LEVELS OF BIOFUNCTIONAL EMBODIMENT OF AUTHENTIC UNDERSTANDING IN
THE CLASSROOM: SHAKESPEARE IN SECONDARY ENGLISH CLASSROOMS

by

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ABSTRACT

This study uses a 3x3x3 Latin square design to investigate the idea that understanding may be taught by means of biofunctionally embodied (BE) classroom practice. Three levels of biofunctional embodiment were manipulated as a within-subjects factor. The other two variables were three scenes from Shakespeare and three lessons each taught in the first, second, or third position with scene and lesson serving as between-subjects factors. The nine between-subjects conditions were first randomly assigned to nine different 9th grade classes. Then, each class was taught three lessons in counterbalanced order in order to manipulate levels of embodiment using a three phase educational model. The first phase in this model, teaching, and the third phase, testing, were identical across all lessons. The second phase, biofunctionally embodied rehearsal, was different across the three within-subjects level of biofunctional embodiment in presentation material (audio, traditional film, and modern film) and the student rehearsal (silent, verbal, and enacted) of the Shakespeare scene. Dependent measures completed by students during the testing phase include an interest activity, a “modified recall of understanding” (MRU) multiple-choice activity, and an open-ended "remembering your own understanding" (RYOU) task. A series of ANOVA procedures was used to analyze effects of each of the independent variables on student performance. The prediction of interest is that the higher the level of embodiment, the higher the level of understanding and interest.
DEDICATION

To each and every member of my beloved family for helping me through this journey, especially Hannah and Olivia--my little research assistants.
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CHAPTER I
INTRODUCTION

Educators too often rely on disembodied information processing theory to explain classroom instructional processes (Palinscar & Brown, 1984; Rosenshine & Meister, 1992; Rosenshine, Miester, & Chapman, 1996; Mayer, 1984, 1989; Moreno & Mayer, 2004; Mayer & Jackson, 2005). Learning is assumed to be the transfer of highly objective knowledge from teacher to student (Reddy, 1979). Yet, research on embodied learning, including biofunctional embodiment, has been available for more than three decades and made major strides toward new ways of thinking about educational theory and practice (Gregg & Sekeres, 2009; Iran-Nejad, 1980, 1987, 2000; Iran-Nejad & Gregg, 2001; Iran-Nejad, McKeachie, & Berliner, 1990; Iran-Nejad, Wittrock, & Hidi, 1992). Biofunctionally embodied learning experiences are multiple-source in origin, involving real-world situations, domain-specific knowledge, a wholetheme comprehensive of all domains (Iran-Nejad, 2000; Iran-Nejad, Hidi, & Wittrock, 1992), and similar sources external and internal to the biological person.

This dissertation presents a biofunctionally embodied (BE) method of classroom practice that expands upon several previous biofunctionally-inspired classroom studies (Gregg and Sekeres, 2008; Long, 2002; Xu, 2005; Zengaro and Iran-Nejad, 2007). These studies have provided insights about the role of performance learning dispositions in people. Their findings suggest that levels of biofunctional embodiment can be manipulated by focusing on teaching more intuitive
and creative thinking, as well as problem-solving skills and deep understanding. The teachers in these studies grounded their instructional strategies in biofunctional theory, seeking to engage the dynamic, physiological processes at work during moments of understanding (Iran-Nejad, 2000; Iran-Nejad, Stewart, and Parizi, 2009).

In a study on levels of wholetheme instruction, Xu (2005) found that students’ overall achievement, as well as their ability to make ethical decisions, showed improvements with wholetheme teaching compared to more direct instruction. Three teachers of different sections of an undergraduate educational psychology class were predicted and independently rated to conduct their teaching at low, medium, and high levels of wholetheme education (see Iran-Nejad & Gregg, 2001). One teacher’s teaching was the closest of the three to direct instruction (low wholetheme education), A second taught at a higher level of wholetheme approach by adopting an eclectic mixture of wholetheme education and direct instruction (middle wholetheme education), and a third adhered mostly to the guidelines of wholetheme instruction (high wholetheme instruction). The study showed significant differences in students’ academic achievement on essay tests, as well as significant links between ethical decision-making and wholetheme instruction. The researcher attributed these findings to the coherent global learning environment and the multiple-source approaches used in wholetheme instruction that shift students into dynamic self-regulation (p. 99).

Zengaro and Iran-Nejad (2007) followed one university-level writing teacher’s efforts to teach for multiple-source understanding. Observation data was gathered through videotape, field notes, and interviews. Probing questions by the teacher encouraged reflection and elicited dialogue. The teacher used real-world setting, symbolism, metaphor, and other strategies to
create authentic understanding. For example, the students identified the image of a “womb” and discussed the associations with birth and protection. The instructor followed with probing questions, such as, “Why is that?” or “How does the idea of the womb protect?” (p. 10). The researchers describe the teacher’s strategies for multiple-source understanding in the following way:

The experiential ground for which she is striving relies on sources other than those that can be derived deliberatively from the text being read. [. . .] She is not isolating poetry as a way to elaborate on the text of it. She leaves the text in search of other sources that contribute to understandings. She wants to see to it that the word itself is not the focus of the student’s attention; instead, feelings, emotions, and other real-life attachments become a catalyst for understanding (p. 9).

This way of thinking on the teacher’s part paves the way for a new way of defining student understanding. Probing questions related to the topics of real-world setting, symbolism, or metaphor, allow students to consider their thoughts and feelings about the ideas at hand, rather than receiving pre-conceived ideas directly from the teacher.

Results of the qualitative study showed overall increase in grades and performance in class in terms of reflective practices. Teaching for multiple source understanding was shown to foster a fruitful learning environment through inquiry and discussion. In this instance, the connection between academia and personal relevance created the higher-order thinking environment needed for authentic understanding.
Biofunctional theory was similarly incorporated into one third-grade teacher’s poetry lessons. Like the prior study, Gregg and Sekeres (2008) focused on the role biofunctional theory plays in the dynamics of class discussion. The researchers observed how the teacher can use biofunctional “shift strategies” to foster creativity and intuitive thinking during student discussion. This wholetheme instruction and the use of probing questions were instructional priorities for the teacher. The teacher’s biofunctional shift strategies were coded to provide evidence of the constructive modes of learning in the children. For example, if the teacher was elaborating on a student’s idea, or fostering student comprehension, her utterance was coded as a dynamic self-regulation shift strategy. Some shift strategies included using conversation moves, incorporating group work, or encouraging intuitions about the material.

Consistent coding of the shift strategies and students’ responses throughout the study allowed the researchers to determine the frequencies and percentages of the positive outcomes. Teacher utterances were more often than not successful in shifting students into dynamic self-regulation and thus, creative and constructive modes of learning. By the end of the school year, the students were having more complex discussions, sharing intuitions, offering solutions to problems, and overall, shaping the entire flow of their lessons. The authors point out why this shift into dynamic self-regulation is so effective:

“Dynamic self-regulation enables children to function well in the creative mode because it is regulated by the brain, not the mind. Thus, none of the children’s attention needs to be focused on the processes of coordinating the multiple sources of information and insight found in the text, the teacher’s words, or their own intuitions” (p. 47).
The shift strategies and coding system of this study applied an analytical framework to the use of biofunctional theory in instructional cues.

These studies seek to expound upon the predictive applications of biofunctionally embodied teaching for authentic understanding. Critical reflection on the learner’s own intuitive self-awareness and creativity, in place of traditional elaboration on the external input, is the goal for student performance in a biofunctionally-embodied learning experience. A project conducted by Long (2001) on teachers’ views of learning showed that teachers can shift their conceptions of learning to more wholetheme approaches. The process of self-reflection can at the very least direct teachers’ views away from a basic view of “internalization of knowledge due to maintenance rehearsal” and toward more wholetheme ways of teaching (p.6).

**Purpose of the Study**

For this study, a further examination of a biofunctionally embodied teaching model contributes to educational research regarding students’ moments of understanding and the predictive qualities that biofunctional theory provides for new forms of teaching. The recent studies on wholetheme learning resulted in higher recorded incidents of multiple-source understanding, intuition, and creativity. These studies provide a basis for the research in this dissertation on biofunctionally embodied teaching for understanding and interest. A conceptual framework for a biofunctionally embodied teaching model is presented in Figure 1 as a foundation for this experiment.
Figure 1: A conceptual framework for a biofunctionally embodied (BE) teaching model.

For this study, a three-phase teaching model consisting of a teaching phase, a biofunctionally embodied (BE) rehearsal phase, and a testing phase will be taught at varying embodiment levels to examine student understanding of play scenes by William Shakespeare. Literal and metaphorical understanding, as well as student interest, will be analyzed. The theoretical foundations for each of the three phases will be discussed further in Chapter II.
biofunctionally embodied (BE) teaching model could be a crucial step toward meeting demands of authentic teaching and new perspectives in educational theory and practice.

**Research Questions**

1) Will biofunctionally embodied (BE) teaching result in better student understanding?

2) Will biofunctionally embodied (BE) teaching enhance student interest?

**Definition of Terms**

*Embodiment:* Theory of understanding arguing that the self-regulatory systems of one’s inner self use nonrepresentational processes that are biological and intuitive in nature; places importance on the existential role that the body plays in learning and understanding (Iran-Nejad, 1990, 1994, 1995; Csordas, 1994; Prawat, 2000).

*Biofunctional Embodiment Theory:* A theory focused on the functioning of the nervous and bodily systems as the immediate source of human understanding and the ground for cognition and other psychological phenomena (Iran-Nejad, 1980, 1987, Iran-Nejad and Stewart, 2010).

