ACTIVE LEARNING: A HYBRID APPROACH

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ABSTRACT

According to Dewey, for learning to be effective it should be student-centered and experiential; however, despite overwhelming acceptance of this theory by the academic community, there is little empirical research to support this position. With such an emphasis on high-stakes testing, many teachers have resorted to methods of instruction that have traditionally been aligned with teacher-centered rather than student-centered practices. One such method is direct instruction, which has been shown to be very effective when teaching students who achieve at low levels academically. Although hailed by many behaviorists and traditionalists as a panacea, studies involving students with an internal locus of control who are highly motivated show less than favorable results. This study examined the effects of a hybrid approach which adopted elements from the direct instruction model and inter-related it with elements of a two-step constructivist model. This hybrid approach was implemented within an experiential frame in order to determine whether or not it would result in sustained learning. Although the results of this study do show that students taught using the hybrid approach did in fact perform better on tests administered three weeks after the lesson than did students using interactive lecture, conclusions based on the restricted nature of the sample should be accepted with caution.

Introduction

With the onset of No Child Left Behind (NCLB) came an emphasis on empirically-based best practice. Although teacher success is often measured through student success, researchers have yet to determine what elements of instruction provide the greatest weight with respect to the impact on student learning. As we understand more about learning we develop a greater understanding that this concept is a complex construct that is often over simplified and misrepresented.

A Review of the Literature

Lecture-based instruction

The past 20 years, has seen a significant shift in the power struggle between advocates for teacher-centered, versus student-centered instruction. Most recently, those in favor of the student-centered approach have led the charge against the teacher-centered approach through a mantra that regards pedagogically correct instruction as the “guide on the side, in place of the sage on the stage”. Strongly grounded in the philosophical ideals of Piaget and Vygotsky, advocates for the student-centered approach postulate that although "[m]ore than fifty years of research shows that lectures are as good as, but no better than, ideas, audio tapes, or assigned reading for transmitting information, they are not good for getting students to think or for changing student attitudes or beliefs" (Burgan, 2006, p.32).

It should be remembered that the theories of Piaget and Vygotsky were based on studies with young children who, according to Erikson, differ greatly in their thinking patterns from adolescents and young adults who have a more complicated thought process. But how do educators bridge this gap? Even Dewey (1910) believed that before we can expect students to think they must be taught how to think and that this process involves a systematized approach to learning (p.95).

> Imitation is but one case of a deeper principle—that of stimulus and response. Everything the teacher does, as well as the manner in which he does it, incites the child to respond in some way or other, and each response tends to set the child’s attitude in some way or other (p.47).

While Dewey clearly does not advocate for a model of instruction that is based solely on imitation, he does include imitation as one of several essential elements of learning. Indeed, Dewey dedicates one third of his book to what he calls “the training of thought.” The misconception that constructivists lack objectives and structure has inspired critics such as Pinker (1997) to label constructivism as a free-for-all that removes the teacher from the learning process, one who provides the opportunity but no guidance for fear of impinging upon the learning. In opposition to this approach are those who believe that

knowledge must be transmitted from the teacher to the student and that the best means of conveying such knowledge is the lecture model.

There is considerable research that shows the lecture to be less effective than alternative methods (Davis, 1993; McKeachie, 2002), "such as cooperative learning [which] tend[s] to produce better outcomes" (as cited in Sackville, Zinn, & Elliot, 2005, p.161). According to Van Matre, Aiken, Carter, Shennum, and Thomas (1975):

> Students who were given a quiz immediately after a lecture performed better on a delayed quiz (administered one week later) than students who were given no quiz…The authors concluded that immediate quizzes increased students' performance in that it increased attending during lecture." (as cited in DeRoma, Young, Mabrouk, Brannan, Hilleke, Johnson, 2003, p. 42)

