradicted when many students could not respond correctly during the response card review sessions. This shows that the review session also provided the teacher with important feedback to student understanding of the material.

Response Cards Verses Hand Raising

Narayan, Heward, Gardner, Courson, and Omness (1990) examined six students in a fourth grade classroom in an inner city classroom. Six students selected by the teacher served as subjects for the study. These students received
daily, whole class instruction in social studies. At the beginning of the
approximately 25-30 minute lesson, the teacher presented and explained concepts
and facts using an overhead projector. The second part of the lesson was a review
of the material covered in the lesson. For the first condition of the study, students
answered teacher posed questions over the material with hand-raising. In the
second condition, students used write-on response cards to answer the teacher’s
questions. At the end of each class session, a 10-item quiz was given over the
material. The results showed that the mean percentage of student responses for the
hand-raising sessions was 4.1% and the mean percentage for write-on response
cards was 82.6%. The mean percentage of accuracy of response was 82% for the
hand-raising condition and 83% for the write-on response cards. The student
performance on daily quiz scores showed that all six students had higher mean
quiz scores on the quizzes under the write-on response card condition. In addition,
performance on daily quizzes revealed that 19 out of the 20 total students in the
class scored higher following lessons taught with response cards.

Narayan et al. (1990) compared the effectiveness of hand raising and
response cards on group instruction on fourth-grade students' opportunity to
respond and student achievement. Results showed that students mean rate of
response during hand raising was .51 responses per minute during hand raising
compared to .98 responses per minute during the response card sessions. These
results show that students responded approximately twice as many times using
response cards. The results also showed that the number of correct responses increased.

Narayan (1980) investigated the accuracy of student response during large group instruction as a function of the mode of student response: hand raising and response cards. The results showed that the mean correct rate increased seven times per minute with write-on response cards.

In another study comparing response-cards and hand-raising, Gardner, Heward and Grossi (1994) conducted an experiment in an inner-city fifth grade science classroom. Using an ABAB design, the study alternated treatments with hand raising and write-on response cards. Although the study included 22 students, 6 were chosen as focus students. Three of these six students were considered at-risk. The mean rate of responding was 1.5 per session for the hand-raising section. The response cards sessions yielded a 21.8 mean rate of responding. These results showed that students had a higher participation rate when using the write-on response cards than with individual hand raising when responding to teacher-posed questions. On next-day, 16-item quizzes, the mean score was 14% higher for items taught under the response-card condition. On two-week, 40-item review tests, all 22 students scored higher after using response cards versus hand-raising.

In a similar study, Cavanaugh, Heward and Donelson, (1996), compared response cards and passive listening during review sessions in an earth science
class. In contrast, this class was in a general education setting in a large suburban high school. The participants were 23 ninth-grade students. Eight of these students were identified as having learning disabilities, behavior disorders, mental retardation, or were enrolled in supplementary programs for students at risk for not completing high school. The study used an alternation treatment design to examine the effects of the two conditions on students’ responses and their performance on next-day and weekly tests. The lesson followed the procedure of teacher lecture, a hands-on demonstration or experiment, and a teacher-led review of the lesson’s main points and concepts. In one condition, the review had a passive format, with the teacher covering each key point on the overhead projector and the students passively listening. In the response card review condition, the teacher wrote a sentence or key point on the overhead with a term, process, or concept left blank. Students responded by writing the correct term to complete the point. When cued by the teacher, students held up their cards for the teacher to see. The teacher provided praise or correction and moved on to the next point. On next-day tests, mean scores by 13 of the 15 general education students and all eight of the special education students were higher for key points reviewed with the response cards than with the points reviewed with the passive condition. On weekly tests, those items reviewed with response cards also were higher than the passive review items. The teacher also noted that on several occasions, that what he had perceived to be an effective lesson was contradicted when many students could not respond
correctly during the response card review sessions. This shows that the review session also provided the teacher with important feedback to student understanding of the material.

A recent study by King (1996) reported similar results when he compared the effects of using response cards or hand raising also during review sessions on secondary students acquisition of global history facts and concepts. The study targeted 12 high school students enrolled in three section of Global History. Five of the students were receiving special education services. During the hand raising or single-student response condition, the mean rate for response for the entire group was 5% and 87% under the response rate condition. The mean percentage of accuracy of responses with hand raising was 91% and 87% under the response rate condition. On unit tests, the overall % of questions answered correctly was 81.2% for the hand raising condition and 84.8 % for the response card condition. A student opinion questionnaire found that 79% of students preferred the response card review sessions over the hand raising sessions.

Rindfuss, Al-Attrash, Morrison and Heward (1998) combined guided notes and response cards in a study that evaluated the effects of combining the two instructional technologies on middle school student's performance on American History exams. The subjects for the study were 85 eighth graders enrolled in five periods of an American History class. On next day quizzes, the mean for all five class periods was higher in conditions using response cards than in the single
student response conditions. The students expressed that they preferred using response cards to answer review questions over the handraising procedure.

Summary

In summary, it can be seen that the research cited in this review supports John Dewey's (1916) view that student's learn by doing. Data on opportunity to respond and academic engaged time reveal that when a student actively responds and often to ongoing instruction, they learn more than when they are just passive recipients of instruction. ASR also has been correlated with student achievement. Providing ASR proves to be an effective teaching technique that is easy to implement in the classroom. Tactics to increase ASR in the classroom include guided notes, choral responding, and response cards. Literature on response cards shows that when used in instruction, they increase student participation and can increase student performance. Of all the research on ASR, only a few studies discussed here have examined response cards during review sessions in general education classrooms on the secondary level. This study furthers the research by using response cards review in an art history classroom in a suburban high school setting.

Research Questions

1. What are the effects of single-student response and response cards during whole-class review of art history facts and student’s scores on daily quizzes?
2. What effects, when compared to single-student responding, will the use of response cards have on the frequency and accuracy of active student participation during review sessions?