*Biofunctionally Embodied (BE) Teaching:* This is conceptually defined as a three-phase model of classroom teaching inclusive of a teaching phase, a biofunctionally embodied (BE) rehearsal phase, and a testing phase. In the biofunctional embodiment experiment, the first and last phase remains identical for all conditions and the experimental manipulation is conducted in the second phase (Iran-Nejad, 2003). In this study, the rehearsal phase determines the level of biofunctional embodiment: listening to an audio presentation with silent student rehearsal constitutes the lowest level of biofunctional embodiment, watching a traditional film version presentation with verbal student rehearsal constitutes the next level of biofunctional involvement, and finally,
watching a modern film version presentation with enacted student rehearsal will constitute the highest level of biofunctional embodiment.

“Meaning to Me” Model for Student Evaluation: A pedagogical model for teachers’ critical reflection of best practices for student evaluation, placing importance on the outcomes of biofunctionally embodied (BE) teaching, including metaphorical understanding, interest, and critical reflection.

Latin Square Designs: An experimental design implemented in this study to control the impact of extraneous variables on an experimental variable. The experiment variable is biofunctional embodiment level (HBE, MBE, and LBE) and the extraneous variables include lesson and scene (Iran-Nejad, 2009, email correspondence, Wednesday, April 22, 2009 10:31 a.m.).

Interest Activity: The first measure students will complete following the intervention in order to determine the students’ interest in a lesson.

Modified Recall of Understanding (MRU) multiple choice measure: The second measure students will complete for each condition; reflects the students’ literal and metaphorical understanding of a scene immediately after the presentation of the condition.

“Remembering Your Own Understanding” (RYOU) measure: The third measure students will complete; an open-ended written response question that reflects students’ understanding of the presented scene.

Significance

Teaching with a biofunctionally embodied approach addresses the physiological systems at work within the individual, as well as the communal processes of understanding. It also provides a cognitive framework to the dynamics of language use and discourse in the classroom (Prawat,
These processes of creating meaning for a student are intuitive, holistic, and always related to the real world around the student.

The public education system needs a more developed use of practical tools that promote equity and excellence. High stakes testing demands the same level of performance from all students, while ignoring the broad range of experiences that students bring to their learning environment (Wells & Holmes, 2005). Embodied teaching addresses current issues of diversity and equity by providing a foundation for authentic learning that addresses the weaknesses of more traditional IP theories of learning (Prawat, 2000).

The importance of the learner’s unique experience in the context of schooling was explored by John Dewey over a century ago. Dewey’s (2001) discussed the “living” environment in which a child will learn, and how transitional and embryonic the experience in the classroom is.” (p. 109). Dewey argues for a mergence of the child and his/her past experiences with the curriculum itself. Too often, educators recognize this link on a theoretical level, yet leave inconsistencies in their pedagogical application of whole theme embodied learning.

While the curriculum continues to exist as the force that propels our students into their most successful and beneficial future, the child cannot create a universe from nothing (p. 20-1). Real-world experiences play a vital role in shaping a student’s understanding. Dewey recognized that the actual learning experience is rich with opportunity for intellectual freedom and development (p. 37-40). If the experience can be better defined in terms of the individual and social factors that foster this freedom, then the educator can begin to have a solid philosophy and pedagogy based on a true learning experience. Under what conditions might a student best incorporate past experiences and their unique qualities, all the while, embracing the richness of the moment and
‘living present?’ (p. 37-40). This is the key question that biofunctionally embodied teaching seeks to understand.
CHAPTER II
LITERATURE REVIEW

Teaching Phase

Human learning has traditionally been viewed within the information-processing theory. This theory has promoted the use of symbolic declarative and procedural knowledge that learners are expected to consciously rehearse (Atkinson & Shiffrin, 1968; Niesser, 1967; Rumelhart, 1975; Kintsch, 1988). The explanation of mental processes consists of sophisticated rules and mental machinery: a long-term memory structure houses information, complete with “nodes” that are interconnected to represent new and previously existing knowledge.

More recent research has resulted in a student-centered constructivist view in place of a teaching-centered view of knowledge acquisition. From an information-processing view, the constructivist perspective is traceable to theories of Rumelhart (1975) and Kintsch (1988) who have proposed more interactive models for reading and discourse that suggest manipulation of top-down processes can influence learning at any given level (letter, lexical, syntactic, or semantic). These learner-centered views are not quite as strict as the more traditional models that place importance solely on bottom-up processes.

While still situated in a symbolic framework, the learner-centered educational movement studies bring to light new ways to deal with the cognitive-load complexities stressed by the information processing theory. Mayer’s studies (Mayer, 1989, 2004; Mayer & Jackson, 2005)
focus on cognitive-load assumption to show the influence of multimedia, personalization of material, and conceptual aids on student learning. Mayer and Jackson (2005) suggested that presentation style does impact student cognitive load. They used two presentational styles of paper-format and computer-based narrative animation format. Based on Mayer’s insights into cognitive load theory, students would have to work harder to process all the different aspects of the narration presentation and thus perform more poorly on tests than for the paper-format presentation style. They might favor the paper format because they could work at their own pace. Findings were consistent with this theory: the paper-format group outperformed the narration-format group. The researchers proposed the possibility of creating a narration format in which the students could work at their own pace, and more attention could be given to the cognitive processes during cognitive load.

Another study by Mayer (1989) predicted that conceptual models would help students recall more conceptual information, they would perform more poorly on verbatim tests since they retained the information better in non-verbatim format. Students would generate more creative solutions to transfer problems than the control group who did not receive the conceptual models. Mayer’s predictions were supported by his findings. While models clearly aid student understanding, Mayer points out that the questions of “what, where, when, who, and why” of using conceptual models in instruction were still unanswered at the time of the study (p. 59). Still, the conceptual models helped students select, organize, and integrate the information that was presented to them in ways that the traditional instruction could not (Mayer 1984, as cited in Mayer, 1989, p. 59).
Finally, Mayer et al. (2004) predicted that a personalized presentation of scientific processes—in this case, the human respiratory system—would enhance student interest, thereby creating a deeper understanding of the material. Students demonstrated this deeper understanding through a series of transfer tests that required them to integrate and organize the material with prior knowledge. Student performance on transfer tests was significantly higher for the personalized presentation than for the non-personalized presentation. Mayer et al. suggest that the relevance of the personalized presentation to the students’ prior knowledge as a likely reason for more effective transfer of the information.

The results of these studies show that the use of multimedia, conceptual aids, and personalization often led to more success in integrating material, applying knowledge to problem-solving tasks, and using creativity to generate ideas and solutions. The researchers often mention the need for further research into the complexities of the cognitive processes during moments of understanding and cognitive load. Thus, internal and external variables generate an infinite number of possible outcomes for learning, and education theory and practice must continue to speak to these possibilities.

**Embodiment theory.**

Breaking away from symbolic teacher-centered or learner-centered educational movement approaches (Iran-Nejad, 1994, 1995), biofunctional embodiment theory lays further groundwork for educational research on the nature of processes involved during learning. For instance, Iran-Nejad (1995) proposed a biofunctionally-inspired development-centered educational movement based on Piaget’s theory. Earlier symbolic representational theories do not explore the notion that learning occurs within the physical body as the learner experiences the world (Varela,
Thompson, and Rosch, 1992). Iran-Nejad (1995) argued that Piaget’s biologically-inspired theory provides a more natural educational theory than the computer-inspired learner-centered educational movement.

Biofunctional embodiment grounds understanding in a more intuitive, physiological sense of knowing, much in the way that the body knows how to heal a wound. The embodied learner knows *that* learning is taking place, but doesn’t know necessarily *how* it takes place (Iran-Nejad, 1990). Iran-Nejad (1990, 1994, 1995) demonstrated that the physical body of a developing learner has more natural ways of lightening the load of learning than those suggested by the computer-inspired educational movement. To unwary minds, these mysterious, biological processes at work within the human body are a more integrated, foundational explanation for what takes place during the stable but expansive moments of learning (Iran-Nejad, 1990; Horn & Wilburn, 2002; Prawat, 2000). Biofunctional embodiment is the solution to the broader epistemological problems with information processing theory (Prawat, 2000, p. 91). Prawat suggests that nonbiofunctional theories of embodiment provide a broad theory of knowledge, which is important for authentic teaching and learning, but cannot solve the problem of the cognitive-load as well as the biofunctional embodiment approach (Zengaro & Iran-Nejad, 2007).

Prawat (2000) argues that a theory for understanding “is an integral part of the understanding we carry out into the world in the form of ideas.” (p. 94). Namely, for educators, it is a crucial aspect of teaching for understanding. A closer look into embodiment theory begins with the body itself. The body has in recent decades become a vast source of understanding and indeterminacy at the same time (Mearleau-Ponty, 1962, Csordas, 1993, as cited in Csordas, 1994). The Poststructuralist era brought about a Western cultural rejection of the subjective and
autonomous capabilities of the body, and instead allowed for the body to be used for purely social agendas (*power and resistance*) (Turner, 1994, as cited in Csordas, 1994). Csordas (1994) writes in his introduction to his text, *Embodiment and Experience*, that more recent cultural and social theories are beginning to examine the crucial role the body itself plays in one’s material understanding of the world in which he or she experiences and creates. One cannot take biofunctional embodiment for granted because it is “the existential ground of culture and self” (p. 6).