Direct instruction

As part of the *War On Poverty* initiative, the Johnson administration, in concert with the Department of Education and the Stanford Research Institute, began *Project Follow Through* (1967) which has come to be recognized as the largest controlled comparative study of teaching methods ever conducted (Kim and Axelrod, 2005). The study involved approximately 700,000 students from 170 communities across the United States at a cost of millions of dollars (Bock, Stebbins & Proper, 1977; Nadler, 1998; Watkins, 1997). Through the use of a planned variation experimental design, parents participating in this study selected one of 12 educational models (in all over 22 proposed models were reviewed) that they believed would best serve the needs of their children. Once selected, the selected model was implemented by the parents' local school. Each experimental school was matched with a control school from the same community. Results on the Metropolitan Achievement Test, the Coopersmith Self-Esteem Inventory, and the Intellectual Achievement Responsibility Scale were overwhelmingly in favor of direct instruction over all other models of instruction. What was found to be of significant interest was that student test scores that reflected basic reading and writing skills, math skills, higher order skills in cognitive and conceptual

thinking, and self-esteem were found to be higher for the group taught through direct instruction (Adams & Engelmann, 1996; AFT, 2002; Becker & Carnine, 1981)

Despite the strength of the findings, they were dismissed by the government and by educational leaders based on what Carnine (2000) and Silverman (2004) describe as an unsubstantiated bias toward child-centered teaching practices held by a majority of the education profession. Teaching methods which focus on student-centered as opposed to teacher-centered instruction, it is argued, are particularly disadvantageous to students at risk, and to those who lack the self-discipline needed to self-educate. The success of direct instruction requires a shift of emphasis from the student to the teacher, who adjusts the curriculum around each student's performance in order to allow each student to attain a high rate of success through a system of teacher modeling and task analysis (Gersten & Domino, 1993; Engelmann & Carnine, 1991).

According to Rosenshine (1979), the fundamental elements of direct instruction are as follows: academic focus, teacher-centered focus, little student choice of activity, use of large groups rather than small groups for instruction, and the use of factual questions and controlled practice in instruction. Direct Instruction requires a rigorous analysis of the curriculum in order to determine what needs to be learned. From here a systematic procedure for learning is created. Instruction in this model begins with a clear presentation of knowledge that is conceptual and cross-curricular (Kameenui & Carnine, 1998; Stein, et al., 1998). The curriculum is designed to be presented sequentially in order to transition from teacher guided to independent learning (Becker & Carnine, 1981; Kameenui & Carnine, 1998; Stein, et al., 1998). These methods are explicit in order to ensure efficient and engaging lessons that are strongly tied to the content. Direct instruction is also known as scripted instruction where teachers are given a prescriptive program of instruction to follow in order to ensure the consistent application of strategies. A typical lesson lasts between 30 and 45 minutes and involves 8 to 12 students who actively respond to scripted teacher instruction. After the instruction is modeled, the entire group often responds in unison to specific directions. Although the instruction is scripted, teachers are expected to be engaged in the constant assessment

of student learning. Because students' success is important to the success of this method, students are placed in ability groups where they can succeed approximately 90% of the time. (Gleason & Hall, 1991),

Direct instruction has been shown to be an effective method of instructing students with special needs (Gersten, 1985), and according to follow-up studies, students who were involved in *Project Follow Through* continued to outperform their counterparts (Becker& Gersten, 1982; Gersten, Keating, & Becker, 1998; Meyer, 1984). Direct Instruction is also believed to be responsible for higher rates of high school graduation and college acceptance (Darch, Gersten, & Taylor, 1987; Meyer, Gersten, & Gutkin, 1983).

Where there appears to be an inconsistency, however, is the effects of direct instruction on highly motivated students who may not benefit as much from it as the would students who lack focus and exhibit low achievement (Brophy, 1979; Peterson, 1979). According to Hunt "conceptual systems theory suggests that the amount of structure students need may depend on their conceptual complexity" (as cited in McFaul, 1983, p.68). According to some critics, this may be due to a lack of diversified instruction or not taking into account the different learning styles of each student (Dunn & Dunn, 2001). Acceptance of this critique, however, would also require one to accept that all students with special needs have the same learning style and should be taught as a group rather than as individuals, a presumption that flies directly in the face of the argument against direct instruction.

