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RUNNING HEAD: HIGH-STAKES TESTING AND NON-TRADITIONAL
METHODOLOGY

The Effects of High-Stakes Testing Upon Non-Traditional Instructional Methodologies in
Midwest Appalachia

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Master's Research Project

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ABSTRACT

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The Effects of High-Stakes Testing Upon the Use of Non-Traditional Methodologies in Midwest Appalachia Classrooms (86 pp.)

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This article reports findings from a survey distributed to teachers in Midwest Appalachia investigating the relationship between high-stakes testing environments and non-traditional methodology in the classroom. Statistical analysis through the Qualtrics survey making tool provided information about (a) test preparation, (b) teacher methodology according to teacher-centered and student-centered instruction, (c) curricular control, (d) content area and grade level methodology, (e) years of classroom experience, and (f) methodology and assessments. Teachers across grade level, experience level, and content level reported high frequency use of traditional instructional methods in the classroom despite agreeing that students need to possess critical thinking skills in modern society. Implications address the need for policy makers to redefine assessment tools so that critical thinking skills are actively included in classroom methodology and assessments.

Approved: _____

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CHAPTER 1 Introduction

“At this defining moment in our history, America faces few more urgent challenges than preparing our children to compete in a global economy.”¹

“Beyond the assessment of reading, mathematics and science, the United States does not assess other skills that are in demand in the 21st century.”²

Background

What is the role of education in a modern, global society? The answer depends upon who is being asked, but for policy makers the link between educational attainment and economic success is increasingly clear (Lowery, 2010; Thompson, 2009; Wilhoit, 2009). Those who graduate from high school earn more throughout their lifetimes than those who drop-out; folks who graduate from college earn even more throughout their lifetime than high school grads (U.S. Census Bureau, 2002). The good news is that 85% of United States citizens have graduated from high school; however, only 28% of U.S. citizens have completed a Bachelor’s degree (U.S. Census Bureau, 2011). In Ohio, the high school graduation rate is higher than the national average, but the 24% of those earning Bachelor’s degrees falls slightly below (U.S. Census Bureau, 2011.)

For those Ohioans who do make it into college, over 1/3 find themselves under-prepared for collegiate academics and need remedial courses to catch- up (Strong American Schools, 2008). Students who take remedial courses have lower graduation rates than those who don’t and are thus entering the workforce with decreased earning power (Ohio Board of Regents, 2006). Moreover, the cost of implementing remediation

¹ http://change.gov/agenda/education_agenda/. Accessed January 16, 2011.

² Partnership for 21st Century Skills. (2008). 21st Century Skills, Education and Competitiveness: A Resource and Policy Guide. Retrieved from http://www.p21.org/documents/21st_century_skills_education_and_competitiveness_guide.pdf

exceeds 100 million dollars per year between the state and the educational institution (Strong American Schools, 2008)! Provocative questions are raised: What is happening in the classroom that is causing students to struggle once they move beyond high school? How will our nation compete internationally when so many of our students are clearly unprepared? What needs to change for American students to succeed?

Statement of the Problem

Teacher methodology is shaped by assessment. What teachers choose to do in the classroom is directly tied to how their students will be assessed and what information and skill sets their students will be required to know in order to demonstrate academic competence (Facione, 1990). Learning that is assessed on high-stakes tests does not comprehensively reflect the information and skill sets that modern students must possess to succeed in a global economy (Shepard & Dougherty, 1991). Instead, high-stakes test achievement represents specific skills that are emphasized through test preparation strategies (Abrams, Pedulla, & Madaus, 2003) including rote memorization in order to recall information (Misco, 2010). While some state content standards are addressed on high-stakes tests, the alarming absence of those which address higher-order thinking underscore the problems surrounding high-stakes exams (Horn, 2003). Succeeding in life takes much more than knowing how to read, write and add; the implications of such a world are science fiction fodder, with one easily imagining individuals who can read the manual without understanding what it means. Being able to critically identify, analyze and evaluate information is crucial for citizens living in a democracy. For the youth who are responsible for carrying the legacy of a democratic society, these skills must be learned in order to continue and improve their social realm.

As it stands, little opportunity exists for students to gain critical thinking skills due to increased test preparation time (Shepard & Dougherty, 1991) and to assessments which do not explicitly evaluate critical thinking ability. For example, students in Ohio are required to pass the Ohio Graduation Test (OGT) in order to graduate high school. The OGT assesses students in four content areas through five separate exams: Language Arts (reading and writing), Mathematics, Science and Social Studies. According to the Ohio Department of Education website, the purposes of the OGT are to:

ensure that students who receive a high school diploma demonstrate at least high school levels of achievement; measure the level of reading, writing, mathematics, science and social studies skills expected of students at the end of the 10th grade; meet federal requirement for high school testing. (2010).

The OGT tests contain “approximately 35 multiple-choice questions and *up to* eight constructed (written) response items” (Ohio Department of Education, 2010, emphasis mine). Written response questions are assessed via a four point rubric; an exemplary response “thoroughly addresses the points relevant to the concept... [and] provides strong evidence that information reasoning, and conclusions have a definite logical relationship” (Ohio Department of Education, 2006, p. 2) and multiple choice questions assess retention of facts. Content areas are included based in policy makers’ determinations that acquiring specific academic information will prepare students for college and beyond.

Private foundations and non-profit organizations are attempting to influence policy through their identification of additional skill sets that students need to have in order to succeed globally. The Partnership for 21st Century Skills identifies several crucial elements: the ability to think critically in order to make judgments; to be able to

solve open-ended, complex, multidisciplinary problems; to be a creative thinker; to be able to communicate and collaborate effectively with a team; and to be innovative when applying knowledge and information are as important to success as content knowledge (Partnership, 2008). The Bill and Melinda Gates Foundation stress learning partnerships and developing habits of mind. Communication between teachers and learners is critical to improving academic success and essential for people who work in collaborative, team environments. Being able to begin a project and follow it through to the end, maintaining concentration on an objective, using evidence to support a position and being able to reflect upon one's work all contribute to personal, academic and professional success (College Ready Education Plan, 2009). The National Leadership Council for Liberal Education and America's Promise (LEAP) agrees that students need advanced communication skills (as cited in Banerji, 2007). Their report goes further to identify the need for students to apply analytical skills during authentic problem-solving activities while using cross-disciplinary knowledge, to have ethical reasoning, to be creative and critical thinkers, and to integrate learning into broader contexts (National Leadership Council, 2007). Although these public education and private sector perspectives represent the polarity in educational objectives, they also function within the same economic paradigm: both sides recognize the relationship between educational achievement and financial success. Both policymakers and business leaders believe that to improve schools, there must be a focus on core academic content areas (Bolt, 2003). Meanwhile, educators responsible for guiding students towards world-readiness must adapt to a revolving door of policy changes and professional expectations amidst personal beliefs of what students need to know in order to be productive citizens.

Understanding intersections of test preparation, teacher methodology, curricular control and critical thinking skills assist in demonstrating pragmatic inconsistencies in current high-stakes testing environments. No one argues that students need to know content knowledge; likewise, most agree that students need to be critically thinking. However, the literature suggests that teachers lack needed professional autonomy in order to decide what methods are best for arriving at student achievement goals (Au, 2007; Winkler, 2002). Furthermore, with tremendous pressure on teachers to prepare students to pass high-stakes standardized tests, the implicit encouragement to teach to the test marginalizes student-centered learning. While some educators report an increase in student-centered instructional strategies due to preparing for high-stakes tests (Au, 2007), most high-stakes school teachers employ teacher-centered strategies which result in retention of facts without accompanying critical thinking ability. The implications of these intersections beg to be investigated.

Research Questions

The research questions for this study will be:

1. In what ways do high-stakes assessments influence teacher methodology?
2. Is there space in high-stakes testing environments for non-traditional methods?
3. Are the methods that teachers employ in response to high-stakes testing promoting higher-order, critical thinking skills?

Purpose/Significance

As such, the purpose of this study is to investigate the extent that educators in content areas are able and willing to incorporate methodologies into the classroom which promote higher-order thinking skills. Specifically, this study is looking at the relationship between high-stakes testing environments and the use of non-traditional methodology in the classroom. This relationship is important because we need to know if teachers are able to provide instruction that promotes the kinds of thinkers who will move our country forward into the 21st century as leaders and innovators. Educators and policy makers want to know what the most effective instructional strategies are for the next generations and particularly for policy makers, it is crucial that employed strategies yield citizens who can handle the unique challenges of a global economy. We all benefit from knowing what to do in order to promote academically comprehensive and critical thinkers so that we may foster it in our own communities; it is at once both a global and local point of interest.

Definitions

The following are operational definitions used for this study. Each term is discussed in detail in chapter two.

1. *High-stakes testing* is defined as an element of policy which “links the score on one set of standardized tests to grade promotion, high school graduation and, in some cases, teacher and principal salaries and tenure decisions” (Orfield & Wald, 2000).
2. *Traditional methodology* is a collection of teaching methods which rely on teacher-centered philosophies and place external knowledge above student experience and interest.

3. *Non-traditional methodology* is a collection of teaching methods which place emphasis upon student experience, student interest, personal knowledge and collaborative inquiry.
4. *Critical thinking skills* are a group of cognitive and behavioral skills which focus on habits of mind and the upper three levels of Bloom's Taxonomy: evaluation, synthesis, analysis (Ennis, 1993; Facione, 1990).

Organization

After reviewing the literature in chapter two, this study's methodology will be shared in chapter three. Included will be a discussion of the research design, the participants, all materials used, and the procedures for data collection analysis. Chapter four will present the results and findings of the data while chapter five will discuss implications of the data for the field of educational policy and teacher methodology as well as recommendations for future investigation.

CHAPTER 2 Literature Review

Introduction

There are inconsistencies between what is being taught, how teachers are teaching, what is being measured and the requisite thinking skills that are necessary for citizens in a global economy. The question of *how teachers should teach* students what they need to know in order to be successful has not received sufficient attention in policy conversations. A blinding light has focused the conversation exclusively on assessments and policy makers have taken note: the Ohio Board of Regents has followed a national trend to “stiffen high school graduation requirements” (2006) in order to increase student achievement. There is an urgent need for educators to navigate the current high-stakes testing landscape in order to meet the demands of a 21st century democracy while the students responsible for the United States’ social and economic success acquire and develop critical thinking skills. But many educators, parents and reformers are discovering exactly what students and teachers in the classroom are achieving: narrowed content, test-taking drills and linear thinking (Misco, 2010; Vars, 2001). The intersections of test preparation, teacher methodology, curricular control and critical thinking skills all point to a chilling picture of what our youth are experiencing as they go through the public school system in the United States.