3. Will students prefer review sessions that use single-student responding or the sessions that use response cards?
CHAPTER 2

METHOD

Students

The students of the study were selected from a class of 25 high school students. Twenty-five students participated in the study, but five were chosen to serve as the students for the observation of the number and accuracy of active student responding during the review sessions under the two conditions. All 25 students took the quizzes, but data is only reported for the five chosen students. A pre-baseline assessment (Appendix C) was conducted concerning facts and concepts about the history of art. This assessment was used for participant selection. The assessment was composed of a 20-question quiz. Students were informed they would not be graded on the quiz, but to answer to the best of their ability. The five students were chosen based on quiz scores that fell below 60% in the pre-baseline condition. All five students were ninth graders. Table 2.1 gives the characteristics of the students. One student received special education services, and another student was categorized by the school as being “at risk” for graduation from the high school.
### Table 2.1: Characteristics of Targeted Students

<table>
<thead>
<tr>
<th>Targ. Student Number</th>
<th>Grade</th>
<th>Age Years</th>
<th>Gender</th>
<th>Reading</th>
<th>Language</th>
<th>Math</th>
<th>CSI&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Quarter Grades 3&lt;sup&gt;rd&lt;/sup&gt; 4th</th>
<th>Special Education</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>15</td>
<td>M</td>
<td>6.0</td>
<td>8.0</td>
<td>6.0</td>
<td>99</td>
<td>C</td>
<td>B</td>
<td>Classified At-Risk</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>16</td>
<td>M</td>
<td>3.1</td>
<td>2.1</td>
<td>3.1</td>
<td>75</td>
<td>D</td>
<td>C</td>
<td>SLD since 1992</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>15</td>
<td>F</td>
<td>11.0</td>
<td>5.1</td>
<td>8.6</td>
<td>112</td>
<td>C+</td>
<td>B+</td>
<td>Special Services&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>15</td>
<td>M</td>
<td>4.0</td>
<td>2.8</td>
<td>3.6</td>
<td>97</td>
<td>D</td>
<td>B-</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>9</td>
<td>15</td>
<td>M</td>
<td>10.7</td>
<td>11.4</td>
<td>8.5</td>
<td>107</td>
<td>B-</td>
<td>A-</td>
<td></td>
</tr>
</tbody>
</table>

Notes.  
<sup>a</sup> California Achievement Test, Administered in Grade 8: grade level scores  
<sup>b</sup>Cognitive Skills Index  
<sup>c</sup>Special Services Intervention Plan for Low Attendance  
<sup>d</sup>quarter of the experiment
Setting

The study was conducted in a middle school/high school combination with an enrollment of approximately 800 students in grades 6 through 12. The students were from diverse suburban and rural neighborhoods. The socio-economic status of the community is medium to high. The school facility was three years old at the time of the study. The middle and high school students share all facilities on the campus due to an expanding community. The classroom was an art room located in the middle of the academic building. The classroom was used by nine different classes weekly.

The classroom measures 25 feet by 35 feet. A chalkboard runs across the front of the room. On the same wall, a 5 foot by 5 foot pull-down screen is mounted for viewing slides and overhead transparencies. A 25-inch television is mounted on the wall six inches from the ceiling. The opposite wall has a computer station, two windows, a drying rack, a file cabinet, and tables containing miscellaneous art supplies. One side-wall is concrete block and covered with various art prints and contains tables with supplies. The opposite side-wall is covered with a row six 8 foot cabinets. Inside the tables are a cart with AV equipment, a still-life display, and a table with the teacher’s supplies. The teacher’s desk is located in a corner of the room. The students sit at six tables in a U-shaped configuration with the opening facing the chalkboard and the AV screen. A copy of the room plan appears in Appendix D.
Experimenter

The art teacher served as the experimenter. The teacher is a master’s degree candidate in the School of Physical Activities and Educational Services at The Ohio State University. She earned bachelor’s degrees in Art Education and Home Economics Journalism from The Ohio State University. She has an Ohio Teacher Certificate in Visual Art K-12. Before teaching art, she worked in a group home for The Association for the Developmentally Disabled for nine years, along with substitute teaching at The Dahlberg Learning Center, a pre-school for students with special needs. She currently teaches four sessions of 8th Grade Art, two sessions of 6th Grade Art, one session of Ceramics/Sculpture and one session of high school Art I. At the time of the study, it was her first year at the school. She previous taught elementary art for 3 years in another school district.

Curriculum

The Art I class is a general art education class open to students in grades 9 through 12. It is a whole-year pre-requisite course to Art II, Art III, Ceramics and Sculpture. The class is divided into four components: art criticism, aesthetic, studio art, and art history. The study covered the Western Art History portion of the curriculum. Major art movements and artists were covered chronologically beginning with cave art.
Definition and Measurement of Dependent Variables

The dependent variables measured in this study were the number of correct and incorrect answers on daily quizzes over art history facts and concepts.

Daily quizzes. Daily quizzes were administered over the course of the study. These written examinations were permanent products in which students responded to a variety of question types. The questions contained items and concepts covered in class that day. Each quiz contained 10 items with each item worth one point. These included: three multiple choice questions where students selected from one correct answer and three incorrect answers, two fill in the blank, three short answer, and two visual recognitions of a work of art. A sample quiz can be found in Appendix E.

Measuring daily quiz performance. At the end of each class session, students cleared their place except for a pen or pencil. The teacher distributed the quizzes to students and told them to “begin”. She monitored and answered student questions that arose about the test. For example, she helped students with clarification about the questions without prompting the answer. As students finished their tests, they stacked them face down on the teacher’s desk and returned to their seat to sit or work on something silently (approximately five minutes) until the majority of the class finished. If a student needed more time, the experimenter allowed them to sit at a desk in the hall to finish.