Yet, past anthropological data fails to recognize the idea that culture is primarily grounded in the human body; history has too often represented the body only as object or biological entity. Drawing from the work of several scholars, Csordas points out that Descartes’ use of mind/body dualism is to blame for the isolation of the body from the subjective experience. Because of this doctrine, everyday life experiences are considered to be examined by the mind, a central processing mechanism, and lead to the disappearance of the body from awareness (Leder, 1990; Leenhardt, 1979 [1947]; Neisser, 1967; Shweder, 1990, as cited in Csordas, 1994). This disappearance feeds the distinction between mind and body, and further isolates the body as a pre-cultural entity which passively receives the reflections and awareness of the mind.

With this isolation of the body under consideration, methodological implications of the body’s role in processes of understanding are numerous and still unexplored:

“The possibility [. . .] that the body might be understood as a seat of subjectivity is one source of challenge to theories of culture in which mind/subject/culture are deployed in parallel with and in contrast to body/object/biology” (Csordas, 1994, p. 9).
Csordas uses the term “being-in-the-world” to capture the conditional and existential qualities of the lived experience (p. 10). Because of its focus on subjectivity, embodiment collapses the Cartesian dualism of mind/body, subject/object, and grounds the experience in the body’s systems (p.9).

**Biofunctionalism.**

Biofunctional embodiment examines “how the system functions to create knowledge” (Iran-Nejad, Hidi, & Whittrock, 1992, p. 410). Any relevance in education can be found within the context of the nervous system and how it functions, just as relevance in medicine is inherently tied to through the immune and related systems of the body and their function (Iran-Nejad, 1990).

It is extremely misleading to separate the metaphysical mind from the body. Consider the analogy in flight between a bird and a modern aircraft. They both fly; but the analogy stops there. The biofunctional system and the aircraft system traveled their very different evolutionary paths. Progress in aviation was made not because researchers studied the biofunctional systems that allow a bird to fly. Rather, starting with the initial inspiration, aviation inventors and scientists carved their own path. Neither did they try to disassociate the flight from the bird for decontextualized analysis. Studying the abstract product (flight) teaches no more about how birds or aircrafts fly than studying the pictures the camera takes (Iran-Nejad, 1980). As biological systems of a bird become important for flight, so do the biological systems of a person become important in understanding knowledge. In education, knowledge is still treated as separate from the human nervous system. Only when researchers and educators focus on the
bodily systems at work during the learning process will we gain useful intelligence about the abstract product, knowledge itself (Iran-Nejad, Hidi, & Whittrock, 1992, p. 409).

**Dynamic self-regulation.**

The biofunctional view assumes that understanding is the special function of the physical nervous system just as respiration is the special function of the respiration system, as described in Iran-Nejad and Gregg’s (2001) *brain-mind cycle of reflection*. In this fashion, the theory grounds understanding in intuitive self-awareness that emerges from the body’s biofunctional activity. In general, embodiment theory argues that self-regulatory systems of one’s inner self use nonrepresentational processes, and “enact a world as a domain of distinctions that is inseparable from the structure embodied by the cognitive system” (Varela, Thompson, and Rosch, 1993, p. 140). Biofunctional theory is more explicit about self-regulation as being dynamic, biofunctional, and intuitive in nature (Iran-Nejad & Gregg, 2001). The *brain-mind cycle of reflection* incorporates these processes into an 8-shaped double-looped figure. The bottom loop of this brain-mind cycle is the non-symbolic bodily experience that runs dynamically without knowing on the part of the biological person. The dynamic self-regulation loop represents the work of the nervous system directly. The processes involved are less easily, if at all, identified within the boundaries of communication or language, and instead, are more in tune with the physiological mechanisms of learning. They cannot be easily categorized and labeled. In fact, any attempt to categorize these processes requires the mediation of the upper loop of this cycle, representing the role of the more active, mental processes. The upper loop, or the mind, is reflecting back on the outcome of the lower loop and labeling it as a concept.
Constructive and creative modes of learning.

Dynamic and active self-regulatory processes can play a role in an effective learning environment when teachers reflect on their own instructional practices and learn to shift students into the appropriate processes at the appropriate time (Gregg & Sekeres, 2008). Dynamic self-regulation is most in sync with what Iran-Nejad (1992) calls the constructive mode of learning. Constructive mode is in tune with the brain’s ability to integrate multiple sources at once and solve problems.

Prolific, insightful student responses often indicate that a student is functioning in constructive mode. The processes of dynamic self-regulation are engaged during constructive modes of learning, and facilitate the learner to make connections to his own world experiences. Constructive mode is a process of critical reflection within the individual, rather than an over-elaboration of the symbolic material to be acquired, as traditional approaches to education would have the student perform (Iran-Nejad, 2000).

Similarly, creative modes of functioning are also a critical aspect of the growth in learning. Dynamic processes of intuitive self-awareness allow the student to explore, create, change, and embrace challenge. Often, students have an attitude of avoidance toward learning habitually through memorization or elaborative rehearsal as practiced in schools, but functioning in creative mode motivates them to act and solve problems usually without disruptions from the teacher (pp. 7-8). This mode of learning results from the ease that comes from biofunctional, energy-mobilizing, creative processes and the student’s ability to be in touch with the novel outcomes of his or her own experiences and intuitions.
Constructive and creative modes of functioning allow biofunctional theory’s brain-mind cycle of reflection to frame a revolutionary perspective for authentic learning—particularly, that teacher facilitates an individual’s own unique learning experience within his/her own “natural rhythm of the individual learner’s physical, nervous, and bodily systems” (p. 12). Shifting students into constructive and creative modes of learning is the goal of biofunctionally embodied teaching.

Wholetheme Learning.

A final key aspect of biofunctionally embodied teaching proposes that dynamic processes of self-regulation and constructive/creative modes of learning all rest on the notion that multiple internal and external sources in the world are being presented to the student in the most natural, holistic way possible. (Iran-Nejad, 2000; Iran-Nejad, Hidi, & Wittrock, 1992; Zengaro & Iran-Nejad, 2007). Iran-Nejad et al. (1990) argue that a simplification through integration is the most effective approach to solving the diverse influences that factor into understanding. This theory argues that, the more a learning experience is deeply or elaboratively processed, the more situated in context, and the more rooted in cultural, background, metacognitive, and personal knowledge an event is, the more readily it is understood, learned, and remembered.

Creating a learning experience rich in the cultural and personal contexts, an integrated approach to instruction addresses the symbol grounding problem (Harnad, 1990). Symbol grounding problem (Harnad, 1990) criticizes the context-free perspective of traditional representational theories:

The symbols and the symbol manipulation, being all based on shape rather than meaning, are systematically interpretable as having meaning,—that, after all, is what it is
to be a symbol system [. . .]. But the interpretation will not be intrinsic to the symbol system itself: it will be parasitic on the fact that the symbols have meaning for us, in exactly the same way that the meanings of the symbols in a book are not intrinsic, but derived from the meanings in our heads. Hence, if the meanings of symbols in a symbol system are extrinsic, rather than intrinsic like the meanings in our heads, then they are not a viable model for the meanings in our heads: Cognition cannot be just symbol manipulation (Harnad, 1990).

Harnad gives a concise example of this difficult problem: a scenario in which he proposes learning the Chinese language solely from the Chinese dictionary! These symbols would be meaningless if they were not grounded in either real-world experiences of some kind, or the learned meanings of a first language (Harnad, 1990). All perspectives lacking embodiment have this problem. There must be an external, environmental interaction taking place (Harnad, 1990, as cited in Pfeifer & Scheier, 1999, p. 71). Symbols must relate to the real world and involve the interpreter, or the embodied agent, who is using his enacted experiences with the real world to create meaning from the symbols (p. 70).

A wholetheme instructional approach rich with multiple external and internal sources addresses schooling differently from information-processing theories that propose a piecemeal approach to understanding, usually requiring the mind to tackle problems in a sequential manner (Heflich & Iran-Nejad, 1995). A person simply does not experience the world in this way. He can see, think, and hear all at the same time, much in the way that a student can investigate, discover, and examine, all while immersed in a thematic study during class (p. 12). Wholetheme
integration of the multiple sources that lead to learning is better suited to dynamic self-regulation within the body, unconscious and intuitive in nature.

**Recent applications of biofunctional embodiment to authentic teaching.**

This discussion now brings the reader full circle to the most relevant studies on embodied teaching mentioned in Chapter 1. These recent studies apply the biofunctional theories of the brain-mind cycle of reflection and wholetheme integration to everyday classroom practices, as well as teachers’ own conceptions of learning (Long, 2001). The most integrative levels of wholetheme instruction have proven to have an impact on student academic achievement and one’s ability to make ethical decisions (Xu, 2005). Probing questions, strategies that shift students into constructive modes of learning, and use of real-world context are just a few instructional cues examined in these studies (Gregg and Sekeres, 2007; Zengaro & Iran-Nejad, 2008). Results give new meaning to the predictive role that biofunctional embodiment can play in student understanding.

**Biofunctionally Embodied (BE) Rehearsal Phase**

**Cinema as a cultural tool.**

To further the trend of giving pedagogical relevance to biofunctional theory, the rehearsal phase of this study will incorporate a teacher’s use of presentational style through audiovisual format to achieve the goals of biofunctionally embodied teaching. The more integrated and sensorial the modalities presented to the student, the more successful the learning experience will be (Iran-Nejad et al., 1990). Embodying instruction recognizes the importance of cultural tools (Salomon & Perkins, 1998); they enhance the embodied learning experience as social mediators,
creating a ‘language of thinking” (p. 5). This collectivity supports the simplification through integration approach (Iran-Nejad et al., 1990).