Critiques of direct instruction also hold that experiential learning allows students to go "beyond the independent practice of skills…to create real life products that could be used or shared with others" (Kierstead, 1985, p.25). Studies have also revealed that students who were regarded as high achievers, performed better on achievement tests but worse on tests of abstract thinking (Peterson, 1979). Further, Janicki (1979) found that students with internal locus of control taught using direct instruction did worse on math tests than when taught using a small group approach (as cited in Peterson, 1979).

Minding the achievement gap

One need only look to the achievement gap to note that Blacks and other minorities are consistently disadvantaged with respect to the quality of education (Johnston & Viadero, 2000; Skrla, Scheurich, Johnson, & Koschoreck, 2001), an outcome based on socio-economic status (SES) rather than ethnicity. Data from the National Center for Educational Statisics (2001) clearly showed that Black students overall had lower scores in math and reading than did White students at all grade levels. When these findings are examined along with census data which has consistently shown there exists a strong correlation between level of education and employment salary, it is difficult to refute the role that economic status plays in education. Although an argument can be made that these findings are the momentum behind the movement to close the gap, it cannot be overlooked that the progress made during the 1970s and 1980s has since stalled (Johnston & Viadero, 2000; National Center for Education Statistics, 2001).

It has been postulated by those in the holistic and constructivist camps that traditional methods, and in particular the lecture model, have failed to take into account individual human differences choosing instead to provide a uniform curriculum for all involved. Contrary to the belief that the human mind is innately averse to education and must therefore be coaxed or bullied into learning, we suggest that humans are innately inquisitive and receptive to solutions for problems that they believe are relevant to their situation (Dewey, 1900, 1934, Eisner, 1997). The shortcomings of the lecture model lie in the inability to perceive the role of the learner as an individual who is an active recipient/participant. Although it is evident to educators that there exist real differences among students, these differences are more often than not referred to in a negative light. Although one may argue that the inability to learn has basic genetic connections, one cannot rule out the role played by the environment (Vygotsky, 1987).

Advocates of the current reform movement stress the need to make teachers more accountable by introducing a curriculum that accentuates quantifiable, observable, and immediately measurable outcomes above the potential measures of human

development and the process through which it can be achieved. In order to minimize the negative impact of this movement it is necessary to rethink the manner in which educators assess and evaluate student progress. Much of the problem seems to emanate from confusion surrounding the operational definitions of assessment and evaluation. Although these terms are often used synonymously, there exists a difference that is implicit in the manner in which each is carried out. The instructor is often asked to make decisions (evaluations) based on research that is both qualitative and quantitative in nature (assessment). Behavioral observations are often qualitatively annotated, while test results are quantitatively recorded in accordance with some numerical value or letter grade. Although both systems serve as valid measurements of development (assessment), the final evaluation often places more emphasis on the quantitative data gathered though the assessment of a series of end products than it does on the qualitative assessments gathered through the learning process. Since authentic learning requires the engagement of the whole child, it would stand to reason that evaluative practices must be implemented mindfully (Miller, 1993).

Teaching and learning

It has been argued that high stakes testing stresses teaching over learning; this perspective overlooks the symbiotic relationship that exists between the two. This hierarchical structure perverts the adage that, “knowledge is power,” and since the teacher has the power, the knowledge must reside within the position. However, if one were to divert from the behaviorist perspective and accept the premise that knowledge is, as Eisner (1998) suggests, a verb, as vibrant as is language itself, then the act of knowing may be as much a social as an individual act. In this case, knowledge may become a shared action between teacher and student unable to exist in the social context without the active engagement of both instructor and learner. This paradigmatic shift would align, strangely enough with the business world. In this case knowledge becomes a sought after commodity and yet, without a buyer, it is not possible for anyone to lay claim to the sale. It would appear most absurd for a salesclerk working on commission to demand or even expect payment based on effort. He or she may work hard, but without the active participation of the client undertaking the role of purchaser,