Completed quizzes were filed in a folder for later grading by the teacher.
Another art teacher in the building was the secondary grader for the accuracy assessment. An answer key for an accuracy assessment was prepared for each quiz. For answers to be counted as correct the students had to have the exact answer provided on the answer sheet with a few exceptions: (a) phonetic spellings were correct when the answer did not spell another word inappropriate to the context of the question, (b) synonyms were accepted as correct unless the question asked for a very specific contextual term, and (c) if two answers appropriate to the context appeared on the same line, it was counted as incorrect.

**Experimental Design**

This study used an ABAB Reversal Design for the experimental analysis. An ABAB Reversal Design is used when two or more different interventions are alternated, and the effects on the target behavior are noted. Cooper, Heron, and Heward (1987) state "The A-B-A-B reversal design is the most straightforward and powerful single-subject design for demonstrating a functional relation between an environmental manipulation and behavior" (p. 165).

This study began with the baseline phase, where the independent variable of response cards was absent. This phase entailed student responding with hand raising/ single student responding to teacher prompted questions during a review session. The second phase or the intervention phase included the introduction of response cards as the independent variable. In this phase students responded to teacher posed questions in review sessions with write-on response cards. All other
conditions of the study remained the same as in the baseline condition. The third phase returned to prior baseline conditions accomplished by a withdrawal of the response cards. The fourth phase included a reintroduction of the independent variable or response cards.

**Procedure**

**Single-student response.** The single-student response condition was a method that accompanied a teacher lecture and student note-taking session on art history facts and concepts. The lesson began with the teacher placing “The Art History Timeline” on the overhead projector. She pointed out what places on the timeline were covered that class session. The timeline began with cave art and progressed through contemporary Western Art. After placing the outline on the overhead, the teacher covered each important point for the day one-by-one. As she lectured on the important movement, artists and techniques of each time period, students took notes using guided notes. At the end of the approximately 25-minute lecture, the teacher ran a review session over the important points covered that session. During the review session, she asked students questions about the material. Students were asked to respond to the teacher posed questions orally after hand raising. In this condition, only one student responded at a time. Ten review questions were asked each review. Students were required to raise their hand at least shoulder height or higher and keep it raised until someone was selected to answer the question verbally. The teacher asked students the question
and waited 10 seconds for students to raise their hands. She selected only a student with their hand raised. If the student emitted the correct response, she verbally praised the correct response (e.g. "Very good answer"). If they answered incorrectly, she said "Good try, but not correct" and asked for another response. Up to three incorrect responses were taken. If a correct answer was not given in three responses, the teacher gave the correct answer and went on to the next question. The teacher attempted to call on different students each response. She started from the left of the room and moved toward the right of the room as she looked for students with their hands raised. If a student just responded and had their hand raised to respond again, she looked for another student to call upon. If no other students had their hands raised, she called on the student that previously answered. The review session lasted approximately 10 minutes.

During the review session, the teacher kept a record of how many times each of the targeted students responded by placing a tally mark on a pre-prepared tally sheet (Appendix F). On the same tally sheet, she also recorded the accuracy of the student response by placing a mark under correct or incorrect response.

At the end of each review session, students were given a 10-point quiz over the day's information. Finished quizzes were placed in a file and graded at a later time.

Response cards. This second phase of the study continued along the art history timeline with lectures on art history facts and concepts. The independent variable
that changed was the use of whole class active student responding with write-on response cards instead of oral single student responding. All other conditions as described under single student response remained constant. In the review sessions of this condition, the teacher again posed questions about important facts and concepts covered in lecture that day. The students were given a 10-second interval to think about and write their answer on a dry-erase board with an erasable marker. They were instructed to write legibly and at least two-inch big words so the teacher could see their answer from across the room. Upon the teacher’s cue “Get ready, cards up”, students simultaneously held the cards up at least shoulder height and facing the teacher so she could quickly read them. If a student did not hold their card up within five seconds of the cue, it was not counted as a response. As the students held up the cards, the teacher scanned the room to see how students responded. Students were instructed to keep the cards up until the teacher cued them again with “Cards down”. If all or the majority of the class had the correct answer, the teacher verbally praised the class response with “Very good” or “That’s right” and repeated the question with the correct answer finishing the sentence. For example, she said “That’s correct, the Greek city covered in lava by the eruption of Mt. Vesuvius was Pompeii”. If less than the majority of the class missed the question, she still repeated the correct answer, but immediately repeated the question for student response. If some students still missed the question, she clarified any misunderstanding of the main point and then repeated it
later in the review. Students again had 10 opportunities to respond.

After the review, students cleared their desks and took a 10-point quiz over the material presented in class that day. The quiz procedure was identical as described under the single student response condition.

As in the first condition, the teacher kept a record of how many times each of the targeted students responded by placing a tally mark on a pre-prepared tally sheet (appendix G). On the same tally sheet, she also recorded the accuracy of the student response by placing a mark under correct or incorrect response.

Accuracy of Measurement

The accuracy of measurement of the dependent variable was assessed with the following procedure. The teacher developed a standard answer key for each quiz. The answer key served as the independent true value of the response. Using the standard answer key, she graded each quiz and marked the score on a separate sheet of paper. To check for accuracy of measurement, a check was completed by the independent observer one time per session. The observer randomly chose one quiz from the five targeted students to score each session. Using the answer key, the independent observer graded each quiz and marked the score on the front of the quiz. The number of answers that matched the answer key was the total number correct. This number was compared to the teacher’s scores using the following method. The total number of teacher agreements was divided by the total number of agreements plus disagreements and multiplied by 100.
The following formula was used:

\[
\frac{\text{Agreements}}{\text{Agreements} + \text{Disagreements}} \times 100 = \% \text{ Agreements}
\]

Across the study, the number of disagreements and agreements across conditions was tabulated. If there was a disagreement on the measurement, the answer key was referred to. The data reported in the study include the accurate agreed upon scores.