Many secondary teachers often use the cultural tool of audiovisual media to enhance their lessons. Any audiovisual component to a lesson would arguably be a form of more embodied teaching, since the expanded modalities of audio- and audio-visual allow the “knowledge of the body” to speak for itself (Marks, 2000, p. 5).

Cinema, in particular, is often used to teach Shakespeare. The use of cinema not only saturates the verbal and the visual (arguably the most distance senses), but evokes the other, more embodied senses of touch, taste, and smell, as well. Cinema creates the ‘sensuous geography’ of an experience (Marks, 2000, p. 2). For Shakespeare, a film-version can bring artistry, gesture, and an appeal to the senses that other versions may not provide. This intersensory link that cinema achieves makes it a more embodied cultural tool than perhaps audio or stage-versions of a Shakespearian text, or other more traditional means of instruction. Kenneth Branagh’s film-version of As You Like It is one example of the artistry that film brings to a Shakespearian play (see In-Depth Look at Film-Version Artistry of Scene from As You Like It, Appendix D).

From the broader standpoint of drawing in the subjective, cinema can often bring light to the “conflict between different ways of knowing” (Marks, 2000, p. 239).

For people whose histories are represented in few other ways, it is these valuable and deeply guarded memories of tastes, smells, and caresses that must be coaxed into audiovisual form (p. 243).
The intercultural aspects of cinema can provide the groundwork for respect of cultural difference that is so crucial to intercultural learning based on personal experience. For minority students, film can be a useful tool to capture their history and memory.

Overall, cinema is an effective cultural tool for embodied learning because of its appeal to all the senses and its relevance to cultural differences. Cinema makes a compelling presentation style for embodied teaching. The manipulations of this research serve to give foundational support to this teaching practice as well as to other embodied teaching practices already in everyday use. Audiovisual and cinematic formats of presentation style will be manipulated for the biofunctionally embodied rehearsal phase in this study (see Figure 5).

**Enacted rehearsal.**

To get a feel for the continuum of biofunctional embodiment, consider the way the term *rehearsal* is used in information processing theory and compare it with the concept of rehearsal as used in theater. This consideration serves as a good transition to the discussion of the student rehearsal phase of this study. Information processing theories have often examined student rehearsal in the form of rote rehearsal, teacher-led instruction, reciprocal teaching, other similar pedagogical approaches for guided learning in which information is passed from teacher to student (Meunier, Meister, Meunier, Ritz, 1974; Rosenshine, Meister, and Chapman, 1996; Reddy, 1979; Palinscar & Brown, 1984). Educational research has shown these traditional approaches to foster comprehension processes, but in a very centralized way with active mental processes and deliberate procedures for understanding. Also, these approaches can best be viewed in a model that describes knowledge as a fixed object being passed from teacher to student, such as in Reddy’s conduit metaphor for learning.
Early research on rote rehearsal indicates gains in free recall of material with increases in rehearsal times and awareness of task (Stanners & Meunier, 1969; Meunier, Meister, Meunier, Ritz, 1974). Rehearsal times were linked to better performance, but most notable to these earlier researchers were the findings on student awareness: when students were aware of their task to recall the information they were rehearsing, they performed better, suggesting that other cognitive processes were at work. These studies reflect the earliest empirical educational research showing the student rehearsal improves student performance.

Further research on reciprocal teaching, one-to-one tutoring, and other guided learning strategies present forms of student rehearsal that broaden the view of knowledge passed from teacher to student (Palincsar & Brown, 1984; Graesser et al, 1995). For example, Palinscar and Brown (1984) researched reciprocal teaching through the form of dialogue between teacher and student. An adult model guided the student in more sophisticated ways to interact with a text. The word “coach” was even mentioned to describe the teacher’s role at times (p. 169). The study was intended to mimic a natural setting, yet a natural setting is described as guided learning that occurs between experts and novices both at home and at school. Studies like this one are successful in showing the methods that often lead to higher comprehension and recall.\(^1\)

An important middle step to student rehearsal is the use of cognitive strategies, such as generating questions and scaffolding, on the part of the teacher. These strategies act as heuristics, designed to support instruction in way that helps teachers develop a lesson to achieve higher levels of student understanding, like critical-thinking skills. These strategies are less specific in their impact on student performance, but believed to be indirectly beneficial to student

\(^1\)Information processing theories often explain reciprocal teaching in terms of knowing-how procedural knowledge. From a biofunctional embodiment standpoint, the student’s taking the role and perspective of the teacher is a form of embodying education; thus, the real effect of reciprocal teaching may have come from this unintended fact than procedural knowledge learning.
comprehension (Rosenshine and Meister, 1992; Rosenshine, Meister, and Chapman, 1996).
Scaffolding and generating questions are two ways students learn to critically think about
learning material in effective ways. Once the student strengthens his or her abilities to practice
the strategies, the scaffolds and other forms of assistance from the teacher are removed. Still, the
influence of linear views of knowledge passed directly from teacher to student can be seen in
these strategies.

As embodied theory takes hold and research begins to discuss the philosophy of the body’s
role in education, research turns to the subjective experience, modality-specific knowledge, and
the importance of action in the classroom. The physiological aspects of memory and recall
become relevant in studies on enactment that indicate that enacted practice leads to better
enacted performance the second time around (Zimmer et al, 2001). Koriat & Pearlman-Avnion
(2003) found that enacted practice led to more modality-specific results. For verbal practice,
results indicated better performance in conceptualization tasks; for enacted practices, results
were highest for enacted performance. These authors describe enacted representations as
mediators between input and output that can be activated by different conditions.

Conceptual knowledge is brought full circle to be considered modality-specific in Barsalou et
al. (2003). Empirical findings on brain imaging and behavioral research revealed that conceptual
knowledge activates a re-enactment of modality-specific states themselves, instead of an amodal
representation that simply redescribes these states. This research is an important step to the
embodied approach because it supports the role that action, emotion, and modality-specific states
play in conceptual knowledge. The embodied view of student rehearsal still has limited
empirical findings (Franks & Jewitt, 2001) and seeks to further examine the effects of enactment on deep understanding exhibited through *reflective* praxis, not just recall.

Some studies apply embodiment theory to student rehearsal in the classroom, and the reflexive nature of student performance is a key variable of interest. In a study on embodiment and artifacts in one Grade 9 mathematics class, Radford et al. (2005) discuss the relationship between the body as a center for subjective meaning and the historical cultural system of mathematical meanings. They argue that thinking is a social and cultural process, and the body plays an important cognitive role in shaping one’s understanding.

In the lesson, students used a graphic calculator and a probe (Calculator Based Ranger, or CBR) to interpret graphs in a technological environment. Students performed a walk, holding the CBR and pointing it toward the door, then stopped and walked backwards from the door. The CBR measures distances between itself and the target, distance limitations, etc. The researchers documented the students’ own observations about the experience.

The authors proposed this mathematical problem as an introduction to mathematical studies of body motion. While not immediately or fully understood by the students themselves, the lesson was important because it gave students a cultural context to experience the objective facts of the lesson. Students were able to engage in a *reflexive* nature of thinking that was needed for these mathematical concepts:

What marks the distinctiveness of thinking is its reflexive nature, something to be understood not as the individuals’ passive receptions of the external reality but as a reflection, i.e. a dialectic process between individuals and their reality, a socio-cultural
process of active and creative efforts to align subjective meanings with cultural ones (p. 116).

Students entered into a social praxis of interpreting graphs and attempting to align their subjective meanings with the more cultural objective meanings (p. 116).

In an examination of the ‘movement approach’ in physical education instruction, Chen et al. (2002) argue that wholetheme perspective can improve instructional practices and be a more effective means of embodied learning. The student rehearsal in the physical education movement lessons incorporated the students’ prior real-world experiences and intuitive knowledge base. Children in elementary physical education classes were introduced to varieties of movement—games, dance and gymnastics. Movement itself was the wholetheme, facilitating the learning of sub-themes of particular fields of athletics or training. Students learned movement from four different aspects: what the body is doing, where the body is moving, how the body is performing, and the relationship which occurs among body parts, individuals, objects, tools, and equipment as the body moves (p. 407). For example, instead of trying to learn the specific steps to a lay-up in basketball, in hopes that the parts successfully make a whole, Chen argues that teachers should be using this type of simplification through integration approach (Iran-Nejad et al., 1990). The learner can more easily learn about movement in games, dance, and gymnastics when his/her background and intuitive knowledge come into play (p. 409). This effort in physical education to broaden instructional practices to wholetheme learning supports the notion that embodied teaching integrates a student’s intuitive and dynamic processes at work during bodily movement.
Social interaction is another critical aspect of rehearsal as it is understood in embodiment theory. Barsalou et al. (2003) extends their research on re-enactment of modality-specific states to include what they call situated conceptualization. Embodied states arise during social interaction that foster understanding and all learning is unique to the situation itself. In particular, situated conceptualization describes learning as the reconceptualization of prior internal knowledge. Their notion of social embodiment theory proposes that situated conceptualizations occur for the individual that allow him/her to reenact the modal states that processed the situation the first time. Embodied states are modality specific and entrench the knowledge for later reenactment of the situation. Other similar theories of social interaction, such as Lave and Wenger’s (1999) situated learning theory, draw heavily from embodiment theory and emphasize the role that social interaction plays in embodied learning.