there is little hope for a commission. In this case without a purchase, there has clearly not been a sale. Yet by placing the emphasis on teaching without an equal emphasis on learning, one expects that success will be attributed to effort. This is simply not the case. It is just as absurd for one to claim that the material has been taught if in fact it has not been learned as it is for one to claim that he or she is entitled to a commission on a sale that has taken place without the presence of a buyer. The argument would however, sustain itself in the case of the rental clerk who, for only a limited time, relinquishes the item. Therefore, if the power must remain with the teacher and not with the purchaser (student), it would make more sense to align the teacher with the rental clerk than with the salesclerk since in the case of high stakes testing, knowledge is more often borrowed than purchased. Is borrowing the knowledge the same as owning it?

There is much research that advocates for effective behaviorist practices such as those proposed by Hunter (1982) and Rosenshine (1970, 1985) based on their ability to procure positive test results. Further examination of these findings, however, reveals that such preparation, although beneficial in the short term, quickly diminishes after a period of forty-eight hours. This, in turn, begs the question, what, if anything was actually learned? One needs to look no further than any traditional classroom in North America during the first month of school to find the majority of time being invested on reviewing. Over the course of a typical educational career from K-12, how much time could better spent on learning that is now wasted on review? In recent years many North Americans have looked to such countries such as the Netherlands, which consistently boasts high test scores. The effectiveness of their system emanates from a philosophy which advocates for active learning as the principal contributor to its success. According to Keyser, (2000) active learning involves “students in doing things and in thinking about what they are doing” (as cited in Gulpinar & Yegan, 2005).

Constructivism

Central to the theory of constructivism is an understanding (Wiggins and McTighe, 2006) of the active nature of the learning process itself. The learner must individually

take in new information and integrate it with existing prior knowledge: a process which either supports current schema or leads to changes in those schema (Piaget, 1972). Similarly, Vygotsky's notion of the Zone of Proximal Development (1987) does not suggest that simple rehearsal (or hearing) "stamps in a response," as is the common belief upheld by the behaviorists, but rather, it suggests that interactive dialogue with a person with diverse or elaborated ideas can incrementally "move" a learner to incorporate new and/or more complex ideas into his or her cognitive network.

Bruner's (l966) seminal work on concepts showed that humans build their own concepts by examining and attending to features in a comparative task. This work not only explains human conceptual differences, it explains how concepts and schema grow, change and develop. Likewise, Ladson-Billings (1994) studied effective teachers of African-American children at a time when they were being badly serviced by schooling; she found that these teachers incorporated aspects of active learning as part of their approach by systematically using the students' prior life experiences and knowledge as starting points for further inquiry. Most recently, Wiggins and McTighe (1998, 2005) have developed a system called "Understanding by Design" (1998, 2005) that emphasizes understanding over memorization.

Bransford and Johnson (1972) also found that the attention, rehearsal and analysis required for understanding are all tied directly to the individual active thinking sparked by the use of prior knowledge available to learners. Jenkins' (1984) findings seem to indicate that active readers are more likely to develop a schema to assist with the developing story and when questioned about the content of their reading, recognize information as "fitting" in with that schema.

Active learning suggests that teachers create tasks that force thinking to align with higher levels of Bloom's taxonomy, suggesting that the cognitive processing demanded by these challenging tasks do have a large positive effect for recall and understanding. (Bransford, McCarrell, Franks &, Nitsch 1977). In a study involving the memorization of a chess board shown in the middle of an actual game, Chase and Simon (1973) found

that chess experts far surpassed novices in their recall, and that their recall was based on familiar conceptual clusters that they had developed and of which they had often thought of during practice. Novices however, recalled only a few pieces and did not apparently use any common set of existing strategies to do so.