**Procedural Integrity**

Integrity of the experimental procedures was assessed by having an outside observer use a checklist to see if all the procedures were implemented correctly. The outside observer, observed the teacher with a checklist (Appendices H and I). The checklist contained the specific sequence and details that the teacher was to follow during instruction. Two different checklists were used: one for baseline and one for the experimental conditions. As the teacher performed each listed action, the observer checked them off on the sheet and wrote down any relevant feedback. If the observer viewed a discrepancy in the procedures, she verbally pointed it out and discussed it with the teacher so she could correct it. Twenty-five percent or 7 of the total 28 sessions were assessed for procedural integrity.

**Student Satisfaction**

Student satisfaction was determined by a written survey (Appendix J).
Students were asked to respond to questions about their opinions of the two review methods used in the study. Answers to the questions were compiled, analyzed, and summarized.
CHAPTER 3

RESULTS

This chapter presents the results of the study, including data on procedural integrity and the accuracy of measurement. Data for individual targeted students are reported across the conditions. Each targeted student has a chart for quiz scores and participation and accuracy of responses during review sessions. The last section reports the results of the student satisfaction survey for social validity.

**Procedural Integrity**

Procedural integrity data were collected by an independent observer marking the recording forms presented in Appendices H and I. The recording forms contained specific procedures the teacher was to follow during instruction in all phases of the thesis. If the observer viewed a discrepancy between the teacher behavior and the specified procedures, she was to verbally point it out and discuss it with the teacher. Procedural integrity checks were performed 7 of the total 28 sessions or 25 % of the total sessions across all conditions. The independent observer checked all items on the recording form as the teacher completed each step. The results show 100% compliance with the established procedures for
review sessions across all phases of the study.

Accuracy of Measurement

The accuracy of the measurement of the dependent variable was assessed using the following procedure. The teacher developed a standard answer key for each quiz. Using the standard answer key, she graded each quiz and marked the score on a separate sheet of paper. An independent observer also graded one quiz per session. The observer randomly chose one quiz from the five targeted students' quizzes to score each session. Using the answer key, the independent observer graded each quiz and marked the score on the front of the quiz. The number of answers that matched the answer key was the number correct. This number was compared to teacher's scores. If there was a disagreement in scores, the teacher and the independent observer referred to the answer key to look up the correct answer. After referring to the key, the teacher and observer agreed up on the answer and changed any needed score to reflect the actual score. All scores reported in the data include the accurate scores that resulted from the accuracy assessments.

Table 3.1 presents the number of agreements across all four conditions. In the first single student response condition the mean agreement between graders was 98.5%. In the first response cards condition, the mean agreement was 98%. In the second single student response condition the mean agreement was 100%. In the second response cards condition, the mean agreement was 97%. The overall
agreement for all phases of the thesis was 98.3%. As stated previously, after referring to the key, the teacher and observer agreed up on the answer and changed any needed score to reflect the actual score. Therefore, all scores reported in the data are the accurate scores of students.

<table>
<thead>
<tr>
<th>Experimental Phases</th>
<th>Percentage of Agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Student Response 1</td>
<td>98.5</td>
</tr>
<tr>
<td>Response Cards 1</td>
<td>98</td>
</tr>
<tr>
<td>Single Student Response 2</td>
<td>100</td>
</tr>
<tr>
<td>Response Cards 2</td>
<td>97</td>
</tr>
</tbody>
</table>

Table 3.1: Percentage of Agreements Across Conditions.
Student Results

Results for the five targeted students are presented with three sets of tables and figures. Table 3.2 displays the student performance on daily quizzes. Table 3.3 represents classroom participation across all conditions. Table 3.4 represents the accuracy of student responses per session. Figures 3.1-3.5 display individual student's performance on daily quizzes. Figures 3.6-3.10 display individual student's classroom participation across all conditions. Figures 3.10-3.15 display individual student's accuracy of student responses per session.

Overall Performances on Daily Quizzes

On daily quizzes, the performance of all five students shows higher middle\(^a\) quiz scores in the responses cards conditions than in both single student response conditions. All five students scored within a spread of 3 to 6 correct in the single student response conditions. In both response cards conditions, the spread was from 5 to 10 correct answers. This reveals an increase in all students test scores when using the response cards. Table 3.2 and Figures 3.1 through 3.5 present individual student performance.

Overall Student Participation

The participation of all five students is higher in both response cards conditions. In both single student response conditions, all students participated

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1: The middle score for odd numbers of data points = the median score. The score for even numbers of data points was calculated by conservatively choosing the lower of the two median scores.
with a middle score of 0 responses with a spread from 0 to 2. In both response cards condition, the middle number of responses of all students was 8 with a spread from 4 to 10 responses. This reveals an increase in the participation of all students when using the response cards. Table 3.2 and Figures 3.6 through 3.10 present individual student participation.
<table>
<thead>
<tr>
<th>Student</th>
<th>Single Student Response $^1$</th>
<th>Single Response Cards $^1$</th>
<th>Student Response $^2$</th>
<th>Response Cards $^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4 (3 to 5) $^c$</td>
<td>8 (7-10)</td>
<td>5 (4-6)</td>
<td>9 (7-10)</td>
</tr>
<tr>
<td>2</td>
<td>4 (4-6)</td>
<td>7 (6-9)</td>
<td>5 (4-6)</td>
<td>8 (7-10)</td>
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<tr>
<td>3</td>
<td>4 (4-6)</td>
<td>8 (7-9)</td>
<td>5 (5-6)</td>
<td>8 (7-10)</td>
</tr>
<tr>
<td>4</td>
<td>4 (3-5)</td>
<td>8 (6-10)</td>
<td>5 (5-6)</td>
<td>8 (7-9)</td>
</tr>
<tr>
<td>5</td>
<td>4 (3-4)</td>
<td>8 (5-9)</td>
<td>5 (4-6)</td>
<td>8 (7-9)</td>
</tr>
</tbody>
</table>

a = Number correct out of 10 possible points  
b = Middle score  
c = Spread of scores