When it comes to the practice and performance of Shakespearian plays, there is a cognition that is social and should not be neglected as such (see Tribble, 2005). Tribble argues that, when it comes to play rehearsal, “cognition” should be viewed as a group process rather than an individual one. Tribble focuses on the systemic nature of the production of a play, and how smoothly the interacting aspects are expected to work together (p. 155). Tribble argues that group aspects of rehearsal are often neglected for individual practice or one-on-one guidance. Yet, the many facets of the group dynamic are expected to flow smoothly and are often taken for granted. Given the importance of action and social interaction in the embodied view of learning, it might follow that Shakespeare would be best learned as it is best played-- situated in a group dynamic, instead of simply read (or even heard) in a traditional sense.
Another integral body of research on enacted student rehearsal is the method of Total Physical Response in foreign language learning (Asher 1966). Asher conducted numerous experiments on language learners, both adults and children. He founds that his Total Physical Response (TPR) approach facilitated the retention of the language on later retention tests. The TPR method had students act out the language prompt, e.g. the teacher says in the foreign language, “run to the desk, pick up the pencil, and walk back” and the student would act out such tasks. Students apply enacted gestures to intuit meaning. Over the past few decades, TPR method has been successfully applied in many foreign language classrooms and incorporated into secondary foreign language textbooks. Both teacher and students enact a series of suggested gestures, as well as some that are improvised. In the TPR method, enacted scripts and scenarios are conducted to demonstrate meaning in another language, representing an approach that heavily influenced the enacted scripts of this study.

It is therefore apparent that action within the classroom environment can have a tremendous influence on students’ ability to realize meaning and interact with one another (Franks & Jewitt, 2001). The role that bodily communication plays in learning has been a neglected source of data in educational research. This biofunctionally embodied (BE) rehearsal phase is based, not on rote rehearsal and teacher-led practice, but on enactment and social interaction.

**Testing Phase**

**A “Meaning to Me” model for evaluation.**

Biofunctionally embodied teaching brings with it a unique need for new perspectives in student evaluation. Clearly, learning grounded in the subjective experience should beg the authentic teacher to reconsider strict approaches recently associated with evaluative practices.
The *Meaning to Me Model* captured in Figure 2 dynamically calls for teachers to reflect on their evaluative approaches. One aspect of this model deals with an awareness of students’ conceptual understanding of the material, often with regard to its metaphoricity. Another aspect deals with student affect and interest, since these are directly linked to student learning in the biofunctional approach (see Iran-Nejad & Cecil, 1992). Finally, a focus on students’ open-ended reflection of the learning experience is critical. These aspects of the *Meaning to Me Model* give importance to the unique and effective qualities of a biofunctional embodied teaching.
Why Shakespeare?

Before aspects of student understanding are discussed, an explanation on the use of Shakespeare plays in this study is necessary. The teaching of Shakespeare’s plays makes a useful example for the potential effectiveness of embodiment (see Thompson & Thompson, 1983; Lakoff & Johnson, 1999). These plays have survived and thrived, despite their complex nature.
and lofty use of language. Most secondary educators who teach Shakespeare are no doubt perplexed with how students might mutually understand and enjoy the play. These literary works are often discussed solely on a level of character development and narrative. A detailed analysis of Shakespeare’s use of language is sometimes overlooked for these broader notions, and this avoidance is understandable considering the complexity of the poetic linguistics. Yet, there is much to be learned from this underside of the stories. What are the factors that lead to the enjoyment of Shakespeare? Surely, one can imagine that they are grounded in some of the elements of embodiment, as the learner likely draws insights from everyday experience (Thompson & Thompson, 1983).

There must be a simple, intuitive understanding of Shakespearian rhetoric. While challenging, this understanding should be explored in this study because of its links to metaphorical understanding, and even a more common, everyday use of metaphor for creating meaning. The authors discuss this paradox of understanding:

These texts, which work in the theatre and on the cinema or television screen for wide audiences, are so intricate in detail that it is not at all easy for final-year specialist university students to produce an accurate paraphrase of a short passage in an examination (p. 2).

Recognizably more difficult to put into words than to experience first-hand in the audience, the understanding of the plays’ complexities is grounded in more experiential and intuitive processes. An in-depth analysis of metaphor suggests that perhaps high levels of rhetorical elaboration are more normal than one might think (p. 8-9). Drawing from a child-like game of “what’s wrong with this picture?”, one develops an early eye for what is what is literally true and
what is a semantic anomaly. This understanding enriches the reading experience at an early age (p. 8). These early processes of understanding suggest that literal and metaphorical notions have more to do with independent and contextual experiences and should be explored as such. Shakespeare provides material that makes this evaluation of student understanding possible on literal and metaphorical levels.

**The importance of metaphorical understanding.**

To deepen the notion of conceptual meaning further for the purposes of student evaluation, metaphorical understanding is representative of embodied knowledge on several levels—the concept, the everyday (conceptual) metaphor, and the poetic metaphor. First, the reader must recognize that concepts are participatory—a link between one’s mind and the world around him. This is a view that starkly contrasts with the cognitivist view that concepts are abstract representations for identifying objects (leaving no room for context or novelty of a situation) (Rosch, 1999, p. 72). Conceptual meaning in this participatory light accounts for the highly subjective nature of the learning context, but more importantly, provide a mode of categorization of knowledge for evaluative purposes.

Conceptual metaphors are continuously creating new depths of meaning for the individual (Lakoff & Johnson, 1999; Lakoff and Turner, 1989). The conceptual metaphor is a mechanism through which a person might make the mental leap from the sensorimotor input (the percept) to the concept. “The essence of metaphor is understanding and experiencing one kind of thing in terms of another” (Lakoff & Johnson, 1999, p. 5). In most cases, an embodiment of a metaphor is a physical logic of some kind. The metaphor stems from early sensorimotor experiences with the world, and then is conflated with the subjective understanding. Consider a basic and commonly
understood metaphor that LIFE IS A JOURNEY (Lakoff & Turner, 1989, p. 3-4). One ‘travels the road of life’ or chooses ‘the right path’, etc. First, one must be entirely familiar with the source domain of the JOURNEY:

All journeys involve travelers, paths traveled, places where we start, and place where we have been. Some journeys are purposeful and have destinations that we set out for, while others may involve wandering without any destination in mind (p. 61).

Then this source should be applied it to the target domain of LIFE, mapping a conception of LIFE from the structured knowledge of the JOURNEY:

To understand life as a journey is to have in mind, consciously or more likely unconsciously, a correspondence between a traveler and a person living the life, the road traveled and the “course” of a lifetime, a starting point and the time of birth, and so on (p. 61).

Another example of a conceptual metaphor would be when a student says, “That’s way over my head.” There is a conceptual metaphor at work here, since the meaning of the material is surely not floating over one’s head. We can guess that the student has learned to conceptualize the understanding of the material as similar to the physical grasping of an object (IDEAS ARE OBJECTS). One experience is sensorimotor (the grasping of an object), and the other is subjective (the understanding of material) (Lakoff & Johnson, 1999, p. 45).

As one grows and learns to blend concepts, there is a more complex use of conceptual metaphors at his or her disposal (p. 46). One conflates the sensorimotor experience with the subjective experience. The sensorimotor experience of one’s “embodied functioning in the
world” (physical logic at work) correlates in the body through neural connections. Neural connections are “projected” from the sensorimotor network to the subjective judgment network. The sensorimotor neural system is more capable of inferential connections that a neural system that is trying to characterize a subjective experience on its own. The authors consider these metaphors that a person ultimately lives by to be part of an embodied cognitive process, grounded in experience (Narayanan, 1997, as cited in Lakoff & Johnson, 1999, p. 49-55).

Poetic metaphor, in particular, is powerful because it elaborates and expands upon the basic conceptual metaphors of daily life. There are many of these basic conceptual metaphors from which poets and writers draw inspiration: LIGHT IS LIFE, DARKNESS IS DEATH, DEATH IS DEPARTURE, DEATH IS SLEEP, TIME IS A THIEF, PEOPLE ARE PLANTS, and so forth (Lakoff & Turner, 1989; Lakoff & Johnson, 1999). Poets like Dickinson, Frost, and of course, Shakespeare use an abundance of poetic metaphor in their works.

Thompson and Thompson (1983) directly apply some of Lakoff and Johnson’s conceptual metaphors to their analysis of the more immediate linguistic meanings in some of Shakespeare’s texts. They assert that the metaphoricity in everyday experiences is grounds for understanding of Shakespeare rhetoric and style:

…the everydayness of the underlying metaphors contributes to the text’s cohesions; a certain authorial style in the elaboration also contributes to the text’s cohesion; but these cohesions do not undermine the characters’ individualities because, in real life, our own individualities are not felt to be inconsistent with our sharing common conceptual schemes and common conceptual metaphors (p. 42).
The lines between everyday and literary metaphor begin to disappear as Shakespeare’s complexity is more firmly rooted in basic human experience than one might think at first glance (p. 10-11). Metaphoricity has many levels, as a concept is not always wholly metaphorical or non-metaphorical (Rosch, 1999). Yet, the metaphorical meaning conveys evidence of an embodied experience that might be examined by the teacher as a measure of successful embodied teaching. The depth of this understanding must be carefully examined by various evaluative approaches (see In-Depth Look at Student Understanding of As You Like It, Appendix E).