Over the past sixty years research in the area of active learning has consistently yielded findings that support its positive effects on learning (Yuretich, 2003; Kvam, 2000; Deming, 1986; Hill, 1982; Johnson, Johnson and Smith, 1991; Vermette, 1998). However, the cyclical nature of educational policy has once again moved to propagate the status quo, including the lecture model which revolves around transmission learning.

This study does not advocate for constructivism as open learning. It does not equate physical involvement with learning. Rather, it advocates for active engagement as activity that involves thinking but not necessarily moving physically. Students may be physically engaged, and an assumption could be made that because they are active they are learning. Logically however, this does not align; it is quite possible, that students can physically engage in an activity without making any connections beyond needing to complete the task at hand. It is this lack of connection that is the focus of much of the attack on constructivism. The hybrid approach used in this stuffy ensures that the intended learning is directed by the individual, internalized, and made relevant by the learner. These roles however, must be seen as integrated and interchangeable. If there does not exist a reciprocity of perspectives between all involved, then based on the philosophical underpinning of this approach, learning will not occur. It is not enough to put together a group of musicians, all of whom are quite capable of playing music, unless they agree to play the same song and unless a common end is shared, and this end, in a large scale setting is realized by the conductor.

Statement of the research questions

1. To what degree, if any, will post-test scores of students taught using a lecture model of instruction differ from those instructed through a hybrid method of active engagement?
2. To what extent, if any, will post-test scores collected three weeks after the initial post-test differ between students taught using a lecture model of instruction and those instructed through a hybrid method of active engagement?

Hypothesis

1. There will be little if any difference in the post-test scores of students taught using an interactive lecture model of instruction and test scores of students who were instructed through a hybrid method of active engagement?
2. Students who were instructed using an interactive lecture model will have significantly lower post-test scores (on tests taken three weeks after the initial post-test) than students taught using a hybrid method of active engagement?

Operational Definitions

Interactive lecture method:

Students were taught as a large group. The instruction was teacher-centered and all questions directed at students were factually-based. The instruction included the use visual examples shown through PowerPoint and audio examples that were played through a laptop computer and an external amplified speaker. The instruction was scripted.

Hybrid active engagement:

This is a composite model that adopts elements from the direct instruction and the two-step model (Flynn, Mesibov, Vermette, & Smith, 2005). Instruction was planned and a script was prepared for use as a guide. Instruction was both student-centered and teacher-centered. Activities were designed by the teacher. Students were provided with a

predetermined structure for the activity and given limited choices within the structure. Instruction utilized both small group and whole class.

Participants

Participants consisted of a convenience sample of fifty-eight students (comprised of both US and Canadian citizens) enrolled in an initial certification master's of education program in a small private Western New York university. The control group consisted of 34 students (22 males and 12 females). The participants ranged in age from 20 to 46 with a mean age of 26. The experimental group consisted of 24 students (8 males and 16 females) enrolled in an initial certification master's of education program. Participants ranged in age from 22 to 50 years with a mean age of 27.

Method

Ten musical concepts were selected and defined as follows:

Beat*:* a specific amount of time and space; a beat can be described as patterned sound which repeats at a consistent interval of time. It is important to remember that beats can vary in tempo (how quickly they are played;

Time Signature*:* a numerical value that identifies the number of beats and the value of each note in a particular measure/bar of music;

Musical Measure: an organization of notes based on a particular number of beats which is then repeated throughout the work. Most popular songs in western culture are based on a 4 beat pattern**;**

Rhythm*:* a change in the duration of sounds over time accomplished through a pattern of accented and non-accented sounds that surround a musical beat. These sounds are heard on and in between beats. In dance music the beat is usually accomplished through the use of a kick drum with the remaining drums and cymbals used to provide the rhythm;

Melody*:* the part of the song that is hummed; *Theme:* a short musical passage that presents the main idea of the song. It is the theme on which the variations are based. The first 4 notes of Beethoven's 5th Symphony serve as the theme for the first movement of the work.