Test preparation

The issues surrounding test preparation have been widely studied. Validity of high-stakes scores, ethical and unethical methods employed by teachers and increased instructional time spent specifically on tested material have been investigated and reported upon in educational literature. Numerous teachers’ report that they must ‘teach

to the test' and use their instructional time in response to standardized exams (Abrams, Pedulla, & Madaus, 2003; Au, 2007; Cook & Faulkner, 2006; Horn, 2003; Jones, Jones, & Hardin, 1999; Joseph, 2010; Kubow & DeBard, 2000; Nordgren, 2002; Pedulla, Abrams, Madaus, Russell, Ramos, & Miao, 2003; Shepard & Dougherty, 1991). Overall, the literature suggests that everyday classroom procedures are being transformed by high-stakes test preparation due to increased pressure to score well on standardized exams. Teaching methodology is becoming increasingly uniform in order to yield higher achievement scores on standardized exams (Jones, Jones, & Hardin, 1999).

Several researchers (Haladyna, Nolen, & Hass, 1991; Mehrens & Kaminski, 1989; Pedulla, Abrams, Madaus, Russell, Ramos, & Miao, 2003; Shepard, 1991) have discussed how disparate preparation practices can affect the overall validity of standardized exams, and thus call into question their usefulness as an assessment tool used to determine successful learning. Educators employ assorted methods to prepare students for high-stakes exams. Haladyna and his colleagues identify (as cited in Urdan & Paris, 1994) ethical test preparation activities: providing test-taking strategies, reminding students to double check their answer sheets and encouraging individual effort. In contrast, teaching to the test, practicing with sample tests or excusing low-achieving students from taking the test are unethical practices. Both practices influence test scores; however, unethical practices artificially simulate learning and compromise the validity of the test results because they are inconsistent with the regular curriculum.

Ethical test preparation develops strategies which impact students' metacognitive development; the cognitive processes can be applied in authentic problem-solving situations as well as in academic settings. Whether or not a student passes the exam has

little impact upon the acquisition of these life-long learning strategies. The latter does not develop individual skill-based learning strategies: unethical test preparation activities stress the importance of an exam score without contextualizing learning processes. As such, many teachers who report teaching to the test are unwittingly modeling unethical behavior. Furthermore, Urdan and Paris (2004) report that teachers who engage in unethical preparation practices threaten student learning because educators are limiting their instructional practice to focus on specific content and skill sets thought to be included on the exam. Four out of five teachers reported that their colleagues spend significant instructional time teaching to the test. Overall, teachers do not believe the tests are worth the money spent on them, do not believe scores reflect student learning and do not believe standardized exams are good for education. These beliefs are the result of increased test preparation time that artificially influences student achievement. Moreover, the reduction of professional autonomy in the classroom, the increase of guilty and frustrated feelings centered on test scores that will further control policy and the continued adaptive strategies to beat the system also contribute to teachers beliefs. These findings suggest that “teachers will willfully engage in activities that invalidate test scores in response to administrative and structural demands to increase test scores” (p. 151). Interestingly, “experienced teachers (those with 10 years in the classroom) were more willing to utilize ethical test preparation methods than less experienced teachers” (p. 152); the implication is that less experienced teachers are reflecting the environment in which they themselves have been educated and in the process emphasizing that students score well on the tests.

Amrein-Beardsley, Berliner, and Rideau (2010) go even further in their analysis of teacher test preparation and ethical conduct. They identify first, second and third degree levels of cheating during high-stakes testing and test preparation and conducted research of educators' cheating practices via a survey and personal interviews. The incidence of first degree cheating was reportedly low: slightly less than 20% of educators indicated that they were aware of colleagues proving answers to student during standardized exams and 18% had seen other teacher's pointing to the correct answer during the testing period while only 3% admitted doing either themselves. However, reported incidences of second and third degree cheating were significantly higher. During testing periods, 38% of teachers witnessed other teachers encouraging students to redo problems and 34% provided additional time to finish the test; self-reported rates were lower, at 16% and 14% respectively. Intersecting the claims of Haladyna et. al. (1991), teachers reporting the incidence of third degree cheating in colleagues, which constitutes using state-created testing materials, copying down questions to prepare for the next years exam and making copies of tests to familiarize students with testing formats, all known as teaching to the test, hovered at 23% . Self-reported actions were significantly lower at 6%. The report of Amrein-Beardsley, et. al. (2010) suggests that not only is cheating rampant throughout the educational community, it is particularly aligned with teachers who are teaching in high-stakes environments. The "external pressures to cheat as a function of the stronger accountability system associated with NCLB (No Child Left Behind), and the high-stakes testing policies associate(d) with that law" (p.27) question the validity of high-stakes test results and the ethical guidelines that are seeping into pedagogical practice.

Shepard and Dougherty (1991) reported that in high-stakes districts, test preparation activities significantly alter instruction to the extent that they supersede normal instruction. The majority of teachers spent a substantial amount of time (two weeks or more) “giving students commercially produced test preparation materials, giving practice tests, and instructing students on test-taking strategies” (p. 7). Additionally, half of the teachers gave students worksheets to familiarize them with testing formats and to review content. Sixty-eight percent of teachers stated that test preparation methods were used regularly throughout the school year and were not limited to the time surrounding the exam. Although the majority of teachers identified several beneficial purposes for standardized tests, the negative effects, due in part to increased test preparation time, outweighed the positives. A legitimate concern is the meaningfulness of the results: if more than half of the teachers report using strategies that have elsewhere been described as unethical, how much are administrators, educators and policy makers really learning about student learning?

This trend of findings continues in a national survey of teachers as reported in The National Board on Educational Testing and Public Policy Report (Pedulla, Abrams, Madaus, Russell, Ramos, & Miao, 2003). The report states that in a high-stakes district with high-stakes for the students as well as for teachers, 70% of teachers worked throughout the school year on test preparation and that the test preparation was considered “somewhat similar to the content of (the) state test” (p. 75). Teachers also report “provid(ing) test-specific preparation materials developed commercially or by the state” and “provid(ing) students with released items from the state-mandated test” (p. 60). The inference is that the materials are in worksheet form or in a simulated test form to

ensure student familiarity with the exam. While it was noted that high-stakes testing prompted increased use of in-class test preparation time, high-stakes testing also affected *how* the information was taught as well as emphasizing *what* information was taught. For example, testing influenced time spent on activities which are not directly related to tested content and has also manipulated the time spent on various instructional methods such as cooperative learning, whole-group instruction, individual seat work and simulated test problems. A majority of teachers responded that high-stakes testing increased the amount of time spent teaching tested subject areas as opposed to those that were not tested.

Teacher methodology

In practice, two main philosophical frameworks function in the classroom: teacher-centered instruction and student-centered instruction. High-stakes testing, for better or worse, has affected the implementation of these frameworks in the classroom.

Teacher-centered instruction.

Teacher-centered instruction can be operationally defined as traditional methodology and includes: lecture, whole-group discussion, worksheets (Cook & Faulkner, 2006) and paper pencil tests. Teachers ask “How do I impart this information to these students” rather than “In what ways do these students understand this information?” Such instructional practices favor direct transmission of information to the student from the teacher, typically through handouts or lecturing and tend to emphasize the contributions of teacher knowledge as a basis of knowing. It is perceived as passive intake of information: teachers talk more than the students and the class is typically grouped together (Cuban, 2007).

Investigating the difference between group discussion and lecture, Colleen Garside (1996) suggests that there is no significant difference between lecture and group discussion in developing critical thinking skills. From an investigation of 118 students, the study did yield significant differences in the types of student learning. Lecture produced learning in regard to overall scores of tests as well as lower and higher-level items. Group discussion produced more learning for higher-level items. The study concluded that although reviewed research suggested a positive correlation between group discussion and the development of critical thinking skills, such a correlation was not substantiated.

Vogler and Virtue (2007) explore the relationship between high-stakes tests and teacher-centered instruction and find support for the claim that high-stakes tests place intense pressure upon teachers to the extent that they “increase their dependency on teacher-centered instruction practices” (p. 56). High-stakes tests, they argue, are the vehicles that move methodology away from student-centered approaches, such as role-play, research papers and cooperative learning, and towards more direct modes of instruction. Vogler (2005) also asserts (as cited in Misco, 2010) that teachers who spend the most time on test preparation have a higher likelihood of using teacher-centered practices “including multiple-choice questions, textbooks, lecturing and textbook-driven work” (p. 122). With the increase in prevalence of high-stakes tests, content becomes the test, thereby reinforcing the need for increased test preparation instructional time (Misco, 2010); Wright (2009) argues that students are thus taught to search for testing clues rather than cognitive skills or knowledge that is needed for academic success. Misco (2010) further elucidates what was missed in one teacher-centered, test prep remediation class:

opportunities for students to meaningfully discuss the big ideas of the subject, due in part to an emphasis on content facts and to time constraints. He laments that in this situation, the highest value is “mastery of uncomplicated content knowledge, bereft of connective tissue and greater meaning” (p. 126). The opportunity to discuss and unpack complex, multi-faceted ideas is lost.

Student-centered instruction.

Student-centered instruction is commonly referred to as progressive or constructivist methodology and places the learner’s experiences and interest at the center of learning. Constructivist educators ask “How do these students learn?” rather than “How can I teach these students?” Familiar methods include group discussion, Socratic seminars, reciprocal teaching, role-playing, group projects, guided discovery, hands-on activities, and interactive games (Cook & Faulkner, 2006; Mayer, 2004). It is perceived as active construction of knowledge and a meaningful integration of content.

It has long been noted that people across the board learn best from active learning (Meier, 1995; Vygotsky, 1978; Dewey, 1963; Shepard, 2000; Slavin, 1995): educators report that active learning yields students with higher engagement levels, increased intrinsic motivation, enhanced critical thinking skills and, at times, higher academic achievement (Slavin, 1995; Gokhale, 1995; Zimmerman, 1990; Bonwell & Eison, 1991). The Learning Pyramid (Anonymous, 1954) states that students retain more information from teaching others, doing the task, or engaged in group discussion than from any other method; however, with the implementation of standardized tests, educators, while closely following state content standards, have decreased the use of time-intensive instructional

methods so as to create additional time for test preparation (Abrams, 2004; Pedulla, Abrams, Madaus, Russell, Ramos, & Miao, 2003; Shepard & Dougherty, 1991).

Two primary examples of student-centered instruction are group discussion and Socratic seminars. The term group discussion is often re-appropriated to refer to small group discussions, ability group discussion or peer group discussions. However, for each of those appropriations, there are yet different types of discussion for specific instructional goals. Hyman (1987) identifies five distinct types: (1) explaining, (2) problem solving, (3) debriefing, (4) predicting, and (5) policy deciding (as cited in Cooper & Simonds, 2003). In addition, experiential learning, an emphasis on students, a focus on critical thinking, the utilization of questions, and student responses to questions are characteristics of the discussion method (Cooper & Simonds, 2003). As such, group discussion utilizes active learning strategies in that the participants are talking informally together in order to reach an understanding of values or to reach solutions to common problems.