**Evaluating metaphorical understanding.**

By now it is clear that a deep understanding of metaphoricity is of tremendous importance to embodied learning. How might a teacher go about incorporating this unique priority into his/her evaluative practices? Gregg & Sekeres’ (2008) coding system for their study on third-grade poetry lessons is relevant to a more analytical approach in determining the role of biofunctional theory in learning. The researchers coded occurrences of students’ “shifts” to constructive or creative modes of learning (p. 41-5). These included utterances that revealed links to the student’s real-world understanding and personal connection. Students might have exchanged an intuition, offered a solution to a problem, responded quickly, engaged in an activity, recognized a problem, etc (p. 54). The researchers also recorded the teacher’s “shift strategies” that engaged the students’ dynamic, creative processes that optimized a positive disposition for learning from whole-theme. Teachers often used humor, group work, games, surprise or novelty, and other strategies to achieve their goal of shifting the children in optimal modes for learning (p. 54). Frequencies and percentages were reported in their data.
These coding procedures provide a framework for similar evaluative procedures that are useful in a couple of ways. First, by coding their distinctive shift strategies (intuition, problem-solving, etc.), they were able to distinctly link the teacher utterance to the student’s manifestation of constructive mode of learning. This data contributes to research-based practices in the classroom, providing useful examples of teacher habits that draw from biofunctional theory. Second, the research promotes the self-reflection of instructional practices on the part of the teacher. The awareness informs the teacher of how the use of wholetheme and opened-ended reflection might result in greater understanding.

By using similar coding systems, student performance could be analyzed more extensively on a subjective and individual basis: *On what level did the student perform? What instructional cues resulted in his success or lack thereof? What consistencies or changes are present in student performance across diverse groups?* Consideration not only of student performance, but of the quantity and quality of the questions would be useful to embodied teaching.

**Interest and affect: consequences of embodied learning.**

Student affect should also play a critical role in evaluating the success of embodied teaching. Biofunctional research supports the link between interest and learning (Iran-Nejad & Cecil, 1992; Iran-Nejad, Clore, and Vondruska, 1981). Affect is a crucial part of the individual and social collective experience, and some findings suggest that affect will determine the outcome of future similar experiences (Lyon & Barbalet, 1994; as cited in Csordas, 1994; Rholes, Riskind, & Lane, 1987).

More specifically, biofunctionalism posits that interest not only causes learning (as discussed earlier in the section on constructive modes of learning), but the intellectual processes that take place during learning cause interest as well (Iran-Nejad, Clore & Vondruska, 1981; Kintsch,
1980, as cited in Iran-Nejad & Cecil, 1992). The interest-producing processes involved in learning are *dynamic*, or transient and grounded in the nervous system (Iran-Nejad and Cecil define learning as the constructive, dynamic, and creative reconceptualization of internal knowledge) (p. 297). This argument takes a different direction than previous structural arguments that view interest as networks of emotion (Bowen & Cohen, 1982, as cited in Iran-Nejad, Clore, & Vondruska, 1981). Ultimately, interest is both a cause and a consequence of learning, according to the biofunctional view.

Studies on surprise-ending stories lend a biofunctional perspective to the association between learning and interest (Iran-Nejad, 1980, 1989, 1990; Blanchard & Iran-Nejad, 1987). This research addressed inconsistencies within the more structural cognitive theories, as well as the problems with the structural views of a single source of internal control (p. 311-13). Proposing that the learning has two internal sources of control, both dynamic and active, biofunctional research was able to show that the spontaneous components of learning are particularly attributed to the dynamic processes of self-regulation, thus bringing about effort-free, interest-creating experiences (p. 312).

To further extend the discussion of interest being both a cause and a consequence of learning, Rholes, Riskind, and Lane (1987) found that affect, usually studied as a result of learning, can alter the cognitive processes associated with an experience, and can have an impact on memory retrieval (p.91). The researchers hypothesized that these cognitions associated with affect have an impact on memory retrieval, even regardless of mood-state. They further hypothesized that positive memories would be retrieved more quickly than negative ones. They tested these theories through the use of self-evaluative statements (*i.e. I am able*), opposed to somatic statements (*i.e. I feel lively*). Subjects were asked to rate their moods and read lists of self-
evaluative and somatic statements. Then, they were timed on how quickly they recalled positive or negative life experiences. The latency of these experiences was also rated. Findings where consistent with the hypotheses, revealing that positive memories were recalled significantly more quickly when positive self-evaluative statements were read, and negative memories were recalled significantly more quickly when negative self-evaluative statements were read (p. 96). These cognitions that were rated to be consistent with recall latency were described by the research to be self-evaluative, not somatic, in nature. Further findings were consistent with the research that positive memories are generally recalled faster than negatives ones, but are not significantly associated with the somatic statements most of the time. Cognitions associated with a mood-state, indicated through self-evaluative statements, can have more of an impact on recall than the mood itself.

Based on these findings, a self-evaluative measure is an integral and predictive aspect of biofunctionally embodied teaching. Students can self-evaluate by rating their understanding and ability to perform on evaluations. For examples, students might rate their understanding (i.e., I have an excellent understanding of the lesson today because of the way it was presented to me). Measured through the use of self-evaluative statements, interest could have predictive qualities for student performance.

In a broader sense, student affect has a more socialized role to play in the success of the embodied learning experience. The social aspects of embodied teaching practices have previously been discussed at length. Likewise, affect and emotion are a link between the body and the social world (Lyon and Barbalet, 1994, as cited in Csordas, 1994, p. 48). “Emotion is precisely the experience of embodied sociality” (p. 48). Social agency is achieved when one can collectively and individually contribute and shape the world around him. Students feel their
reality and presence in the learning environment and emotion is key to their awareness of their ability to impact and bring about growth in learning. The social impact of human emotion is “unavoidable,” and embodiment brings about an awareness that affect, interest, and emotion are influential on the collective and individual social experience (p.62).

**Open-ended reflection.**

The final aspect of the evaluation of biofunctionally embodied teaching should concern open-ended reflection. This should take place on both the part of teacher (Heflich & Iran-Nejad (1995) and student (Gregg & Sekeres, 2008; Varela, Thompson, and Rosch, 1993). The foundational studies of this research (Gregg and Sekeres, 2008; Iran-Nejad and Zengaro, 2007) show that teaching grounded in biofunctional theory with a whole theme biofunctional approach result in better student reflection about the material.

Open-ended reflection on the students’ part is a form of the embodied experience itself, and can be performed with mindfulness and awareness (Varela, Thompson, and Rosch, 1991). Mindfulness, in the traditional Buddhist sense, is a ‘letting go’ of the habits of mindlessness, or the disembodied, unmindful reflection that takes place in one’s daily life. This notion is the heart of the practice of meditation, or what one might observe in the grace and precision of an athlete or musician (p. 28). Varela, Thompson, and Rosch (1991) propose that open-ended reflection is a natural and experiential approach to bringing together mind and body. Important questions that relate to reflection are, “What are the relations of body and mind in actual experience (the mindfulness aspect), and how do these relations develop, what forms can they take (the open-ended aspect)? “ (p. 29). Buddhist doctrines encourage the ‘letting go’ of the mind to allow for the natural activities of observation and discovery, making open-ended reflection relevant to creative and constructive modes of learning.
Gregg and Sekeres (2008) also took a qualitative look at how students improved their abilities to reflect on poetry from the beginning to the end of the year. By the end of the year, students had improved dramatically in their classroom discourse and their ability to shape the flow of the lesson itself (p. 49-50). By May, while participating in a similar poetry lesson to one given in October, students had developed in their desire to take charge and lead further discussion of the poem based on their intuitions. Without teacher prompting, the students demanded the meaning of words that aided their understanding, and the evolution of the lesson was rapid-fire, as opposed to the slower exploration in the earlier part of the year. Engaging the students’ dynamic processes of self-regulation freed them from focusing on the more active processes of coordinating information (p. 47). Instead, they can focus on functioning creatively.

Similarly, Zengaro and Iran-Nejad (2007) observed that student’s open-ended reflection--their intuitive insights, their connections to real-world experience, and their ability to recognize metaphor and symbolism—became a growth process throughout the college-level class. The qualitative data showed an overall improvement in grades. The research showed that class discourse in this style can be powerful and beneficial to students.

Literal and metaphorical understanding, affect, and open-ended reflection are all insightful aspects of student evaluation proposed in the *Meaning to Me* Model. More traditional means of evaluation should give way to integrated, subjective, and wholetheme approaches that allow for a true reflection of student understanding.
CHAPTER III
METHODS

The three phased teaching model of this study presents ninth grade English classes three Shakespeare scene lessons that vary in levels of embodiment from low (LBE), medium (MBE), to high (HBE). Students’ ability to think critically and metaphorically is examined. Student interest in each lesson is also analyzed. The lessons with the most embodying aspects, both in the way they are presented and rehearsed, are hypothesized to result in deeper metaphorical understanding and critical reflection, as well as greater student interest.

Participants

For this study, nine 9th grade English classes from northwest Alabama public high schools were selected for convenience, each class consisting of approximately twenty to thirty students. An incentive of a $40 gift card was offered to the four participating teachers. IRB approval was obtained for this study, and all participating students and parents completed assent/consent forms prior to commencing.

Design

A 3x3x3 Latin square design was used to determine the effects of embodiment level on student understanding and interest using MRU, RYOU, and interest scores (see Figure 3). Embodiment level was the experimental variable of interest. Nine 9th grade classes were randomly assigned to the nine cells of a 3x3 Latin square design, which was then replicated three
times to manipulate levels of embodiment as a within-subjects factor. The three biofunctional embodiment levels (low, medium, high) were assigned to the three replicated Latin squares (LBE, MBE, and HBE) in a counterbalanced order (123, 231, or 312). In addition, two control variables were used. Lesson was one control variable, accounting for the placement of the lesson (first, second, and third) within the assigned counterbalanced order (see Figure 3). Scene (MAAN, AMND, and AYLJ) was another independent variable, accounting for the differences in the content of the three Shakespeare scene selections. Both lesson and scene acted as between-subjects factors.