Melodic Variation: a change in the melody of the song which is usually accomplished through the addition or deletion of notes, or by a change in the direction of the melody;

Harmonic Variation**:** a change in the harmonic structure of the song often accomplished by changing or augmenting the chordal structure with consonant and dissonant tones;

Rhythmic Variation*:* a change in the rhythm of the song or melody by changing the location or pattern of stressed beats;

Ternary Form*:* a three part song which consists of an A part (the theme) and a B part (a variation on the theme) where the A part is reoccurs at the end of the song bringing it to completion. An example of this is "Twinkle, Twinkle Little Star."

The study is based on a pre-test, post-test design. The pre-test was given to each group prior to instruction. The pre-test was a written test comprised of ten musical terms that the participants were required to define. Students were provided with a copy of the test and were given five minutes to complete the pretest.

Immediately following the pretest, each group was provided with one 30 minute lesson. The focus of the lesson delivered to the control group was based on lecture methods of instruction. Students were instructed through a lecture that implemented the use of visual diagrams, written definitions, and audio samples that were used to supplement the lecture. All students were provided with the definition of terms and an example of each. Immediately following the lecture, students were given a posttest which was identical to the pretest taken prior to instruction. All tests were scored in accord with the definitions provided and the grades recorded.

Similar to the control group the experimental group was provided with a copy of the pre-test and given five minutes to complete it. Immediately following the pre-test students engaged in a 30 minute constructivist session based on active learning principles. The lesson began with large group facilitation that lasted for ten minutes .In this first stage, students were provided with examples of each term and asked to describe what they

heard. The participants were then broken into six groups of four and assigned a task which required them to choose a nursery rhyme that was familiar to the group (e.g., *This Old Man, Twinkle, Twinkle Little Star, Yankee Doodle*) and modify the rhythmic, melodic, and harmonic structure of the song based on their understanding of the terms. This second stage lasted for ten minutes. The final ten minutes of instruction was focused on whole class debriefing where each group presented their work and discussed the changes they had implemented. Immediately following the lesson, students were given a post-test which was identical to the pre-test taken prior to instruction. All tests were scored in accord with the definitions provided and the grades recorded.

Three weeks after the initial pre-test and lesson, a second post-test was given to the control and experimental group. This second post-test was identical to the pre-test and initial post-test which the participants had taken three weeks prior. The tests were collected, scored and their grades recorded.

Four weeks after the initial pretest and lesson, a third post-test (posttest 3) was given to the experimental group to determine whether or not their learning extended beyond lower level Bloom. This test focused on the students' ability to *synthesize* and *evaluate* the concepts. This second posttest used a multiple choice format and focused on the students' ability to recognize the concepts that were presented to them in audio form. Students were provided with a multiple choice response sheet (which included five options for each question), played an audio clip two times and given five seconds to identify the musical concept that the audio clip best exemplified; their responses were recorded on the multiple choice response sheet. The time of this third test was 5 minutes and 19 seconds in length. Due to the timing of the research, students in the control group were not available to complete this portion of the study.

Data Analysis

The data were recorded using an Excel spreadsheet. Means, medians and standard deviations of each test set were calculated. This data set was then imported into the

Software Package for the Social Sciences (SPSS) for analysis. An independent sample *t*-test was conducted on the pretests of the control and experimental group to determine whether there was a significant difference between the two. A repeated measures test with a post hoc Bonferoni was conducted on both the experimental and control groups in order to determine what, if any, difference exists between pretest and posttest student scores..

Results

A *t*-test for independent samples was run on the pretest scores for both the experimental and control groups. The findings, $t = -.06$ (df = 56) yielded significance levels above the alpha ($p>.05$), which resulted in acceptance of the null hypothesis that there does not exist any significant difference between the scores of the two groups.