Socratic Seminar instruction has been found to increase student's ability to critically think. Polite and Adams (1997) conducted a qualitative study at Lookout Valley Middle School in Chattanooga, Tennessee. Using data from teacher interviews and from a random sample of Lookout Valley students, Polite and Adams (1997) found that the use of the seminars was "strongly associated with students' conflict resolution skills" (p. 265) and that "approximately 80% of the student sample engaged in at least intermittent metacognitive activity or Piagetian formal operational activity" (p. 266). The findings were significant because it would be expected that sixth graders would be functioning at a Piagetian concrete operational stage with little or no metacognitive ability. Polite and

Adams (1997) suggest that the findings support Socratic Seminars as an effective method to increase both cognitive and social functioning of students. Wheelock (1994) also investigated Chattanooga's Paideia Schools in which Socratic Seminar is one of three curricular columns. Focusing on academic achievement, Wheelock (1994) reported that of two graduating classes of 100 students each, over 90% are attending private or public universities and 5% are attending two-year colleges. In addition, 80 of 94 students in the 1993 class had a grade average of 80% or better due in part to the integration of content along with an open, critically engaged dialogue.

Curricular control

A significant consequence of high-stakes testing is its impact upon teacher autonomy in the classroom. Individual autonomy in the classroom is understood as educational professionalism, which is the educator's freedom and responsibility to identify student needs and make appropriate instructional decisions to meet those needs. Using test scores as the sole focus of a teacher's professional ability devalues teacher's judgment about their student's achievement and need for intervention; decisions based upon test scores alone downplay the insight educators have about their students and are typically non-negotiable (Madaus & Russell, 2010). Research into teacher autonomy and curricular control supports the claim that student accountability via high-stakes testing has meaningfully altered teacher autonomy in the classroom.

In examining the effects of the Standards of Learning (SOL) test in Virginia, Winkler (2002) reported a difference between veteran and new teachers in regards to how they perceived teacher autonomy. Veteran teachers (those who had taught for more than nine years) perceived standardized exams as negatively effecting their teaching more than

new teachers (those who had taught for less than two years). Veterans felt that the SOL “imposed a narrow and rigid view of education on their existing philosophies” (p. 221); one veteran believed that social, emotional and academic needs of a child should be taken into equal account while another veteran believed in individual instruction to meet the unique needs of students. Furthermore, veterans identified inter-department competition as another negative effect of standardized testing; everyone knew when certain concepts weren’t being reached by a specific teacher (Winkler, 2002). New teachers, however, perceived the SOL in terms of gains rather than losses. One stated that “teaching is better connected than what they told me. It’s not isolated” (p. 221) and her perception was reinforced by another new teacher who was amazed at how well each educator worked with one another, using the same materials and teaching the same units (Winkler, 2002). The new teachers did not have an established portfolio of lesson plans and favorite activities or units; thus, they found curriculum mapping to be a good blend of curricular guidance and methodological autonomy. Winkler (2002) found that the key difference in perception between these two groups of educators was their accumulated time in the field; while veteran teachers have taught in environments without external monitoring, new teachers have always had the structure of standards based, high-stakes testing informing their education and their practice.

In a meta-analysis of studies centering on high-stakes testing and curricular control, Au (2007) found that there was a significant increase of teacher-centered instruction in response to high-stakes tests, particularly in language arts and social studies classrooms. Curricular content is narrowed to tested subjects and is structured to meet test-based norms; content is also taught in fragmented, isolated pieces in order to directly

address the content of the tests. Despite an overall increase of teacher-centered strategies, there were a small number of cases where student-centered instruction increased due to high-stakes testing. The increase was linked to expanding curricular content. For example, New York State's history exams requires essay responses; to address this requirement, educators included critical literacy and writing within their social studies class. However, the inclusion of such content was never independent of testing expectations. Furthermore, Au (2007) argues that because social studies was the only subject which was not completely influenced by high-stakes testing, it may "represent a special case in relation to high-stakes testing and curricular control" (p. 264). Most importantly, in two separate studies (Yeh, 2005; Hillocks, 2002), Au (2007) finds that it is the construction of the exam, the intentional design of the test, which affects curricular control, rather than it simply being a high-stakes test. Hillocks (2002) reports (as cited in Au, 2007) that poorly designed writing assessments "promote a technical, mechanical, five-paragraph essay form, and that teachers' pedagogy adapts to that form" (p. 264).

Vallis and Chambliss (2007) also found an increase in teacher-centered methodology due to high-stakes testing. In a classroom observational study of two reading lessons taught by the same teacher, the strategies and practices implemented varied greatly between the three regular reading groups and an intervention group. As a note, the teacher observed had previously demonstrated a commitment to preparing all students for personal success (Vallis & Chambliss, 2001). All students were culturally diverse; many had participated in an ESL program. The first three reading groups met with the teacher at a round table in the back of the room and worked through a teacher-selected text. In all three groups, the text was chosen with careful consideration of

cultural practices of students, specific issues in student lives and specific skills that students needed to develop. Emphasis was given to texts that students would enjoy reading and could identify and learn from the characters. The meetings were child-centered; that is, students wrote, spoke and listened to one another as well as to the teacher. In the intervention group, student's prior knowledge, interests, skill levels and enjoyment were not considered. The test chosen for this group was based upon its adaptability to short-response questions that students would encounter on standardized assessments. Rather than spirited conversations and collaborative inquiry, a packet of 37 lessons which replicated state test topics was distributed to the students. Students were directed to their practice test seats to begin working on their packets, after which they would talk about the lessons. The environment was teacher-centered, with an abundance of nod-responses from the students. Vallis and Chambliss (2001) found that the teacher used different materials, communicated differently and maintained a different focus with intervention students to the extent that students were unable to answer teacher questions. There was no collaboration between the teacher and the learners; there was frustration in the teacher because the students could not answer her (the test) questions correctly. The reading groups participated fully; the intervention students did not. According to Vallis and Chambliss (2001), the difference was rooted in the methods and materials that the teacher used for each group. Vallis and Chambliss (2001) concluded that as child-centered teaching is replaced by teacher-directed instruction, achievement and the relationships fostered through collaborative inquiry will diminish.

Higher-order thinking skills

‘Critical thinking’ is often used as an umbrella term for a wide, and variously defined, discourse of higher-order thinking; the definitional literature base is broad (Pithers, 2000). Used interchangeably with terms such as decision-making, problem solving, informal logic or reasoning, and creative thinking, ‘critical thinking’ is widely referenced with a similarly wide, context-dependent understanding (Facione, 1990; Gibson, 1995).

Based upon expert consensus statements that arose from a paneled discussion of philosophers, educators, and scientists, Facione (1990) reported that critical thinking combines cognitive skills and affective dispositions. Cognitive skills required for critical thinking are interpretation, analysis, evaluation, inference, explanation and self-regulation. Of those, analysis, evaluation and inference are considered core skills and with increased proficiency of them, one has earned the designation of being adept at critical thinking. Citing interpretation as a communication tool rather than as a critical thinking tool, one panelist strongly dissented to its inclusion in the cognitive skill list. Nevertheless, 87% of the panelists identified interpretation, explanation and self-regulation as central to critical thinking (Facione, 1990). Critical thinking is not a body of knowledge in and of itself, although having domain-specific knowledge may allow one to successfully make reasonable judgments in specific contexts. Rather, it is a purposeful and pervasive utilization of thinking strategies within a body of knowledge or experience to arrive at a conclusion (Facione, 1990).

In addition to being proficient in a specific skill, one must also have the aptitude to use the skill even if it isn’t needed at the moment. Termed affective disposition, these

habits of mind and attitudes work in tandem with cognitive skills to form a critical thinker. Examples of affective dispositions include being habitually disposed to engage in critical judgment, being able to make that judgment in multiple contexts for a variety of purposes, contributing to fair-minded analysis and decision-making, and promoting intellectual freedom in order to advance carefully reasoned investigations into any matter of social concern (Facione, 1990. p. 24). Two-thirds of the panelists hold that affective dispositions are components of critical thinkers while the remaining 1/3 believes that only cognitive skills are critical thinking skills. The former argue that if one is adept in analysis yet regularly uses the skill inappropriately, then one really isn't critically thinking. It is necessary then for people to have the opportunity to practice critical thinking skills and the panel recommends that modeling is the most effective way to teach critical thinking (CT) (Facione, 1990):

Regardless of the subject area, students should be encouraged to be curious, to raise objections, ask questions, and point out difficulties in the instructor's position. These objections and questions should be clarified, interpreted, and examined objectively. Student should be given reasons for doing things a certain way, rather than being dogmatically told how to do them. Instruction should bridge the gap between the subject and the student's own experience. In the case of CT instruction, the topics of discussion should not be restricted to factual matters or academic subjects, but should include issues which have normative, moral ethical or public policy dimensions. (p. 33).

As with Facione's panel of experts, Gibson (1995) also notes differences in the kinds of critical thinking. In *Critical Thinking: Implications for Instruction*, Gibson

(1995) narrows all definitions and terms into two separate but related traditions: philosophical and psychological.

Philosophical.

Robert Ennis (1986) once stated that “critical thinking is reasonable reflective thinking focused on deciding what to believe or do” (p. 180). More recently, concluding that true critical thinking is more than reasonable reflection and correctly assessing statements, he modified and expanded the concept’s definition to include space for creativity in the thinkers’ mind. Ennis (1986) identified criteria necessary for critical thinking as being able to: assess source credibility; locate “conclusions, reasons, and assumptions”; assess argument quality; create and support an issue position; ask relevant, elucidative questions; devise experiments and assess its design; define terms; be open-minded and well informed; elicit justified conclusions with caution (p. 180). Ennis (1986) posits that these points are interdependent rather than hierarchical as Blooms’ taxonomy would suggest.

Richard W. Paul (1992) enters on the idea of dialogic reasoning which incorporates critical thinking attributes as well as standards and self-assessment criteria. Paul (1992) distinguishes between weak sense and strong sense critical thinking in that the latter “possesses a disciplined, fair-minded, multilogical perspective on an issue or problem so that the reasoner is not trapped by egocentricity or self-deception” (as cited in Gibson, 1995, p. 28). The former relies solely on Bloom-inspired (Bloom, 1956) cognitive characteristics such as argument analysis, synthesis and evaluation. In addition, Paul (1992) argues that certain “exemplary elements, standards, traits, and skills for critical thinking” (as cited in Gibson, 1995, p. 29) transcend disciplines or content areas,

thereby suggesting a moral high-ground as evidenced in fair-minded as an attribute of strong sense. However, such exemplary elements can and should be applied to traditional discipline-specific ways of thinking thereby connecting academic and everyday reasoning processes (Gibson, 1995).