Table 3.2: Middle number and spreads on daily quizzes per experimental phase.
Figure 3.2: Number of correct responses on 10 item daily quiz per experimental Phase
Figure 3.3: Number of correct responses on 10 item daily quiz per experimental Phase.
Figure 3.4: Number of correct responses on 10 item daily quiz per experimental Phase
Figure 3.5: Number of correct responses on 10 item daily quiz per experimental Phase
### Student Participation

<table>
<thead>
<tr>
<th>Student</th>
<th>Single Student Response&lt;sup&gt;1&lt;/sup&gt;</th>
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<th>0</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(0 to 1)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>(8-10)</td>
<td>(0-0)</td>
<td>(8-10)</td>
</tr>
<tr>
<td>1</td>
<td>0&lt;sup&gt;b&lt;/sup&gt;</td>
<td>9</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
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</table>

**Scores**

---

<sup>a</sup> = Number of responses of 10 possible responses  
<sup>b</sup> = Middle score  
<sup>c</sup> = Spread of Scores

Table 3.3: Middle number and spreads for student participation per experimental phase.
Figure 3.6: Number of student participation responses per experimental phase out of 10 opportunities
Figure 3.7: Number of student participation responses per experimental phase out of 10 opportunities
Figure 3.8: Number of student participation responses per experimental phase out of 10 opportunities.
Figure 3.9: Number of student participation responses per experimental phase out of 10 opportunities.
Figure 3.10: Number of student participation responses per experimental phase out of 10 opportunities
Overall Accuracy of Responses

The percent correct of student responses during class participation was higher in both response cards conditions. In both single student response conditions than during the single student response condition. The overall percentage for all five students was 50%. The overall percentage accuracy in both response cards conditions was 93%. This reveals an increase in the accuracy of all students when using response cards. Table 3.4 and Figures 3.11 through 3.15 present individual student accuracy.

Student Satisfaction

Student satisfaction was determined by a written survey composed of six items. Students were asked to respond to questions about their opinions of the two review methods used in the study. Data on student satisfaction is represented in Table 3.5.

A summary of the results is presented below.

Of the students responding to the survey, 85% enjoyed reviewing using response cards. 75 % of the respondents preferred to participate in response card review sessions rather than single-student responding. When given the options of “a lot”, “a little” or “not at all, to response to how much they enjoyed using the response cards, 35% of the students replied “a lot”. 60% replied “a little” and 5 % replied “not at all”. Ninety percent of students indicated that they felt the response
cards were easy to use. When asked if they felt the writing down of the answer on the response cards helped them to remember facts or titles of artwork, 90% of the students responded “yes”. Some student remarks or comments on the use of response cards included: “Good idea-should of used them earlier,” “Fun! Easy!,” and “Made me think more.

<table>
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<th>Single Student Response&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Response Cards&lt;sup&gt;1&lt;/sup&gt;</th>
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<td>87%</td>
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<td>98%</td>
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<sup>a</sup> = Percentage

Table 3.4: The percentage correct of student responses during class participation per experimental phases.
Figure 3.12: Number of correct responses during student participation out of 10 opportunities
Figure 3.13: Number of correct responses during student participation out of 10 opportunities
Figure 3.14: Number of correct responses during student participation out of 10 opportunities.
Figure 3.15: Number of correct responses during student participation out of 10 opportunities
CHAPTER 4

DISCUSSION

This chapter presents a discussion of the research questions, limitations of the study, implications for educational practice and further research. It is followed by a summarization of the study.

Research Questions

Question 1: What are the effects of single-student response and response cards during whole-class review of art history facts and student's scores on daily quizzes?

The middle score of correct answers on daily quizzes during the single student response conditions across all five targeted students was 5 with a spread from 3 to 6. The middle score of correct answers across all five students during the response cards condition was 8 with a spread from 5 to 10 correct responses. This results in a middle score of 3 more correct answers on quizzes during the response cards conditions than the single student response conditions. The analysis of the quiz scores data shows that response cards produced higher quiz scores than hand raising for all five targeted students. The improvement in quiz scores from the first
single student response condition to the response cards condition was replicated in the second response cards phase for all five students. These results support a positive relationship between increased Opportunity to Respond and improved student achievement (Greenwood, Delquadri, & Hall, 1984). According to Greenwood et al. opportunity to respond is an important variable in increasing student’s academic achievement.

An improved academic performance is a function of using response cards was also reported by Cavanaugh, Heward and Donelson (1996) where student’s scores on weekly tests were higher for items reviewed with response cards over a passive review session. On next day tests, 13 of the 15 general education students and all of eight special education students scored higher on key points reviewed with response cards than for key points reviewed with a passive procedure. These results reveal an overall 12% difference in favor of the response cards review.

King (1996) found only a 3.6% difference in favor of response cards over single student response on student scores on unit tests taken one day after a review session. This thesis was a systemic replication of the King (1996) study in which the teacher presented material during lecture for 8-12 sessions, then conducted a review session over the entire range of material in preparation for a unit test the next day. The King study covered a large amount of material in one session. This should be considered when comparing the differences in the results of this thesis and the King study. This thesis covered small increments of material daily,
reviewed with response cards daily, and took a daily quiz compared to the more extensive amounts of information covered by King during a unit that was followed by a review and then the administration of a unit test. The amounts of daily information presented to students and the length of time before they had to perform on a test or quiz may have affected their performance. This thesis did not address how students would perform on unit tests with larger amounts of material.

During the single student response conditions student behavior included putting their heads down on their desks, staring into space, looking bored and not paying attention. During the response cards conditions, the students sat up in their chairs, looked at the teacher, and appeared to be paying more attention than in the single student response conditions. This attention may have contributed to the higher quiz scores received in the response cards conditions.