Independent Samples Test

		Levene's Test for Equality of Variances		*t*-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Experimental v. control pretest	Equal variances assumed	1.474	.230	-.060	56	.953	-.032	.534	-1.102	1.038
	Equal variances not assumed			-.062	54.955	.951	-.032	.515	-1.063	.999

Each test was scored out of a possible 10 points. The mean for the experimental group was 2.79 (median 3.00, SD = 1.744) on the pretest indicating minimal understanding of the concepts. The initial posttest scores yielded means of 7.33 (median 8.00, SD = 2.057), the highest scores of any of the four tests. Post test date collected three weeks after the initial testing yielded lower means of 6.04 (median = 7.00, SD = 2.510). The final posttest which required students to respond to evaluation questions yielded higher

means of 7.09 (median = 7.00, SD = 1.676). Modal scores were highest on the initial posttest (mode = 9.00) and remained consistent for posttests two and three (mode = 7.00).

Experimental Group Statistics

	Pretest	Post 1	Post 2	Post 3
Mean	2.79	7.33	6.04	7.09
Median	3.00	8.00	7.00	7.00
Mode	1	9	7	7
Std. Deviation	1.744	2.057	2.510	1.676

multiple modes exist. The smallest value is shown

The mean for the control group was 2.82 (median 2.00, SD = 2.167) on the pretest indicating minimal understanding of the concepts. The initial posttest scores yielded means of 8.03 (median 8.00, SD = 1.714), the highest scores of any of the three tests. Post test date collected three weeks after the initial testing yielded lower means of 4.35 (median = 4.00, SD = 2.295). Modal scores were highest on the initial posttest (mode = 10.00) dropping off for the final test which was bimodal (mode = 4, 6)

Control Group Statistics

	pretest	Post 1	Post 2
Mean	2.82	8.03	4.35
Median	2.00	8.00	4.00
Mode	2	10	4(a)
Std. Deviation	2.167	1.714	2.295

multiple modes exist. The smallest value is shown

Both the control and experimental groups showed a marked improvement in scores from the pretest to initial posttest; however, based on all three measures of central tendency, the control group appeared to have the greatest improvement of the two groups. The experimental group did appear, however, to retain the learning longer than the control group.

Based on pairwise comparisons of test results for the experimental group, a significant difference ($p<.001$) was found to exist between the pretest and all three posttests. There was no significant difference however, between posttests two and three or between

posttests three and four, which would seem to indicate sustained measures across all posttests.

Pairwise comparisons for experimental group

Measure: MEASURE_1

(I) experiment	(J) experiment	Mean Difference (I-J)	Std. Error	Sig.(a)	95% Confidence Interval for Difference(a)	
					Lower Bound	Upper Bound
1	2	-4.565(*)	.544	.000	-6.142	-2.989
	3	-3.348(*)	.585	.000	-5.044	-1.652
	4	-4.348(*)	.443	.000	-5.631	-3.064
2	1	4.565(*)	.544	.000	2.989	6.142
	3	1.217	.798	.847	-1.095	3.529
	4	.217	.462	1.000	-1.121	1.556
3	1	3.348(*)	.585	.000	1.652	5.044
	2	-1.217	.798	.847	-3.529	1.095
	4	-1.000	.641	.799	-2.858	.858

Based on estimated marginal means
* The mean difference is significant at the .05 level.
a Adjustment for multiple comparisons: Bonferroni.

Pairwise comparisons of tests results for the control group, yielded a significant difference ($p<.001$) between the pretest and both posttests and between posttest one and posttest two. Although there was a significant difference between the pretest and posttest two, the difference was minimal when compared to the differences between the pretest and initial posttest and the difference that was recorded between the two posttests. This would seem to indicate that although gains were made, these gains diminished over time.

Pairwise comparisons for control group

Measure: MEASURE_1

(I) Control	(J) Control	Mean Difference (I-J)	Std. Error	Sig.(a)	95% Confidence Interval for Difference(a)	
					Lower Bound	Upper Bound
1	2	-5.206(*)	.428	.000	-6.560	-3.852
	3	-1.529	.588	.042	-3.391	.332
2	1	5.206(*)	.428	.000	3.852	6.560
	3	3.676(*)	.458	.000	2.227	5.126

Based on estimated marginal means
* The mean difference is significant at the .05 level.
a Adjustment for multiple comparisons: Bonferroni.