Psychological.

Kuhn and Dean (2004) state that many educators claim to know ‘good thinking’ when they see it, while the question of what ‘good thinking skills’ *are* has been ignored. They (2004) focus on inquiry and argument as empirically observable skill sets and then move onto the role of these skills for metacognitive development. Inquiry must begin with the development of a thesis statement or question that is accompanied by potential evidence. The statement must also have space for something to be found out, otherwise students would assume all inquiry simply exhibits information already accepted as true. In addition, Kuhn and Dean (2004) argue that argument skills have received even less attention, noting that young adolescents debating an opposing view focused on explicating their perspective “four times as frequently as they sought clarification of the opponent’s argument and four times as frequently as they undertook to critique the opponent’s argument” (Kuhn & Dean, 2004, p. 270). These adolescents focused on undermining their opponent’s position without addressing their opponent’s argument. Kuhn and Dean (2004) state that developing and supporting one’s own argument while processing an opponent’s argument “may represent cognitive overload for the novice arguer” (p. 270).

Martinez (2006) understands metacognition through its functionality and identifies three primary categories of metacognition: metamemory and

metacomprehension; problem-solving; critical thinking. Metamemory and metacomprehension “both refer to an understanding of one’s own knowledge state” (p. 696) and essentially require recognition of one’s own memory or comprehension abilities. Of import is the ability to recognize, rather than the accuracy of the recognition. Problem solving, according to Martinez (2006), is daily navigation through life. Humans are constantly faced with situations that demand a solution; the process of generating new possibilities, weighing each option, exploring option subsets, and evaluating the results all factor into problem-solving. Additionally, one must constantly step back to examine and rework plans by checking the original goal and the alignment of practices towards its realization. Martinez (2006) defines critical thinking as simply evaluating ideas for sense-making quality, and notes that although researchers stress the strong relationship between metacognition and content, it is unlikely that all metacognitive processes require specific content parameters. Finally, automaticity is central to metacognition: one must be able to automatically access one’s working memory in order to engage in higher-order thinking. Simply stated, the absence of such access prevents the mind from looking back upon itself (Martinez, 2006).

Metacognition is commonly described as “thinking about one’s own thinking,” but a growing interest in epistemological understanding has resulted in a series of steps that lead to more sophisticated levels of metacognition. Kuhn and Dean (2004) identify four levels of epistemological understanding: (a) realist, (2) absolutist, (3) multiplist, and (4) evaluativist. Of import here are the last two stages because they are typically applicable to adolescents and adults. The multiplist believes that assertions are individually chosen opinions and directly accountable to their owners; knowledge is a

product of human minds and uncertain. Because every mind has an authentic, personal opinion, critical thinking is irrelevant in order to value all opinions equally. The evaluativist believes that assertions are judgments that can be compared and evaluated according to evidence and argument; knowledge is produced by human minds, but is uncertain and thus open to evaluation. Critical thinking is necessary in order to ascertain the validity and soundness of assertions as well as to enhance comprehension (Kuhn & Dean, 2004). In comparing the qualities of each definition with classroom activities, Kuhn and Dean (2004) argue that while students do not engage in evaluative understanding, it is still the educator's role to facilitate the transition through the use of inquiry and argument exercises.

In sum, the literature indicates an increasingly negative picture of educational environments as they relate to high-stakes testing and critical thinking. Teachers are spending disproportionate amounts of instructional time engaged in test preparation at the expense of time-intensive, critical thinking activities and are in effect teaching to the test (Abrams, Pedulla, & Madaus, 2003; Au, 2007; Cook & Faulkner, 2006; Horn, 2003; Jones, Jones, & Hardin, 1999; Joseph, 2010; Kubow & DeBard, 2000; Nordgren, 2002; Pedulla, Abrams, Madaus, Russell, Ramos, & Miao, 2003; Shepard & Dougherty, 1991). Although student-centered instructional methods such as Socratic Seminars increase students' metacognition and conflict resolution skills (Polite & Adams, 1997), classroom instruction is less diverse, more teacher-centered (Au, 2007; Vogler & Virtue, 2007) and students are learning to take a test rather than developing life-long cognitive skills (Misco, 2010). In addition, teachers report dissatisfaction with the loss of professional autonomy in the classroom due to high-stakes tests (Winkler, 2002).

The current study contributes to the literature by combining aforementioned elements in order to understand their intersections in a Midwest Appalachia state. No studies have investigated these relationships for this geographic area and hopefully, other researchers will begin to do so. Despite the abundance of information related to high-stakes testing, there are still exciting and worthwhile areas open for future research. The relationship between critical thinking activities and test preparation deserves further investigation. If teachers are engaging in test preparation, is it possible to include critical thinking activities that also cover testable content knowledge? Are they mutually exclusive areas? Moving in a slightly different direction, another area of related research centers on teacher's attitudes as they become more acclimated to high-stakes environments: are they choosing to stay in the field? What is the turnover rate? How has it changed in the last 30 years? What does that mean for the future of the United States and its students?

CHAPTER 3 Methods

This study investigated the relationship between high-stakes testing environments and non-traditional methodology in the classroom. Two central questions guided the research: Do educators have the opportunity to use or try to use non-traditional instructional methodology in the classroom while simultaneously preparing students for high-stakes tests and do high-stakes testing environments adequately prepare students for life in an economically competitive, global society? Connecting these questions is the crucial element of critical thinking skills, the need for their development in students and their presence in the classroom as an instructional objective.

Participants

The participants of this study were high school content area teachers in a Midwest Appalachia state. High school teachers were chosen based upon the researchers' interest in secondary schools and non-traditional teaching methodology. All participants taught at least one of the following courses: Language Arts/ English/ Literature; Science/ Biology/ Physics; Mathematics/ Algebra/ Geometry/ Calculus; Social Studies/ Government/ Citizenship. Only content area teachers were selected because other disciplines are excluded from high-stakes testing requirements in the state under study. Participants were identified through a multi-tiered online search. All schools provided contact phone numbers and most schools had either a district website or school website with faculty, content area and email addresses listed. Participants were selected based upon their indicated content area on the school webpage. The researcher called schools which did not list faculty members or did not provide what content area teachers taught in and requested the principals email address in order to introduce the study and request that the

research instrument be distributed to content area staff. The total potential participant count was 336 although three schools did not provide email addresses or faculty lists and thus, the exact number of content area educators teaching in the research area is unknown. Of the 336, twenty-five were principals, some of whom were also teachers. Finally, the survey instrument along with a letter of introduction was sent to all school principals as a common courtesy.

Instrumentation

An online survey was created on Qualtrics, an online research software tool, and administered electronically to all identified content-area teachers in a Midwest Appalachia state. The survey was comprised of three parts and used a combination of open-ended questions, fill-in-the-blank responses and five- item Likert scale questions. The first section asked for demographic questions, the second asked about teacher methodology in the classroom as well as frequency of instructional methods and assessments using a Likert scale, while the third section, also using a Likert scale, asked about educational philosophy. All efforts were made to ensure the absence of researcher bias in the questioning format. Non-demographic questions were deliberately phrased to be open-ended and the researcher attempted to neutralize all known variables (teaching experience, content, grade level, course level) by specifically including them in the survey. Despite all efforts though, there is a possibility that the instrument will impact the results due to the forced-response of some questions and the absence of forced-response in open-ended questions. Out of 20 survey questions, 15 were force-response.

Procedure

The link to the survey on Qualtrics was sent out electronically to all principals and participants using school district email addresses. Of 311 calls for participation sent to educators, 86 taught English, 79 taught Science, 68 taught Social Studies and 79 taught math; 25 calls were sent to school principals, some of whom were also teachers. Data collection was electronic. Once participants had completed the survey, they indicated ‘finished’ and then the completed survey was automatically sent back to the researcher. Participants also had the option of working on the survey in increments, saving their progress and then returning to the survey at a later time.

CHAPTER 4 Results

Small sample size, non-random selection of participants and low response rate all contributed to the non-statistical significance of this study's results. Of the 336 calls sent to participants, 51 (15%) surveys were returned and 44 (13%) of those were completed fully. Across content areas, there were slightly more responses in Language Arts, Science and Mathematics than in Social Studies; responses across grade level were evenly distributed. Teachers with four to nine years of classroom experience had the highest response rate (Appendix B).

Five areas were selected for analysis: teacher attitudes, years of classroom experience, content area and teaching methodology, grade level and teaching methodology, methods and assessment. Content area, grade level and methods were further cross-referenced according to traditional and non-traditional instructional categories.

Teacher attitudes

Using a five-point Likert scale, teachers were asked to identify agreement or disagreement with educational philosophy statements. Half of the statements were taken from traditional philosophy and the other half represented constructivist philosophy. Using the two strongest opinions ("strongly agree" and "agree"), the data were looked at to determine the philosophical foundations of the participants. Across content areas, 100% of educators report either strongly agreeing or agreeing with the statement "freedom of instruction and assessment are very important to me as an educator"; the 93% like to try new methods in their classrooms, 100% believe critical thinking is a necessary skill for students in our world and 95% believe that students need to think

outside the box to be competitive in our global economy. Thirty-two percent agree or strongly agree in the value of process over product in service learning. In sum, 84% of the responses indicated personal and professional belief in constructivist philosophies.

Educators reported slightly lower agreement with traditional philosophies; however, as in the case of non-traditional philosophical beliefs, a large portion of participants (80%) indicated strong or very strong agreement with traditional philosophical beliefs. Forty-nine percent of educators responded as strongly agree or agree to the statement “I prefer to use district-wide curriculum mapping as a tool to shape my instruction”; 72% indicated strong or very strong agreement with the use of tried and established methodology in the classroom and 81% reported strong or very strong agreement with the belief that acquiring knowledge is central to student learning. One hundred percent of respondents believed that understanding social rules and procedures is necessary for student in our world and 98% agreed or strongly agreed that students must learn to follow instructions to be competitive in the workplace. Noticeable departures from these results were the expressed disagreement or strong disagreement towards two specific statements: “I prefer to use district-wide curriculum mapping as a tool to shape my instruction” and “I value process over product in student learning” (both indicated that 16% disagreed and 5% strongly disagreed). Further breakdown indicated a difference between the two philosophies in terms of level of agreement. Thirty-four percent of respondents indicated strong agreement with the traditional philosophy statements while 47% simply agreed. The opposite was found for constructivist philosophy: 50% of respondents indicated strong agreement while 37% agreed (Table 1).