**Question 2: What effects, when compared to single-student responding, will the use of response cards have on the frequency and accuracy of active student participation during review sessions?**

**Participation.** The frequency of active student participation during the review sessions in the single student response conditions across the five subjects was a middle score of 0 responses out of ten opportunities with a spread from 0 to 2. The frequency of participation during the response cards conditions was a middle score of 8 responses out of ten opportunities with a spread from 5 to 10 responses.
For all five targeted students, the response cards condition held the highest number of responses. Student #1's top score of participation with response cards was 10 out of 10 responses. His lowest score of participation with response cards was 8. During the response cards condition, 4 out of the 5 students participated in every available response opportunity at least one time. Student #1 made 10 responses a session for five sessions in the response cards condition. The same student had a tally of 0 responses a session eight times during the single student response condition.

These score of active student participation using response cards are comparable to the results reported by Narayan, Heward, Gardner, Courson, and Omness (1990) for response cards used by fourth-graders during social studies instruction. The number of responses represents a high amount of engagement with the material during instruction.

During the single student condition, the teacher called on only students with their hand raised. Because the target students rarely raised their hand in an attempt to answer the review questions, their number of responses was low. Each learning trial, the teacher frequently called on a high performing student because they were the only student's with their hand raised. These results support the finding of Malheady, Mallette, Harper and Sacca (1991) and King (1996). Malheady et al. (1991) found that hand raising usually resulted in few or no responses by the lower achievers in the study. King (1996) also found the low performing students
demonstrated the lowest level of participation. During the single student response condition, King found that students attempted to respond to 2% of questions and actually responded to 1% of the review sessions compared to a 71% response under the response cards condition.

As stated previously, students appeared to be paying more attention during the response cards conditions. The targeted students who rarely raised their hands or payed attention in the single student response conditions were listening to the information, looking at their notes and attending to the teacher in the response cards conditions.

**Accuracy.** The accuracy of active student participation across the review sessions during the single student response conditions was 50% with a spread from 0% to 50% accurate responses. During the response cards condition, the accuracy of active student responding was 93%. This reveals a 43% increase in accuracy during the response cards conditions. Gardner, Heward and Grossi (1994) also report higher levels of accuracy for the response cards condition with an accuracy of 92%-93%.

During the single student response condition students may not have attempted to answer due to fear of not having the correct answer. The students may have a fear of aversive consequences related to verbalizing the wrong answer such as publicly looking stupid in front of peers or displeasing the teacher. When using the response cards however, students were told they could look at another
student's card to get the correct answer. Some students did this, but others wanted to figure out the answer themselves. The use of the response cards took the focus and pressure off single students and distributed it to the entire class. This may have elevated any fear students had in answering a question of which they were unsure of the answer.

Question 3: Will student prefer review sessions that use single-student responding or the sessions that use response cards?

Seventy-five percent of the students in the study said they preferred using response cards during review sessions more than they liked the single-student review sessions. During the single-student response conditions, the same few, high-performing students raised their hands to answer for every question. The targeted students would only raise their hand occasionally and did not seem to listen when other students answered. During the response cards condition, students were much more alert and engaged with the material. When the condition changed from response cards back to single student responding, students were disappointed and complained. One student said "Why can’t we use the cards, they’re helping me". Several students were competing with their friends to see who could get the most correct in a class session. Several students also felt that they would have been helpful earlier on learning the art history facts and concepts.

Ninety percent of students indicated that they felt the response cards were
easy to use. All students were able to write their responses on the cards big enough for the teacher to see with ease. When asked if they felt the writing down of the answer on the response cards helped them to remember facts or titles of artwork, 90% of the students responded “yes”.

Narayan, et al., (1990) reported similar results where students indicated a preference for the response cards over single student responding. Berg (1994) also reported similar results when using response cards with preschool students with disabilities. However, Cavanaugh et al. (1996) reported no student preference for response cards for an earth science review over a passive student listening review session in a high school class.

Limitations of the Study

Although the study was conducted with a large group of secondary students, only five ninth grade students were targeted. It is unknown what the effects would be on the dependent variable if all 25 students in the class were included in the study.

A second limitation of the study is the subject characteristics. Only students scoring 60% or lower on the pre-baseline assessment were chosen to participate. The effectiveness of response cards on academic achievement with students at different grade and ability levels was not studied.

As stated previously, the students chosen for the study scored 60% or lower on the pre-baseline assessment on known art history facts and concepts. The
reasons that the students chosen did poorly in the assessment may be due to several factors that were not considered. These factors include various degrees of knowledge about art history and a lack of motivation because they wanted to do applied studio projects (e.g.; painting, sculpture, printmaking).

A third limitation of the study was the concentrated time span in which the timeline of Western art was taught. The study lasted eight weeks at the end of the school year. The curriculum of the class also calls for applied studio art, art criticism, and aesthetics. The other three components were almost deleted from the class due to the time it took to teach the art history portion examined in this thesis.

A fourth limitation related to the curriculum is the factor of student motivation. The majority of students expected to participate in studio activities all year long when enrolling in the art class. This thesis encompassed at least four out of the five weekly art classes. This decreased student motivation. Because students disliked doing the art history component of the curriculum on a daily basis, it may have affected their academic performance.

A fifth limitation was the amount of material covered each class session was small compared to other studies. This thesis did not investigate how students would have performed on unit or weekly tests.

The study was conducted during the last quarter of the school year. This may be considered a limitation because many things go on in a public high school during the spring quarter. Throughout the study, several sessions had to be
canceled or post-poned due to events such as school meetings, sporting events, college visitations, internships, and picnics. It is unknown if the effects of response cards would be different if the study was conducted during a different time period in the school calendar.

A final limitation of the study was varying difficulty of quiz items. The art history lessons were composed of facts, concepts, and visual images of artwork. Each quiz was composed of 8 questions on recall and recognition and two identifications of works of art. The identification of visual images may have been an easier quiz question for students with visual learning modalities over auditory learners. This may have affected student performance on the daily quizzes.