**Latin Square Design**

<table>
<thead>
<tr>
<th>First</th>
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</tr>
</thead>
<tbody>
<tr>
<td>LBE MAAN (Class 1)*</td>
<td>LBE AMND (Class 4)</td>
<td>LBE AYLJ (Class 7)</td>
</tr>
<tr>
<td>LBE AMND (Class 2)</td>
<td>LBE AYLJ (Class 5)</td>
<td>LBE MAAN (Class 8)</td>
</tr>
<tr>
<td>LBE AYLJ (Class 3)</td>
<td>LBE MAAN (Class 6)</td>
<td>LBE AMND (Class 9)</td>
</tr>
<tr>
<td>MBE MAAN (Class 7)</td>
<td>MBE AMND (Class 1)</td>
<td>MBE AYLJ (Class 4)</td>
</tr>
<tr>
<td>MBE AMND (Class 8)</td>
<td>MBE AYLJ (Class 2)</td>
<td>MBE MAAN (Class 5)</td>
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<tr>
<td>MBE AYLJ (Class 9)</td>
<td>MBE MAAN (Class 3)</td>
<td>MBE AMND (Class 6)</td>
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<tr>
<td>HBE MAAN (Class 4)</td>
<td>HBE AMND (Class 7)</td>
<td>HBE AYLJ (Class 1)</td>
</tr>
<tr>
<td>HBE AMND (Class 5)</td>
<td>HBE AYLJ (Class 8)</td>
<td>HBE MAAN (Class 2)</td>
</tr>
<tr>
<td>HBE AYLJ (Class 6)</td>
<td>HBE MAAN (Class 9)</td>
<td>HBE AMND (Class 3)</td>
</tr>
</tbody>
</table>

Key: HBE: high biofunctional embodiment, MAAN: Much Ado About Nothing, etc

*Nine classes were randomly assigned to 3x3 Latin square cells and the three levels of BE were assigned to low (L), medium (M), and high (H) BE in counterbalanced order.

*Figure 3.* Levels of biofunctional embodiment for the Latin square design (Iran-Nejad, 2009, email correspondence, Wednesday, April 22, 2009 10:31 a.m.).
Procedure

One embodiment condition was taught per day for three consecutive days, according to the assigned counterbalanced order. All teachers were briefed the same way for the first phase of the study and were given the material deemed by their LBE, MBE, and HBE conditions. Lastly, all conditions were given the same assessment packets. Lessons were conducted according to detailed instructions in the teacher scripts. Any irregularities were reported to the researcher.

Varying levels of embodiment across the different conditions affect the biofunctionally embodied rehearsal phase. The teaching phase and the testing phase are the same for all conditions. The teaching phase includes an introduction to the characters, plot, and setting of the Shakespeare selection, as well as a cloze activity for review. Teacher scripts are the same for this phase for all three conditions. In contrast, the rehearsal phase varies across conditions in the way scenes are presented (audio, traditional film, modern film) and rehearsed (silent, verbal, or enacted). Teacher scripts change for this phase, mostly for HBE which include an enacted script with suggested gestures for acting out lines. In the testing phase, students complete three dependent measures for this study: an interest activity, a multiple choice (MRU) measure, and a “Remembering Your Own Understanding” (RYOU) written response. Figure 4 portrays the three teaching models with varying levels of embodiment. Each teaching model of the study is discussed in greater detail in the following sections.
Figure 4. Graduated manipulation of the levels of biofunctionally-embodied (BE) teaching.
Teaching Phase, All Conditions

The first phase, the teaching phase, remains consistently the same for all three conditions. This phase begins with the teacher distributing the student booklet and reading the teacher-scripted lesson. He/she tells the students that they are going to be presented a scene from one of Shakespeare’s famous plays. The teacher will ask students to turn to DAY 1 material, which includes a Scene Info Sheet, a copy of the scene, the practice cloze activity (titled Review Activity), and the dependent measures. Next, the teacher reads the Scene Info Sheet, complete with character, setting, and plot info. A presentation of the scene follows. After the scene presentation, students begin a cloze activity as guided review. The cloze activity reviews a complex but brief scene excerpt referenced later by the MRU multiple-choice task. Students may look back in the scene text for the cloze activity, and the teacher reviews the correct answers after students are finished.

Biofunctionally Embodied Rehearsal Phase

LBE Condition.

For the LBE condition, the teacher uses the least embodied teaching model, with a rehearsal phase consisting of an audio presentation of the scene selection, and the students’ silent reading of the scene. This reading is done independently by the individual student. The LBE condition silent reading has very little sensory embodiment.

MBE Condition.

For the MBE condition, the teacher uses a more embodied teaching model, with a rehearsal phase consisting of a traditional film presentation of the scene selection, as well as the verbal group reading of the scene. In this presentation, actors deliver a more embodied presentation through their gestures, voice, and emotion. Students are instructed to participate in a verbal
rehearsal of the scene. They use their scene text to assume individual roles to read aloud in small group settings. Students are guided to use their own emotion, voice, and gesture in their reading, inspired by the version just presented to them.

**HBE Condition.**

For this condition, the students participate in the most embodying teaching model, which includes a modern film presentation and an enacted rehearsal of the scene. In the modern film version of the Shakespeare scene, professional actors enact the scene with emotion, gesture, and voice. Music and other interpretive qualities are added in this presentation, such as detailed ambiance, colorful wardrobes, and close-ups of facial features.

For their rehearsal, students are asked to participate in an enactment of the scene. This enactment is quite involved, as they are directed to get into groups that best assign roles by gender and number of students. Students are given props that include labels for individual roles, caps for male character roles, and scarves for female roles. Students are given suggested gestures to act out with each line of their script. The teacher reads each line of the play on the enacted script. Then, the student repeats the line in character and acts out suggested gestures. Students are encouraged to add their own gesture, voice, and emotion to their roles (*see Appendix C*). All of these components are carefully scripted for the teacher.

**Testing Phase, All Conditions**

For the third and final phase, the testing phase, the teacher instructs students to turn to the assessment tasks in their booklets. He/she reads through the instructions in the teacher script as students read along silently. Students are given a few minutes to complete each dependent measure, first the interest activity, then the multiple-choice MRU activity, and finally, the RYOU written-response. Student booklets are collected at the end of the lesson.
Materials.

The scene selections for the three conditions were ACT V, Scene II of Shakespeare’s *Much Ado About Nothing* (MAAN), ACT I, Scene II of Shakespeare’s *A Midsummer Night’s Dream* (AMND), and ACT V, Scene II from Shakespeare’s *As You Like It* (AYLI) (see Appendix A). The selected Shakespeare scenes were chosen for their obscurity, among other reasons, to ensure that students had not read or heard the materials before this study (see Figure 5). Audio downloads for LBE were taken from the Librivox website (www.librivox.org). Traditional film clips for MBE were taken from the BBC Television Series *The Complete Dramatic Works of Shakespeare*, created during the 1970s and 1980s. Modern film clips for HBE were taken from Kenneth Branagh’s films adaptations of the plays. All materials were used according to copyright laws for educational purposes.

Students were given copies of each Shakespeare scene text within a student booklet that housed their material for each day. A Scene Info Sheet, the scene script, the cloze Review Activity and the dependent measures for each day were sorted as DAY 1, DAY 2, and DAY 3.

Teachers received packets for “DAY 1,” “DAY 2,” and “DAY 3” which included all participating classes’ discs and scripts for that day. Teachers were given a reminder sheet on the front on their packets for each day, instructing them to distribute and collect student booklets, and to prepare the necessary disc for presentations that day.
Measures.

The first dependent measure was an interest activity that determines the student’s interest in the presentation through a Likert scale measurement. The second dependent measure was a modified recall of understanding (MRU) multiple-choice measure, used to determine depth of literal and metaphorical understanding. Finally, the third dependent measure was an open-ended “Remembering Your Own Understanding” (RYOU) written-response, measuring a student’s insight and understanding as presented in his/her own writing.

To elaborate further on the nature of the dependent measures, the interest activity allows for an analysis of whether students perceive the more embodied conditions to be a richer, more enjoyable learning experience. The Likert items reflected student interest and meta-cognitive awareness. MRU questions were written at several levels (literal knowledge-based, basic metaphorical, and extended metaphorical understanding). The goal was to capture the natural range of understanding at varying levels. Metaphorical understanding for this study draws from
the discussion of conceptual metaphor (giving meaning to everyday sensory input) as well as the relevance of poetic metaphor to Shakespeare’s work (Lakoff & Johnson, 1999; Thompson & Thompson, 1983). Ideally, the questions that represent a deeper metaphorical understanding would be answered correctly more often with the more embodied conditions (see Appendix E). Finally, the RYOU task demonstrates a student’s ability to reflect on characters and events of the scene. Length of development, internalization of emotion, real-world connections, and critical insights into the metaphorical meaning of the scene are all factors in the RYOU written response.

The interest activity, the multiple-choice MRU measure, and the RYOU written response reflect a broad range of evaluative measures applicable to the everyday classroom. They lend themselves to a wide range of qualitative and quantitative analyses. For this study, all questions for each of the three dependent measures were reviewed by a panel of experts in embodied cognition and learning, including dissertation committee members and experienced teachers with a broad range of training.