Table 1. *Comparison of participants' agreement with constructivist and traditional philosophical belief statements*

Constructivist Philosophy		Traditional Philosophy	
Belief	Strongly Agree/Agree	Belief	Strongly Agree/Agree
Freedom of instruction and assessment are very important to me as an educator.	20/23 47%/53%	I prefer to use district-wide curriculum mapping as a tool to shape my instruction.	5/16 12%/37%
I like to try new methods in my classroom.	17/23 40%/53%	I tend to use tried and established methodology in my classroom.	6/25 14%/58%
I value process over product in student learning.	5/13 12%/30%	The acquisition of knowledge is central to student learning.	13/22 30%/51%
Critical thinking is a necessary skill for students in our world.	37/7 84%/16%	Understanding social rules and procedures is necessary for students in our world.	25/18 58%/42%
Students need to think outside of the box to be competitive in our global economy.	28/13 65%/30%	Students must learn to follow instructions to be competitive in the workforce.	23/19 54%/44%

Note: First level of figures indicates number of responses while second level indicates percentages.

Classroom experience

Other studies have found that veteran teachers (those with more than nine years

of classroom experience) perceived teaching in high-stakes environments differently than novice teachers (those with fewer than two years of classroom experience), specifically in terms of instructional freedom and professional autonomy (Winkler, 2002). The results from this study partially support those findings. Eighty-five percent of teachers who had more than nine years of classroom experience strongly agreed that freedom of instruction and assessment were very important and 35% reported agreement whereas teachers with less than nine years of experience tended to agree (65%) more than strongly agree (15%). Additionally, 82% of veteran teachers strongly agreed that they liked to try new methods in the classroom and 39% agreed with the statement. Sixty-one percent of teachers with fewer than nine years in the classroom indicated agreement while 18% reported strong agreement. No teachers reported disagreeing or strongly disagreeing with the statement although 7% of veteran and less experienced teachers reported neither agreeing nor disagreeing. Conversely, of the five people who strongly agreed with the statement “I prefer to use district-wide curriculum mapping as a tool to shape my instruction”, four were veteran teachers. Sixty-three percent of veteran teachers reported agreeing with the statement while 38% of teachers with less than nine years classroom experience reported agreement. There was an increased variety of responses about curriculum mapping compared to responses which asked about freedom of instruction and assessment: 12% of all teachers reported strong agreement with mapping while 47% strongly agreed with freedom; 37% reported agreement with mapping and 53% agreed with freedom; 30% neither agreed nor disagreed with mapping and 0% held that belief about freedom; 16% reported disagreement with mapping while 0% reported disagreement with freedom; 5% reported strong disagreement and 0% reported strong disagreement with freedom. Fifty-

two percent of veteran teachers reported agreement with using tried and established methods in their classrooms and 48% of less experienced teachers also agreed. However, only 17% of less experienced teachers reported strong agreement with the statement compared to 83% of veteran teachers. Neither group strongly disagreed and both groups had equal rates of disagreement. Slightly more veteran teachers were indifferent than less experienced teachers (Appendix D).

Content area and methodology

For this section, the researcher divided the data into two categories: content area as it related to traditional methodology and content area as it related to non-traditional methodology. Participants were asked to rate how often they used certain methods: once a week; twice a week; three to four times a week; everyday or never. Traditional methodology includes lecture and class discussion. The majority of language arts teachers (38%) reported using lecture only once a week whereas the majority of science teachers (54%) and mathematics teachers (55 %) reported using lecture three to four times a week. Fifteen percent of language arts teachers and 38% of social studies teachers used lecture three to four times a week. Fifty percent of social studies teachers reported using lecture every day, compared to only 8% of language arts teachers. The majority of language arts teachers (46%), math teachers (64%) and social studies teachers (63%) used class discussion everyday; science teachers reported using class discussion equally three to four times a week (31%) and everyday (31%) (Table 2).

Table 2. *Analysis of traditional methodology usage by content area*

	Traditional methodology									
	Lecture					Class discussion				
	Once a week	Twice a week	3-4 times a week	Every-day	Never	Once a week	Twice a week	3-4 times a week	Every-day	Never
Language arts	5 38.46%	3 23.08%	2 15.38%	1 7.69%	2 15.38%	1 7.69%	3 23.08%	3 23.08%	6 46.15%	0 0.0%
Science	4 30.77%	2 15.38%	7 53.85%	0 0.0%	0 0.0%	3 23.08%	2 15.38%	4 30.77%	4 30.77%	0 0.0%
Mathematics	0 0%	0 0.0%	6 54.55%	3 27.27%	2 18.18%	0 0.0%	1 9.09%	3 27.27%	7 63.64%	0 0.0%
Social studies	1 12.5%	0 0.0%	3 37.5%	4 50.0%	0 0.0%	0 0.0%	0 0.0%	3 27.27%	5 62.5%	0 0.0%

Note: First level of figures indicates number of responses while second level indicates percentages.

Non-traditional methodology includes seminars and hands-on activities. Some “other” methods also can be defined as non-traditional. Teachers reported using seminars either once a week or never; the division between language arts teachers and other content area teachers was stark. Forty-six percent of language arts teacher reported using seminars once a week while 54% reported never using them. Ninety-two percent of science teachers, 82% of mathematics teachers and 75% of social studies teachers reported never using seminars in the classroom. Overall, 75% of surveyed teachers reported never using seminars. The distribution of teachers employing hands-on activities was more even. One hundred percent of science teachers and social studies teachers reported using this methodology at least once a week while 91% of math teachers and 92% of language arts teachers reported at least once a week usage. However, 7% of language arts teachers and 9% of mathematics teachers reported never using this method.

Table 3. Analysis of non-traditional methodology usage by content area

	Non-traditional methodology									
	Seminars					Hands-on Activity				
	Once a week	Twice a week	3-4 times a week	Every-day	Never	Once a week	Twice a week	3-4 times a week	Every-day	Never
Language arts	6 46.15 %	0 0.0%	0 0.0%	0 0.0%	7 53.85 %	4 30.77 %	3 23.08 %	3 23.08 %	2 15.38 %	1 7.69 %
Science	1 7.69%	0 0.0%	0 0.0%	0 0.0%	12 92.31 %	5 38.46 %	4 30.77 %	4 30.77 %	0 0.0%	0 0.0%
Mathematics	2 18.18 %	0 0.0%	0 0.0%	0 0.0%	9 81.82 %	5 45.45 %	1 9.09%	2 18.18 %	2 18.18 %	1 9.09 %
Social studies	2 25.00 %	0 0.0%	0 0.0%	0 0.0%	6 75.0%	5 62.5%	3 37.5%	0 0.0%	0 0.0%	0 0.0%

Note: First level of figures indicates number of responses while second level indicates percentages.

Forty-six percent of language arts teachers reported using “other” methods once a week and 22% reported using them at least three to four times a week. Thirty-one percent of language arts teachers never used other methods. Only 15% of science teachers reported three to four times a week usage, while 62% reported using “other” methods at least once a week. Twenty-three percent of science teachers reported never using them. The results for mathematics and social studies were more polarized: 55% of mathematics teachers reported never using other methods while 45% reported using them at least three to four times a week. Half of social studies teachers reported never using “other” methods while the other half reported them once a week (see Appendix C for detailed list of “other” methods).

Grade level and methodology

For this section, the researcher again divided the data into two categories: grade level as it related to traditional methodology and grade level as it related to non-traditional methodology. Participants were asked to rate how often they used certain methods: once a week; twice a week; three to four times a week; every-day or never.

Between the two methods, teachers across grade levels reported using class discussion more frequently than lectures. Fifty percent of 9th and 11th grade teachers and 58% of 10th and 12th grade teachers used class discussion everyday. . Although everyday use of lecture was much less than everyday use of class discussion, approximately 1/3 of teachers from each grade level reported using lecture three to four times a week and a similar distribution was reported for those lecturing twice a week. When separated by grade level, 31% of 11th grade teachers report using lecture three to four times a week and everyday respectively. Thirty-two percent of 9th grade teachers also used lecture three to four times a week while 18% used it everyday. Proportionate to response rates, 10th grade teachers reported using lecture less frequently than other grade level teachers. Sixty-two percent of 12th grade teachers and 11th grade teachers reported using lecture at least three to four times a week (Table 4).

Table 4. Analysis of traditional methodology usage by grade level

	Traditional methodology									
	Lectures					Class discussion				
	Once a week	Twice a week	3-4 times a week	Every-day	Never	Once a week	Twice a week	3-4 times a week	Every-day	Never
9	5 22.73%	3 13.64%	7 31.82%	4 18.18%	3 13.64%	2 9.09%	2 9.09%	7 31.82%	11 50.0%	0 0.0%
10	5 20.83%	3 12.5%	8 33.33%	6 25.0%	2 8.33%	2 8.33%	2 8.33%	6 25.0%	14 58.33%	0 0.0%
11	5 19.23%	2 7.69%	8 30.77%	8 30.77%	3 11.54%	2 7.69%	3 11.54%	8 30.77%	13 50.0%	0 0.0%
12	3 11.54%	4 15.38%	9 34.62%	7 26.92%	3 11.54%	2 7.69%	3 11.54%	6 23.08%	15 57.69%	0 0.0%

Note: First level of figures indicates number of responses while second level indicates percentages.

When asked whether the emphasis on standardized tests has changed their teaching, a large majority of teachers across grade level reported an emphatic yes. Sixty-two percent of all respondents indicated yes, 12% stated that they had always taught in a high-stakes environment, 14% reported no effect, 5% reported no but that some test-taking strategies were now incorporated due to standardized assessments and 8% reported answers that were irrelevant (such as “see above” or “ten minutes is more than I can spare”). Seventy-seven percent of 9th grade teachers indicated that their teaching had changed due to standardized assessments, 14% indicated no effect and 9% indicated some effect. The following represent a sampling of 9th grade responses:

- “Yes...Focus on multiple-choice, short-answer and extended-response tests due to OGT.”
- “Yes, I place more emphasis on teaching more standards in the freshman/general math class, involving more word problems in my assessment to prepare students to take the OGT.”

- “Very much so, our school funding is based off of test scores, therefore test scores and material is the focus of our teaching.”
- “Yes, I do not have the time to be as in-depth or as creative.”
- “Yes, I have to use class time to review previous test questions in preparation for the test.”
- “I’ve only ever taught with the standardized assessment but I know it confines the way I teach due to the amount of topic I must cover.”
- “Yes and no- I try to stay true to myself, but because students have to pass the OGT I feel a responsibility to help them do so.”
- “No it has not changed my teaching. I have always had very high expectations and my students have always done very well on standardized assessments.”

The results for this section are similar to those in the cross-analysis of content area and non-traditional methodology. The frequency of seminars being used in the classroom never went above once a week; across all grade levels, 25% of teachers reported using them once a week and the remaining 75% reported never using them. 11th and 12th grade teachers each indicated a slightly higher frequency of use (31%) than 9th and 10th grade teachers (23% and 21% respectively). The use of hands-on activities had a broader frequency of use by all grade levels. Forty-one percent of all grades reported using this method only once a week while 4% reported never using it. Ninety-six percent of 9th grade teachers reported using hands-on activities at least once a week; in general, they report using hands-on activities the most of any grade and also had the lowest rate of never using it. Nevertheless, 92% of 10th, 11th and 12th grade teachers also reported using

hands-on activities at least once a week. Slightly more than half (56%) of all 10th, 11th, and 12th grade teachers reported using hands-on activities only once a week (Table 5).