Implications for Teaching

Art teachers should give consideration to using response cards during instruction and review. If more active student participation and opportunities to respond results in higher student achievement, (Greenwood, et al., 1984) then extending and enhancing active student responding should be a goal of an art teacher.

From the standpoint of an art teacher, is the incorporation of a response cards as an ASR strategy a procedure that is time and effort worthy? Because response cards are fairly inexpensive and easy to make, the initial time and monetary investment is minimal. Once the set of cards is made, the teacher can re-use them again and again. Response cards not only increase student ASR, but also
provide immediate feedback to the teacher. The cards are very useful for teaching art history facts and concepts, but some alterations in their use are recommended.

These included dividing up into the curriculum. In an Art I classroom, the art history lecture and use of response cards could be used once or twice weekly. This would keep up student motivation improve attitudes. In addition, the change of art history lectures and quizzes could be incorporated with studio projects. As each art history lecture was covered, the studio project that students completed would be based on the week's lecture. All questions used in the lecture review would be important art history facts and concepts appropriate to the studied era, but also would reinforce a planned studio project. This continues Dewey's belief that students learn by doing. Following a step-by-step plan: students take notes during lecture, they become engaged with the material through the use of the response cards and active student responding, and then they actually produce a product.

Other implications for teaching are the other possibilities of uses of response cards in a visual art classroom. Response cards can be used in group instruction in the acquisition and practice stages of learning art techniques and information. Write-on response cards can be used to work with students as a group in a demonstration setting. The teacher can model how to perform a specific drawing skill and students can do it by drawing on their response cards. In a quick visual swoop around the room, the teacher receives immediate feedback as to who
is or is not understanding the concept and is able to perform the drawing skill.

Some other examples include printing steps, ceramic terminology, color theory, art
criticism and aesthetics activities. Some disadvantages may be present when using
response cards in instruction, such as the legibility and size of student writing or
the inability to cover more complex material. The use of write-on response cards
may be very useful for various areas of an art curriculum, but all need to be
executed carefully and appropriately.

Areas for future research

The following is a list of possible research areas suggested by the study.

Suggestions include:

1. Would the acquisition of the art history fact and concepts improve if student
   motivation were higher and the art history portion of the curriculum was spread
   out over the school year?

2. How would the use of response cards during review sessions affect student’s
   knowledge of facts and concepts about art history on weekly or unit tests?

3. What would be the effect on academic performance if some concepts were
   reviewed with response cards and others with hand raising in the same session?

Summary

This thesis analyzed the effects of write-on response cards on class
participation and daily test performances. An Art I public school secondary
classroom with an enrollment of 15 boys and 10 girls served as the research setting. One condition (A), of an ABAB experimental design, used the instructional method of teacher lecture, student note taking, and teacher guided single-student oral responding. The other condition (B) changed single-student oral responding to all students responding with write-on response cards. All other setting variables remained constant. In both conditions, students completed a ten-point daily test on the lecture material. The format and level of difficulty of all the tests remained identical throughout the experiment. All students improved their daily test performances during both response card phases.
Dear Parent(s):

One of my goals as an art teacher is to stay informed about methods and techniques that will help me be a more effective teacher by conducting a variety of classroom activities. To help me pursue this goal, my classroom has been selected for an educational research project conducted under the guidance of Dr. John Cooper, Professor, School of Physical Activity and Educational Services from The Ohio State University. I am writing you now to briefly explain the project and ask for your permission to include your child in the study.

As part of the New Albany Art Curriculum, students are required to learn facts and concepts about art history. This part of the art curriculum will also mirror what students are learning in Western Civilization classes. The art history timeline we will cover in class begins with prehistoric man and proceeds up to the contemporary art world. This study will examine the ways in which students respond in class and how it will effect their test grades on art history information covered in lecture and review sessions. The study will compare oral student responding with hand raising verses a technique where all students in the class respond by writing answers on dry-erase boards. I am very interested in discovering how these procedures can reveal information about teaching and learning.

As a student in my Art I class, your child will have the opportunity to be included in this study. All data collected in the study will remain confidential. Each student will be assigned a number and the data documented under that number. If you or your student decide not to be a part of the study, the student will still participate in all the procedures, but their results will not be included in the collected data. If at any time your child would like to resign from the study, they may do so without negative consequences.

Enclosed you will find an Ohio State University Parent/Guardian consent form that requires your signature. Please read, sign and return the signed copy of the form in the envelope provided at your earliest convenience. Please keep the other copy for your records. If you have any questions about the study, please call me at 253-5140 (home) or you may contact Dr. John Cooper at The Ohio State University at 292-2700. Thank you for your time and prompt response.

Sincerely,

Patricia M. Banas
Art Teacher, New Albany MSHS

Dr. John Cooper
Professor, The Ohio State University
APPENDIX B

Consent Form
CONSENT FOR PARTICIPATION IN
SOCIAL AND BEHAVIORAL RESEARCH

I consent to my child's participation in the research entitled:
Comparative Effects on Art History Test Scores when Secondary Students Use Response
Cards or Single-Student Oral Responses.

Dr. John Cooper and his authorized representative, Patricia Banas, masters student, have
explained the purpose of the study, the procedures to be followed, and the expected
duration of my child's participation.

I acknowledge I have had the opportunity to obtain additional information regarding the
study, and that any questions I have raised have been answered to my full satisfaction. I
also understand that my consent pertains only to this study and I am free to withdraw
consent for my child at any time and to discontinue participation in the study without
prejudice to me or my child.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it
freely and voluntarily. A copy of this form has been given to me.

Date:__________________________ Name: __________________________

(Participant)

Signed: ________________________ Signed: ________________________

(Parent or Guardian) (Parent or Guardian)

Signed: ________________________ Signed: ________________________

(Investigator) (Co-Investigator)

Witness:__________________________

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Special Education
292-8148

Sport & Exercise Sciences
292-2504

Wellness & Human Services
292-8183

Workforce Education & Lifelong Learning
292-5037

College of Education
APPENDIX C

Pre-Baseline Assessment
1. Name three contemporary artists.