Discussion

Pretest scores for both the control and experimental group were similarly low. It is interesting to note that initial posttest scores yielded higher results for the control than for the experimental group. These results are aligned with much of the research which suggests that the lecture model of learning will result in increased test scores if the test is taken within 48 hours but that these scores will not be sustainable over time. Although the experimental group yielded lower scores on the initial posttest, this group did sustain their level of competency on the second test which was administered after a three week interval. When the alpha was set at .05, a level acceptable in social sciences research, there appears to be no statistical evidence, a difference exists between the two methods. However, by raising the requirements and the alpha to .01, stronger statistical support exists for the experimental method as compared to the results of the lecture method. This claim appears to find further support in the mean posttest scores. The experimental group raised its scores from a mean of 27.9% to 73.3%. Although the mean score dropped to 60.4% on the second posttest, it was raised to 70.9% on the third test which was based on higher level Bloom (evaluation) questions. Based on these same results, the control group increased from a pretest mean of 28.2% to a score of 80.3% on the initial posttest. However, this score dropped to 43.5% on the posttest administered three weeks later, which seems to clearly indicate a lack of retention. Unfortunately, due to scheduling difficulties the control group was unavailable for the third posttest and although declining test scores would seem to indicate a trend, due to the different nature of the third test, this assumption cannot be empirically supported.

Conclusion

The findings of this study are consistent with the findings of previous research and other writings on active learning principles (Yuretich, 2003; Kvam, 2000; Deming, 1986; Hill, 1982; Johnson, Johnson and Smith, 1991; Vermette, 1998). These findings can also be substantiated through previous research involving direct instruction which emphasized cross-curricular instruction that was sequenced in its delivery (Becker & Carnine, 1981; Kameenui & Carnine, 1998; Stein, et al., 1998). It should be noted however, that a key

element of direct instruction, i.e., teacher-directed modeling, was omitted from the experimental lesson and replaced with cooperative modeling that required the symbiotic teacher-student relationship. In this instance the objectives, although tied directly to a curriculum, were achieved through a more incidental than direct approach. The students were focused on a task that, in order to be completed satisfactorily, required a basic knowledge of ten musical concepts. Rather than beginning the lesson with instruction, the lesson began with a guided experience that enabled the students to discover rather than record the concepts. Students were immediately engaged in the creation of the concept (.e.g., beat, rhythm, melody, etc.) and through teacher-guided questions asked to describe what they were hearing/doing. The lecture however, was focused on the definition of each concept, and it utilized lower level fact-based questions and provided modeling through visual and audio examples. Both the control and experimental lessons were sequenced and arguably teacher-centered in that there were specific objectives that the teacher intended to achieve by the end of the lesson; however, while the lecture model required the teacher to disseminate the information to the students, the hybrid model utilized the teacher as an orchestra does a conductor who, realizing the complexity of the work and having a clear vision of what it should sound like, guides the musicians to a cohesive end. In both cases the end result is fully realized by the teacher. However, while the lecture model seeks to convey knowledge from the teacher to the student, the hybrid model seeks to pull the knowledge from the student and align it with the intended objective.

The findings also support previous research which found that the lecture model will have a positive impact on test scores but that this effect will dissipate over time. As the content of the material was not aligned to the course work, i.e., participants were neither seeking certification in music nor were they being instructed in practices of teaching music, it would seem reasonable to assume that the increased scores over time were not attributed to instruction or study beyond the initial lesson. The sample was, however, not representative of the population and, although content validity was established, these findings must be accepted with caution. Further research in this area needs to be conducted by procuring a sample that is larger in number and randomly

selected. The role of age, of gender and of prior knowledge of subject matter must also be considered.

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