Table 5. Analysis of non-traditional methodology usage by grade level

	Non-traditional methodology									
	Seminars					Hands-on Activity				
	Once a week	Twice a week	3-4 times a week	Every-day	Never	Once a week	Twice a week	3-4 times a week	Every-day	Never
9	5 22.73 %	0 0.0%	0 0.0%	0 0.0%	17 77.27 %	7 31.82 %	3 31.82 %	4 18.18 %	3 13.64 %	1 4.55 %
10	5 20.83 %	0 0.0%	0 0.0%	0 0.0%	19 79.17 %	10 41.67 %	3 12.5%	7 29.17 %	2 8.33%	2 8.33 %
11	8 30.77 %	0 0.0%	0 0.0%	0 0.0%	18 69.23 %	10 48.46 %	7 26.92 %	5 19.23 %	2 7.69%	2 7.69 %
12	8 30.77 %	0 0.0%	0 0.0%	0 0.0%	18 69.23 %	10 38.46 %	6 23.08 %	6 23.08 %	2 7.69%	2 7.69 %

Note: First level of figures indicates number of responses while second level indicates percentages.

When asked if they were teaching the way they wanted to in the classroom, teachers responded with mixed results. Roughly 40% of respondents stated that they were teaching the way they wanted to, while the remaining 60% was split evenly between not teaching the way they wanted to and teaching the way they wanted to with conditions. The following text responses were shared by teachers.

- “I would like to use even more hands-on activities, more higher level thinking question, and more in-depth class discussions.” (A science teacher for 10th, 11th, and 12th grades who reported using hands-on activities three to four times a week.)

- “I would like to be doing more lab work but time and cost of supplies limit this method. Even though current thought is that science should be inquiry based learning there is not enough time to use this method and get over all the information prior to OGT in March. I use the methods I do for this reason.” (A 10th grade science teacher who reported using hands-on activities once a week.)
- “I sometimes use guided discovery activities for the students to reach the conclusions I want them to get. I would like to do more discovery activities.” (A math teacher who also taught 10th grade, 11th grade, and 12th grade and reported using hands-on activities once a week.)
- “No. Too much time and effort covering just the standards. No freedom to spend more time on topics of student interest. Class sizes too large for many hands-on activities.” (A social studies teacher for 9th grade, 11th grade and 12th grade who reported using both student-led teaching and hands-on activities once a week.)
- “Sometimes I teach the way I would like to, but I often feel like I am rushing the students. More review, hands on projects and in-depth projects would be beneficial to the students.” (A 9th grade science teacher who reported using hands-on activities twice a week.)
- “Ten minutes is more than I can spare.” (A 12th grade social studies who reported using hands-on activities once a week.)

These responses indicate the tension that teachers are feeling regarding in-class practice. The most common responses indicated that teachers do not use technology-based instruction as often as they would like.

- “Yes. I do wish I had more time to set up more lessons with my smartboard.”
- “Yes, although I would like to include more hands on.”
- “Yes, but I wish I could incorporate more technology.”
- “To a degree. I would like to use more technology.”
- “Sometimes- classroom space, class size, and tools/resources available sometimes does not allow for project, activities, etc. to take place.”

Methods and assessments

One hundred percent of teachers who reported lecturing everyday also reported using tests very frequently. Sixty-five percent of teachers who reported lecturing three to four times a week also used tests very frequently. Of the 44 respondents, one teacher reported using tests rarely and the response rate from teachers who reported never or very rarely using tests was zero. Six out of 17 teachers reported using tests occasionally and lecturing three to four times a week. More teachers reported using lecture three to four times a week than any other frequency (39%) and the frequency of those using tests as assessments was also the most commonly reported (59%) . The relationship between tests and class discussion was similar. As with lecture, 43 out of 44 respondents reported using tests very frequently and 58% of those who reported using class discussion everyday also tested very frequently. One teacher reported using class discussion once a week and

testing rarely. The response rate from teachers who reported very rarely or never using class discussion and tests was zero.

The intersection between lecture methods and essay assessments contained more divergent frequency rates. Twenty-nine percent of teachers who reported using lecture once a week used essays very frequently while 24% of teachers who used lecture three to four times a week reported never using essays. Half of respondents who used lecture everyday rarely or never used essays while the other half used them very frequently or occasionally. As with the relationship between testing, lecturing and class discussion, the results for class discussion and essays was similar to lecturing and essay assessments. Fifty-eight percent of respondents who reported using essays very frequently used class discussion every day. Thirty-one percent of teachers who reported using class discussion three to four times a week also used essays very frequently. Sixty-two percent of teachers who used class discussion reported using essay assessments very frequently or occasionally. The remaining respondents reported rarely (9%), very rarely (11%) and never 18% using essays (Table 6).

Table 6. Cross analysis of traditional methodology and traditional assessments

		Lecture					Class discussion				
		Once a week	Twice a week	3-4 times a week	Everyday	Never	Once a week	Twice a week	3-4 times a week	Everyday	Never
Tests	Very frequently	3 11.54%	2 7.69%	11 42.31%	8 30.77%	2 7.69%	1 3.85%	2 7.69%	8 30.77%	15 57.69%	0 0.0%
	Occasionally	6 35.29%	3 17.65%	6 35.29%	0 0.0%	2 11.67%	2 11.76%	4 25.53%	5 29.41%	6 35.29%	0 0.0%
	Rarely	1 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
	Very rarely	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
	Never	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Essays	Very frequently	4 28.57%	3 21.43%	2 14.29%	3 21.43%	2 14.29%	0 0.0%	2 14.29%	4 28.57%	8 57.14%	0 0.0%
	Occasionally	5 38.46%	1 7.69%	6 46.15%	1 7.69%	0 0.0%	2 15.38%	2 15.38%	3 23.08%	6 46.15%	0 0.0%
	Rarely	0 0.00%	0 0.0%	2 50.0%	2 50.0%	0 0.0%	0 0.0%	1 25.0%	1 25.0%	2 50.0%	0 0.0%
	Very rarely	1 20.0%	1 20.0%	3 60.0%	0 0.0%	0 0.0%	2 40.0%	0 0.0%	3 60.0%	0 0.0%	0 0.0%
	Never	0 0.0%	0 0.0%	4 50.0%	2 25.0%	2 25.0%	0 0.0%	1 12.5%	2 25.0%	5 62.5%	0 0.0%

CHAPTER 5 Discussion and Conclusions

Study limitations

Because this study focused on a very specific area of Appalachia with its own cultural beliefs, attitudes and practices, the following limitations are provided before discussing the results and offering conclusions:

1. Midwest Appalachia is a substantially rural area with school districts that span large geographical distances; many educators who teach in Appalachia are native to the area and thus have internalized cultural identities (Woodrum, 2004). Therefore, this study is not representative of the broader United States culture, but instead represents the views and practices of people in Midwest Appalachia.
2. Only content area teachers were selected as participants. This includes teachers who work in districts that practice inclusion and work with students with Individual Education Plans (IEP). Special Education teachers working in self-contained classrooms were not included. While the survey did request information about course level, it did not ask for information about students with IEP's.
3. The research instrument did not request socio-economic information from participants and thus discussion about the intersections of socio-economic standing and educational beliefs were not included.
4. All data was acquired from an internet survey that was distributed through each school district's server. Several schools chose not to participate and several other schools did not provide email addresses for faculty.
5. It was not guaranteed that school servers permitted outside emails to reach individual teachers. The researcher contacted each school to verify whether the

server allowed entry and also requested that each administrator who received the study introduction respond to ensure its arrival. Out of 25 administrator requests, four responded.

Teacher attitudes

Interestingly, the results for teacher's philosophical beliefs indicated a strong agreement for constructivism and traditional philosophy. Eight-four percent of teachers indicated strong or very strong agreement with constructivist philosophy yet 80% also indicated the same for traditional philosophical statements. However, the distribution was slightly different in terms of strength of agreement. Those who strongly agreed with constructivist statements were slightly more (50% vs. 37%) than those who strongly agreed with traditional statements (34% vs. 47%). This seems to indicate a sense of passion about the idea itself, an attachment to it as a principle rather than simply as an educational philosophy; constructivism champions individual growth through identified strengths and collaborative effort but has been accused of being impractical for modern learning and standards-based assessments (Brooks & Brooks, 1999). Simultaneously, traditional philosophy places teachers in control of the classroom and provides a well-established foundation for teaching, one that many teachers have probably experienced in their own lives when they were students. Educators are in a bind then: they personally identify with the idea that learning occurs through integration of experience and content, and also believe that students need to obey authority as demonstrated through the educational system. That may explain the high reporting of educators who support traditional methodology while espousing constructivist philosophy. It is heartening that participants lack polarization in their philosophy, but instead embrace the principles of

both. The integration of perspectives in politics, education, social policy, environmental ethics and individual morality, among other issues, is actively discouraged in the media and oftentimes in society, one is encouraged to choose either one thing or the opposite. The participants in this survey suggest that they have chosen the way of synthesis amidst an environment which is doing its best to thwart that.

Classroom experience

Although veteran teachers and those with fewer than nine years of classroom experience both indicated agreement to the statement “freedom of instruction and assessment are very important to me as an educator” the difference between strongly agreeing and simply agreeing was quite distinct in the two groups. Eighty-five percent of veteran teachers strongly agreed while only 15% of new teachers reported strong agreement; 65% of new teachers agreed while 35% of veteran teachers agreed. Veteran teachers have experienced a wide variety of educational policy which impacts curricular control in the classroom whereas new teachers have only experienced, professionally and in teacher education programs, the intense emphasis on student achievement as it relates to high-stakes standardized assessments. Teacher education programs teach their students about education’s past in order to understand the present, and in some cases, there is a strong critical element which analyzes the direction that education has been moving in since the early eighties. Nevertheless, teacher education programs are designed to prepare future educators to be professionally competent and in the current environment, that means learning how to navigate students as they move through high-stakes testing environments. It also implies that young teachers will be prepared to be members of a team which implements curricular development. That supports the difference in

agreement levels regarding freedom in the classroom: one can agree with freedom and still be a productive team member. In terms of methods and the explanation of why they were chosen, an interesting difference emerged. When comparing the text responses from a math teacher with more than 27 years of experience to a math teacher with one to three years of experience, the veteran indicated that hands-on activities were "the most effective methods for the students to increase their understanding of mathematics." The new teacher reported that "the best way for the students to learn the material is through lecture/discussion." Note the difference in emphasis of what needs to be covered. The former focuses on students understanding concepts whereas the latter concentrates on students learning the material. Certainly, people adapt to new situations but having started one's teaching career in a time when high-stakes testing were not a pillar of the field seems to have influenced what one considers important. The new teacher, immersed in high-stakes testing for the whole of their career, covers material primarily through daily lecture and daily class discussion. The new teacher reported testing, self-evaluations and formative assessments as the most frequent assessment tools. However, the same new teacher disagreed with the belief statement "I tend to use tried and established methodology in my classroom." The reported beliefs that this new teacher gave are not internally consistent with reported practices. These findings are supported in Costigan's (2002) study of new teachers' perceptions and instruction in high-stakes environments supports. New teachers are mandated to prepare students for high-stakes tests and are using traditional, drill-and-remember instructional practices to accomplish that goal even though they went into the field because they self-identified as creative, fun and child-like in their curiosity (Costigan, 2002). Furthermore, Barksdale-Ladd and

Thomas (2000) found that veteran and new teachers alike are sacrificing many non-traditional activities in the classroom due to high-stakes testing even though the activities are perceived as meaningful, significant and enjoyable for students and teachers.