2. Define “Impressionism”

3. Name the title or place of the work of art on the overhead

4. Who painted the “Mona Lisa”?

5. What period in history is the Mona Lisa from?

6. Who is Andy Warhol?

7. What society is Western Civilization architecture designed in the “Classical” style based upon?

8. What is “Modern Art”? 

9. Who painted “Sunflowers”?

10. What “Pop Artist” was from Columbus and graduated from Ohio State? (Hint: He has a sculpture at Port Columbus Airport)

11. Name three types of paintings (i.e. a portrait)

12. What are hieroglyphics?

13. Name a famous work of art by Michelangelo.

14. Name a “Cubist” painter

15. Jackson Pollock is classified an Abstract

16. Name the American painter who is famous for her paintings of the Southwest and large flowers?

17. New Albany High School is what style of architecture?

18. Name the Egyptian pharaoh who’s tomb and the remains of it’s contents were discovered in the 20th century and toured the world.

19. What is the name of the Greek City that was covered destroyed by a volcano and kept preserved for thousands of years?

20. Where and what is The Louvre?

Score: 

Name: 
APPENDIX D

Classroom plan
Table 2.2: Classroom Plan
APPENDIX E

Sample quiz
ART I: ART HISTORY

Name: ____________________________
Score ______/10

Impressionism and Post-Impressionism

1. Name the work of art on the overhead/slide. ____________________________

Multiple Choice: Choose the Best Answer

2. All of the following are examples of Impressionist artists except:
   A. Edgar Degas   B. Georges Seurat   C. Andy Warhol   D. Paul Gaugin

3. The artist that sold only one painting in his life and used thick, swirling brushstrokes was
   A. Henri Matisse   B. Claude Monet   C. Édouard Manet   D. Vincent Van Gogh

4. The artist that often painted portraits of women and children and used pastels and oils was
   A. Claude Monet   B. Camille Pissarro   C. Mary Cassatt   D. George Seurat

Short Answer

5. The artist whose painting entitled Impression, Sunrise inspired the name "Impressionist" was ________.

6. Where did Impressionists usually paint? ____________________________________________________________________________

7. What was the one natural factor that the Impressionists all used and can be seen in all their work?
   ____________________________________________________________________________

8. From what country are most of the Impressionists from? ________________________________

9. Describe the work of Georges Seurat. ____________________________________________________________________________

10. Name the work of art on the overhead/slide. ____________________________________________
APPENDIX F

Frequency and accuracy of response tally sheet

Single-student response condition
**Frequency and accuracy of response tally sheet:**

*Single-student response condition*

**Frequency**

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**Accuracy**

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APPENDIX G

Frequency and accuracy of response tally sheet

Response cards condition
Frequency and Accuracy of Response Tally Sheet:

Response Cards Conditions

**Frequency**

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**Accuracy**

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APPENDIX H

Procedures checklist

Single-student response condition
Procedures Checklist: Single-Student Response Condition

____ The teacher tells the class what period in art history they will be covering.

____ The teacher places the timeline on the overhead and shows the class where the
days session fit into the timeline.

____ The teacher replaces the timeline with the outline of the material.

____ The teacher lectures the class on the topic and student’s take notes.

____ The teacher tells student’s it is time to start the review session.

____ The teacher asks the class the first review question and waited ten seconds
for students to raise their hands.

____ The teacher reminds students they need to raise their hands at least shoulder
height or higher and keep it raised until someone was called upon to answer.

____ The teacher called on a student with their hand raised.

____ A correct answer was verbally praised with “Very Good”.

____ The teacher rephrased the question with the answer filled in and went on to the
next question.

____ An incorrect answer was replied with “Good try, but not correct”

____ Another student was asked to raise their hand and answer.

____ Up to three incorrect responses were taken, until the teacher stated the correct
answer and went on to the next question.

____ The teacher attempted to call on different students each question, moving from
the left side to the right side of the classroom.

____ The teacher reviewed ten different questions per session.

____ The teacher kept a running record of the number of times the targeted students
responded and if they responded correctly on a tally sheet.

____ The teacher instructed students to clear their desks for the quiz.

____ The teacher gave the quiz and told students to place their finished quizzes in a pile
face down and to work silently until everyone was finished.
APPENDIX I

Procedures Checklist

Response cards condition
Procedures Checklist: Response Cards Condition

___ The teacher tells the class what period in art history they will be covering.

___ The teacher places the timeline on the overhead and shows the class where the days session fit into the timeline.

___ The teacher replaces the timeline with the outline of the material.

___ The teacher lectures the class on the topic and student’s take notes.

___ The teacher tells student’s it is time to start the review session.

___ The teacher passes out the response cards, dry-erase markers, and paper towels to wipe the cards clean for each question.

___ The teacher poses the first review question, reminding students:
___ they need to write legibly and at least two inches big
___ they have ten seconds to think and write their answer
___ once cards were up, they were to be held at least shoulder height and facing the teacher

___ The teacher cues students with “Get ready, cards up”.

___ As students held up their cards, the teacher scanned the room for answers.

___ The teacher cued students with “Cards down” to put the cards down.

___ If the majority of the class emitted the correct answer, the teacher responded with “Very Good” or “That’s right” and repeated the question with the answer.

___ If the majority of the class responded incorrectly, she gave the correct answer and immediately repeated the question.

___ The teacher again repeated the missed question later in the review.

___ The teacher reviewed ten questions.

___ The teacher kept a running record of the number and accuracy of responses by the targeted students on a tally sheet.

___ The teacher instructed students to clear their desks for the quiz.

___ The teacher gave the quiz and told students to place their completed quizzes face down in a pile and work silently until everyone was finished.
LIST OF REFERENCES


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