Returning to the current study, the veteran teacher emphasized student understanding of mathematics as a whole, suggesting a holistic approach to the discipline. The veteran never lectured, used hands-on activities three to four times a week and used self-evaluations, tests and oral responses frequently to assess student learning. The veteran teacher integrated traditional and constructivist methods to accomplish the objectives of student understanding.

Both groups of teachers have tools to function in the current high-stakes environment; the key difference is that veterans are adapting to changes within the field while new teachers are adapting to a new job. In sum, new teachers use traditional methods more often than non-traditional methods while simultaneously rejecting tried and established methodology. It seems that they may not see themselves for what they are and instead want to be what they wish they could be, that is independent, cutting-edge and non-traditional. Veterans, through experience and professional reflection, report statements that are consistent with reported practices. Experience is meaningful in terms of emphasizing beliefs and methods despite both groups use of traditional more than non-traditional methods and assessments.

Content area and traditional methodology

Mathematics, science and social studies teachers all reported using lecture at least three to four times a week. Interestingly, the only content area which did not use lecture regularly was language arts: language arts teachers reported using non-traditional

methods more frequently when imparting information and educating students. The prevalence of lecture as an instructional strategy in content areas indicates an emphasis on teacher-centered pedagogy and a focus on transmitting information rather than as part of a meaning-making process; the continued use of high-stakes assessments reinforces the primacy of such strategies in reaching the goal of increased test scores. Opportunities for students to integrate information into a broader context are limited due to the singular purpose of preparing students to pass high-stakes exams. Certainly, not all lectures discourage critical thinking; some incorporate critical thinking questions into the content (Pedulla et al., 2003). However, because high-stakes exams are predominantly based on information recall rather than problem-solving, the occurrence of such questions is limited. In effect, there is an impulse to find the “one right answer” (DeMolli, 1997) which significantly impedes one’s ability to pursue different viewpoints. Perhaps the difference is found in the inclusion of so-called objective information found in some content areas. For example, mathematics and science utilize well known theorems and processes that are built upon and reinforced throughout a student’s educational career: converting numbers, determining equivalencies, understanding and implementing the scientific method, comprehending the laws of nature. In contrast, language arts incorporates subjective understanding of a text as an element of the educational process in addition to fact-based knowledge, such as vocabulary acquisition, grammatical structure and denotative meaning of a passage. However, all content areas could incorporate subjective understanding through the use of critical questioning. Investigating the premises of historical events, the accuracy of recorded history, the prevalence of one

type of mathematical system over another, and the social influence of science processes could all create opportunities for collaborative critical questioning.

Content area and non-traditional methodology

The use of non-traditional methodology across content areas was less frequently than the use of traditional methodology. While educators used both traditional methods (91% used lecture and 100% used group discussion) at least once a week, the use of some non-traditional methodology was used far less. Seventy-five percent of educators across content area never used seminars although 95% of educators across content area indicated using hands-on activities at least once a week. Of 26 responses that indicated using “other” methods (see Appendix C), 11 provided responses that qualified as non-traditional or student-centered instructional strategies. Hands-on activities are typically non-traditional; that is, they are student-centered and utilize discovery learning, are focused on problem-solving processes and incorporate higher-order thinking such as analysis, synthesis and evaluation (Stohr-Hunt, 1996). Of note is that educators identified so many activities as “other” which followed traditional, teacher-centered instruction. The results suggest that teachers are utilizing teacher-centered strategies more often than not which supports the literature (Au, 2007; Vogler & Virtue, 2007). Teachers are under intense pressure to present students who pass achievement tests. Instructional strategies which explicitly prepare students for those exams are used more often.

Grade level and traditional methodology

The reported use of traditional methodology across grade levels was consistent with literature which stated that many teachers used teacher-centered instruction in response to high-stakes tests (Pedulla, Abrams, Madaus, Russell, Ramos, & Miao, 2003).

Although 10th grade teachers used lecture less frequently than other grade levels, the overall level of teachers lecturing three to four times a week accounted for 1/3 of all respondents. In addition, 80% of all teachers reported using class discussion three to four times a week. The data suggest a strong teacher-centered approach to learning and an emphasis on traditional methodology. When asked if standardized assessments had changed their teaching, 77% of 9th grade teachers responded yes. Answers to open-ended questions from 9th grade teachers indicated a strong emphasis on test preparation during class time. Significantly fewer 10th grade teachers (38%) and 11th grade teachers (23%) reported that their teaching had changed due to standardized assessments; 35% of 12th grade teachers reported a change in teaching due to standardized assessments. The data indicates that 9th grade teachers are most affected by standardized assessments. Due to extremely high pressure placed upon them to produce students who can successfully pass the OGT as sophomores, 9th grade teachers are adjusting their instructional methods to include a significant amount to test preparation material which includes practice tests, review questions and test-taking strategies.

Grade level and non-traditional methodology

The reported use of seminars was very minimal: 75% of teachers across all grades never used seminars as a learning tool and the remaining 25% used them once a week. Of those teachers who used seminars, 72% taught 11th and 12th grade. Micro-analyzing the reported use of 11th and 12th grade teachers compared to 9th and 10th grade teachers found no difference among years of experience or content area. Several explanations are helpful in understanding the data. In general, seminars are daunting to many educators because they require much planning, a well thought out idea for investigation and a willingness to

relinquish classroom control while the seminar is being conducted (Tredway, 1995). Because teachers perceive classroom management as central to their professional responsibilities and thus use their voices to control the classroom, using seminars could be perceived as threatening to class management and hinder its use as an instructional strategy (Alvermann & Hayes, 1989; Alvermann, O'Brien, & Dillon, 1990). There is also the considerable amount of time needed for educators to professionally develop discussion promoting skills as well as to learn about the different forms of seminars. Teachers may not know how to conduct a seminar in terms of balancing teacher-questioning with student questioning (Billings, 2004). Open-ended question responses for this study revealed that while some teachers wished there was more time to do additional creative activities in class, there was no mention of needing or wanting professional development for learning how to implement seminars in the classroom. Without district and administrative support, it becomes the individual teacher's responsibility to learn these skills either through workshops or through membership in a collaborative environment. However, with the already hefty demands placed on educators, many either cannot or will not seek that training.

On the other hand, hands-on activities are relatively common in teacher vernacular; most teachers can identify several hands-on activities without difficulty (Johnson, Wardlow, & Franklin, 1997). Collages, puzzles, labs, and manipulatives are all common tools used for hand-on activities. However, with the increase of high-stakes tests and the looming presence of an upcoming exam, teachers reduce hands-on instruction to make more time for worksheets and choral reading of tested texts (Jones, Jones, & Hardin, 1999). As such, it is surprising that a large majority of teachers across all grade

levels (93%) reported using hands-on activities at least once a week. Twenty-nine percent of 10th grade teachers reported using hands-on activities three to four times a week compared to 42% who reported using them only once a week. The data indicate that while the use of hands-on activities is more common than that of seminars, they are still used less frequently than traditional methods.

When asked if they were teaching the way they wanted to in the classroom, 40% of teachers answered no. The rest were divided evenly between those who were satisfied and those who were satisfied but would like additional things to happen as well. For the 60% of teachers who reported a positive perception of what they do in the classroom, the most frequently identified reason was freedom. Positive responses contained statements centering on the autonomy that teachers had in the classroom; teachers across grade levels indicated positive perceptions when they believed that their principals supported their efforts by allowing them to do what they wanted to in the classroom. Of interest is that teachers explicitly mention having freedom in instructional decision making; 59% of teachers with a positive perspective explicitly identified instructional freedom as the primary reason for their satisfaction. The conspicuous absence of freedom in the open-ended responses of teachers who were not satisfied or who were partially satisfied indicates the critical importance of it for teachers. Aligned with lack of freedom is the presence of control: negative responses alluded to the lack of control that they had in terms of time-allocation, access to resources, and instructional decision-making. The consequences of these feelings become manifested in the classroom in a variety of ways. The most obvious is through teacher-directed instruction but more insidious is the message that is spread about sovereignty. The more control that is taken from teachers in

the classroom results in teachers who take more control from their students. Awash in powerlessness, students vacillate between shutting down and revolting against an individual who doesn't value their contributions and a system which suppresses their abilities. In "Another Brick in the Wall" the band Pink Floyd depicts a schoolroom full of students who listen obediently to the teacher, who line up neatly and who eventually assume the same identity as everyone else as they walk into a machine which will kill them. The teacher tells them what to do and they do it, thoughtlessly and obediently. Finally though, the students begin to think and then shout "We don't need no thought control! Teacher! Leave us kids alone!" The current environment is ripe with the feelings of powerlessness and at some point, teachers and students alike will do what they must to reclaim their sovereignty from an educational system that has slowly and carefully attempted to strip them of their intellectual freedom.

Non-traditional methodology across grade level provides some relief to the aforementioned scenario although the data indicates mixed reviews. From statistical analysis, 10th grade teachers reported using hands-on activities more frequently than other grades, but they also are required to prepare students for the OGT. Because there are more 10th grade teachers who teach math than other content areas, perhaps they are identifying in-seat classwork as hands-on when it may or may not be student directed. From teacher's responses to open-ended questions in the survey, teachers seem to want more time in the classroom to *do*: more hand-on activities, more inquiry-based learning, more technology integration, and more critical engagement. Yet despite the mixed reviews, in the space between those who state that they can't educate the way they think they should and those who feel confident and well supported, there is a sense of

complacency: things are fine, content is being taught, students are learning, this is the way things are. The tone is one of a shoulder-shrug: what can I do about it? The data indicates a sense of apathy towards the system as a whole and therein lies the danger of the current environment. When one is stuck, so to speak, in an uncomfortable position without any foreseeable relief, the life force of enthusiastic energy and positive belief begins to fade.

Methods, assessments and philosophies

One would think that people tend to behave in ways that are consistent with their personal value systems and philosophies (Bardi & Schwartz, 2003); however, studies indicate that beliefs and practice are at times inconsistent with one another (Raymond, 1997). This idea is interesting because of the reported philosophical beliefs of survey respondents as they compare to methodologies and assessments in the classroom. As stated in the “Teacher Attitudes” section of this article, teachers indicated a belief fusion of constructivist philosophy and traditional philosophy. Data derived from an analysis of traditional and non-traditional methods with traditional and non-traditional assessments suggests that there is a discrepancy between the beliefs teachers hold about education and what they do in the classroom. Traditional methods are aligned with traditional, teacher-centered philosophy of education: students receive knowledge (rather than information) from a teacher who is in control of the learning environment; teachers talk and students listen; teachers direct and students obey. Methods that actualize those beliefs include lecture and whole group discussion (which is teacher-directed and distinct from small group discussion, peer discussion or paideia discussion). While 84% of teachers strongly agreed that critical thinking skills are a necessary skill for students (constructivist

philosophy), 36% reported using lecture based instruction three to four times a week and 22% reported using lecture everyday: more than half of teachers who espoused constructivist philosophy reported using methods which were dissonant with their reported beliefs. Furthermore, while 28 out of 43 teachers strongly agreed that students need to think outside of the box to be competitive in a global economy, 32% reported lecturing three to four times a week and 21% reported lecturing everyday. Fifty-four percent of those who simply agreed rather than strongly agreed reported using lecture three to four times a week. Only three respondents who strongly agreed never used lecture based instruction. Class discussion had similar results; however, class discussion does have the possibility of including student-direction. The tension then between reported beliefs and methods is less pronounced than with lecture method although the overall percentages of those who strongly agree and agree with the idea that students need to think outside the box is the same as with lecture method. Sixty-one percent of teachers who strongly agreed and 23% of teachers who agreed used class discussion every day.

Overall, the relationship between reported belief and actual practices is indistinct. There is a high level of internal inconsistency between attitudes and behaviors, particularly in new teachers. This suggests cognitive dissonance in the minds of many teachers who participated in the study. Teachers care about their students and they want their students to succeed: when faced with a choice of preparing their students to succeed on an exam that will be administered with or without their support, teachers are choosing to assist students with test preparation even though it is inconsistent with their professional beliefs. At some point, this will be unsustainable as the disconnect between

philosophy and action continue to diverge from one another. For now though, teachers keep on keepin' on, so to speak. They do what they think they must to support their students.

Implications

The implications of this study are consistent with the wide body of literature which has investigated the link between high-stakes testing upon classroom methodology as it relates to critical thinking skills (Au, 2007; Shepard & Dougherty, 1991; Vallis & Chambliss, 2001; Vogler & Virtue, 2007). No other studies have investigated these relationships for this geographic area and hopefully, other researchers will begin to do so. Teachers want their students to be critical thinkers. Policy makers want a critically thinking student body. Industry leaders want a workforce who can critically think and creatively problem-solve. In order to achieve this common goal there must be a change in instructional methodology in the classroom and to bring that about, policy makers must redefine how achievement is measured. Standardized exams heavily use multiple-choice, recall-level questions to measure what a student knows but time and again, how one thinks makes all the difference in personal and professional success. Teachers are responding to the urgent call of policy makers to teach students how to pass “the test” and the results are devastating. Teachers are teaching to the test and do not have time to teach to the person; students are learning to test and are missing out on crucial opportunities to develop higher-order thinking skills that must be developed in authentic, problem-solving situations. Lecture based instruction and other traditional, teacher-centered strategies are becoming standard operating procedure and the opportunities for teachers to engage in non-traditional methodologies such as Socratic seminars, peer discussion, and project-

based learning become fewer and more difficult to implement (Au, 2007). Teachers need the support of policy makers to create space for students to take intellectual risks through inquiry-based learning. How can this happen? Increase funding for professional development opportunities so that educators can cooperatively learn about how to implement non-traditional methods in their classrooms. Allow teachers to work together during shared planning periods so that professional relationships are promoted between content areas in order to integrate rather than compartmentalize student learning. Revise current assessments so that students can holistically demonstrate what they have learned in ways that correspond to their personal strengths: include creative assessments so that a variety of skills are highlighted. Actively incorporate critical thinking exercises in all content areas so that students and teachers regularly dialogue and explore with each other. To sum it up, allow educators to be active decision-makers within their schools so collaborative, critical, creative and reflective behavior is modeled for all students. These are ambitious recommendations but unless the current system of high-stakes assessment and corresponding instructional strategies changes, not only will our students continue to struggle academically, they will also be woefully unprepared for the dynamic world that awaits them once they leave high school. In order to meet these recommendations, additional research is needed in the area of critical thinking skills instruction amidst high-stakes testing environments. Are there ways that teachers can prepare students for high-stakes tests without sacrificing critical thinking instruction? Are there changes that could take place in the classroom to accomplish this? As policy makers, educators and industry leaders continue to hope for and strive towards higher levels of student achievement, these questions, and those that have yet to be thought of, all need to be addressed.

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APPENDIX A: SURVEY INSTRUMENT

Part 1: Demographics

1. Which content area do you teach? Language Arts, Science, Math, Social Studies

2. What grade levels do you teach?

9	General	Honors	Advanced Placement	Content
Area _____				
10	General	Honors	Advanced Placement	Content
Area _____				
11	General	Honors	Advanced Placement	Content
Area _____				
12	General	Honors	Advanced Placement	Content
Area _____				

3. How many years have you been in the classroom?

Less than one year 1-3 yrs. 4-6yrs. 7-9yrs. 10-12 yrs. 13-15 yrs. 16-18 yrs.
 19-21 yrs. 22-24 yrs. 25-27 yrs. More than 27 years

Part 2: Teacher Methodology

4. How often do you use these methods?

a. Lecture	Once a week	Twice a week	Three times a week
Every day	Never		
b. Class discussion	Once a week	Twice a week	Three times a week
Every day	Never		
c. Seminars	Once a week	Twice a week	Three times a week
Every day	Never		
d. Hands-on activity	Once a week	Twice a week	Three times a week
Every day	Never		
e. Other _____	Once a week	Twice a week	Three times a week
Every day	Never		

5. Why did you choose these methods?

6. What assessment tools do you use in the classroom? How frequently do you use them?

	(1) never	(2) very rarely	(3) rarely	(4) occasionally	(5) very frequently
f. Portfolios	1	2	3	4	5
g. Tests	1	2	3	4	5
h. Student self-evaluation		1	2	3	4 5
i. Essays	1	2	3	4	5
j. Oral responses	1	2	3	4	5
k. Projects	1	2	3	4	5
l. Other _____		1	2	3	4 5

7. Why did you choose these assessments?
8. Are you teaching the way you want to in your classroom? Please explain.
9. Are you teaching concepts and information that you want to teach? Please explain.
10. Has the emphasis on standardized assessments changed your teaching? In what ways?

Section 3: Beliefs and Philosophy

Please respond to the following statements.

(1) strongly disagree (2) agree (3) neither agree nor disagree (4) disagree (5) strongly agree

11. Freedom of instruction and assessment are very important to me as an educator.
1 2 3 4 5
12. I prefer to use district-wide curriculum mapping as a tool to shape my instruction.
1 2 3 4 5
13. I like to try new methods in my classroom.
1 2 3 4 5
14. I tend to use tried and established methodology in my classroom.
1 2 3 4 5
15. I value process over product in student learning.
1 2 3 4 5
16. The acquisition of knowledge is central to student learning.
1 2 3 4 5
17. Critical thinking is a necessary skill for students in our world.
1 2 3 4 5
18. Understanding social rules and procedures is necessary for students in our world.
1 2 3 4 5
19. Students need to think outside of the box to be competitive in our global economy.
1 2 3 4 5
20. Students must learn to follow instructions to be competitive in the workforce.
1 2 3 4 5

APPENDIX B: TEACHER DEMOGRAPHICS

1. How many years have you been teaching in the classroom?				
#	Answer		Response	%
1	Less than 1 year		0	0%
2	1-3 yrs.		3	6%
3	4-6 yrs.		9	18%
4	7-9 yrs.		9	18%
5	10-12 yrs.		2	4%
6	13-15 yrs.		6	12%
7	16-18 yrs.		5	10%
8	19-21 yrs.		4	8%
9	22-24 yrs.		6	12%
10	25-27 yrs.		1	2%
11	More than 27 years		6	12%
	Total		51	100%

2. What content area(s) do you teach?

#	Answer		Response	%
1	Language Arts		14	27%
2	Science		15	29%
3	Mathematics		14	27%
4	Social Studies		9	18%

3. What grade levels do you teach?

#	Answer		Response	%
1	9		27	53%
2	10		28	55%
3	11		30	59%
4	12		30	59%

4. How often do you use these methods?

#	Question	Once a week	Twice a Week	3-4 times a week	Everyday	Never	Responses	Mean
1	Lecture	22.73%	11.36%	38.64%	18.18%	9.09%	44	2.80
2	Class Discussion	9.09%	13.64%	29.55%	47.73%	0.00%	44	3.16
3	Seminars	25.00%	0.00%	0.00%	0.00%	75.00%	44	4.00
4	Hands-on Activity	40.91%	25.00%	20.45%	9.09%	4.55%	44	2.11
5	Other	31.82%	9.09%	13.64%	9.09%	36.36%	44	3.09

APPENDIX C: “OTHER” METHODS AND ASSESSMENTS

<p>“Other” methods <i>Non-traditional in italics</i></p>	<p>“Other” assessments <i>Non-traditional in italics</i></p>
<p><i>Computer lab projects</i> Individual instruction, <i>peer instruction</i> Practice Media, computer Media, internet, film Homework, quizzes Media Mini-lesson/lecture Demonstrations <i>Lab</i> <i>Presentations/speaking</i> <i>Journals</i> <i>Lab</i> None Demonstrations Demos and reading assignments <i>Group work</i> <i>Student-led teaching</i> Guided practice Formative assessments <i>Annotations</i> Reading and writing <i>Writing workshop</i> Guided reading, written reading responses <i>Computer lab simulations</i> Videos</p>	<p><i>Video project</i> Written responses and games Students practice new concepts Homework/Classwork <i>Labs</i> Discussion questions <i>Performances</i> <i>Student-driven Discussion</i> On-line quizzes <i>Lab Practical</i> Quizzes <i>Creative responses</i> Checklists Formative <i>Labs, homework</i> <i>Critical thinking quizzes</i> Unknown Notes and homework Formative Assessments <i>Annotations</i> Observation Catechism Exit slips Clickers <i>Lab Journals/lab performance</i> Quizzes</p>