Data Collection

Student task data was collected and coded in a manner that did not identify data by class or condition, in order to prevent researcher and rater bias. Interest activity questions were assigned points ranging from one to five, rating students’ answers from least to most. The composite score for interest was totaled, allowing for students to score 20 possible points. For the MRU, scores were calculated to reflect the number of points the student earned out of twenty possible points. Each question’s responses were ranked from the strongest choice, receiving the greatest number of points, to the weakest choice, which received the least number of points. Points were given in this manner to reflect the range of student understanding from a literal to a metaphorical level. For example, in the MRU task for As You Like It, question #2 asks, Which choice best
describes Orlando's feelings about his brother's wedding the following day?  a) his heart is filled with happiness; b) his heart is filled with emotions; c) his heart is empty; d) his heart is filled with bitterness toward Rosalind. For this question, response B is the strongest choice, receiving four points. Response A is the next best choice, receiving three points. Response D is next and receives two points, while Response C is the most inaccurate choice, receiving one point only. For a more in-depth discussion of the nature of the MRU questions, see Appendix E. The RYOU written response was graded by two expert raters who were briefed in detail as to their understanding of the scenes and the grading rubric for the activity (see Appendix C). Each RYOU written response was given a point value based on the grading rubric, from zero to sixteen possible points. Scores from each rater were averaged together to determine each student’s final score. In a test for inter-rater reliability, Cronbach’s alpha was reported at .836.

All scores on the three dependent measures were entered along with all other corresponding variables for each student into SPSS Version 17.0 for data analysis purposes.

Data Analysis

Prior to examining the effects of embodiment level, the first set of 3x3 ANOVAs examined the effects of lesson and scene for each dependent variable, MRU, RYOU, and interest scores. A second set of repeated-measures ANOVAs were used to determine effects of embodiment level on scores for the three dependent variables. Tests for assumptions were met for all analyses, and post hoc procedures were conducted when appropriate. Significance level was set at $\alpha = .01$ for analyses pertaining to extraneous variables lesson and scene. Significance level was set at $\alpha = .05$ for analyses of embodiment level. Descriptive means for dependent variables scores were reported. SPSS 17.0 software was used to conduct the analysis procedures.
CHAPTER IV
RESULTS

Controlling for Lesson and Scene

The Latin square design of this study allows the examination of the effects of the extraneous variables on the dependent measures before the influence of embodiment, as the main independent variable, is investigated. A 3x3 ANOVA was conducted on each of the three Latin squares with lesson (first, second, and third) and scene (MAAN, AMND, and AYLI) as between-subjects factors and MRU, RYOU, or interest as a dependent variable. The results of these analyses will be discussed in the following section.

The first ANOVA examined the high biofunctional embodiment (HBE) Latin square using MRU scores. As reported in Table 1, lesson and scene showed an interaction, $F(4, 159) = 3.438; p < .05$, but no significant main effects were reported for lesson, $F(2, 159) = .898; p > .05$, or scene, $F(2, 159) = .735; p > .05$. A follow-up Scheffe test determined that only the mean for the first lesson of MAAN was significantly lower than the mean for the other two lessons for both lesson and scene, indicating that MAAN showed a systematic increase in scores as a function of lesson, $p < .05$ (see Figure 6).
Table 1

**ANOVA Summary Table for HBE Latin Square Analysis of Lesson and Scene Using MRU**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
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<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
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<td>Lesson*scene</td>
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<td>.409</td>
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<tr>
<td>Scene</td>
<td>9.059</td>
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<td>.735</td>
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</tr>
</tbody>
</table>

Figure 6. The interaction between lesson and scene for HBE Latin square using MRU scores.

The ANOVA for the medium biofunctional embodiment (MBE) Latin square showed no interaction for lesson and scene, $F (4, 159) = .496, p > .05$ Lesson approached but did not show significance, $F (2, 159) = 3.168; p > .01$. Scene did not produce a significant main effect, $F (2, 159) = .614, p > .05$. ANOVA results are reported in Table 2.
Table 2

ANOVA Summary Table for MBE Latin Square Analysis of Lesson and Scene Using MRU

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson*scene</td>
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<td>3.017</td>
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<td>.739</td>
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<td>Lesson</td>
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<td>19.283</td>
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<td>.045</td>
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<td>7.474</td>
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<td>3.737</td>
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<tr>
<td>Total</td>
<td>39066.000</td>
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</table>

Finally, an ANOVA reported in Table 3 for the low biofunctional embodiment (LBE) Latin square showed an interaction between lesson and scene that approached but did not produce significance, $F (4, 159) = 2.501, p > .01$. No main effects were found for lesson, $F (2, 159) = .437, p > .05$, or scene, $F (2, 159) = 1.497, p > .05$.

Table 3

ANOVA Summary Table for LBE Latin Square Analysis of Lesson and Scene Using MRU

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
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<td>Lesson*scene</td>
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<td>.647</td>
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<td>Scene</td>
<td>24.230</td>
<td>2</td>
<td>12.115</td>
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<td>Error</td>
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In summary, results showed no significant patterns generalizable across lesson and scene, indicating that the data could be collapsed for the extraneous independent variables of lesson and scene in further analyses to investigate biofunctional embodiment effects pertaining to MRU.
A separate set of 3x3 ANOVAs was used to examine independent variables lesson and scene for each Latin square using the RYOU dependent measure. The first ANOVA conducted on the HBE Latin square reported an interaction between lesson and scene, $F(4, 119) = 4.641, p < .05$. This interaction is mapped in Figure 7 revealing no generalizable effect for scene as a function of lesson. The main effect for lesson approached but did not show significance, $F(2, 119) = 3.849, p > .01$. No main effect was present for scene, $F(2, 119) = 2.425, p > .05$. The results of this ANOVA are found in Table 4.

Table 4

<table>
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<th>Sig</th>
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<td>Lesson</td>
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<td>Scene</td>
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<td>20.995</td>
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<td>.093</td>
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<tr>
<td>Error</td>
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<td>8.658</td>
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</table>

Figure 7. The interaction between lesson and scene for HBE Latin square using RYOU scores.
The second ANOVA for the MBE Latin square using RYOU scores showed no interaction, F(4, 109) = .848, p > .05. No main effect was reported for lesson, F(2, 109) = 2.935, p > .05, or scene, F(2, 109) = 2.388, p > .05. ANOVA results are reported in Table 5.

Table 5

ANOVA Summary Table for MBE Latin Square Analysis of Lesson and Scene Using RYOU

<table>
<thead>
<tr>
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<td>Lesson</td>
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<tr>
<td>Scene</td>
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<td>26.372</td>
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<td>.097</td>
</tr>
<tr>
<td>Error</td>
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<td>Total</td>
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</table>

The third ANOVA examined the LBE Latin square using RYOU scores. Results showed an interaction for lesson and scene, F(4, 124) = 7.636, p < .05. Figure 8 maps this interaction both ways, neither of which shows a generalizable pattern of effects. No main effect was reported for lesson, F(2, 123) = .561, p > .05. Scene showed a significant main effect, F(2, 124) = 6.061, p < .05. Table 6 reports these findings. In a Scheffe test, all three scenes for LBE showed significant differences in means for lesson and scene, suggesting that scene may have played a role in student writing when there was minimal embodied teaching. LBE taught third show a systematic effect as a function of scene, p < .05. Figure 8 displays two graphs demonstrating the interaction between lesson and scene for LBE. The right-side graph was included to reflect the systematic effect of LBE taught third.
Table 6

ANOVA Summary Table for LBE Latin Square Analysis of Lesson and Scene Using RYOU

<table>
<thead>
<tr>
<th>Source</th>
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<th>df</th>
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<th>F</th>
<th>Sig</th>
</tr>
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<tr>
<td>Lesson</td>
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<td>6.593</td>
<td>.561</td>
<td>.572</td>
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<td>Scene</td>
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<td>71.202</td>
<td>6.061</td>
<td>.003</td>
</tr>
<tr>
<td>Error</td>
<td>1456.733</td>
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<td></td>
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<td>Total</td>
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<td></td>
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</tbody>
</table>

Figure 8. The interaction between lesson and scene for LBE Latin square using RYOU scores.

RYOU means for lesson and scene are shown in Table 7, with significantly different means noted for Scheffe results. While lessons taught first had significantly higher RYOU scores for HBE, and scene showed significant differences for LBE, no other differences were present for either variable in the other conditions. Reasons for these differences could be attributed to newness of participation, repetition boredom, or chance. This lack of consistent effects across all three embodiment levels justifies the collapse of lesson and scene in further analyses of RYOU scores.
Table 7

*RYOU Means Showing Differences for Lesson and Scene*

<table>
<thead>
<tr>
<th></th>
<th>First</th>
<th>Second</th>
<th>Third</th>
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<tbody>
<tr>
<td><strong>HBE</strong></td>
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</tr>
<tr>
<td>MAAN</td>
<td>M=10.78&lt;sup&gt;a&lt;/sup&gt;</td>
<td>M=8.91</td>
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</tr>
<tr>
<td></td>
<td>SD=2.99</td>
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<td>SD=2.61</td>
</tr>
<tr>
<td>n=9</td>
<td>n=15</td>
<td>n=21</td>
<td><strong>N=45</strong></td>
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<tr>
<td>AMND</td>
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<tr>
<td></td>
<td>SD=2.83</td>
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<td>SD=2.52</td>
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<tr>
<td>n=18</td>
<td>n=19</td>
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<td><strong>N=48</strong></td>
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<tr>
<td>AYLI</td>
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<td></td>
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<tr>
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<td><strong>M=9.22</strong></td>
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## LBE

<table>
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<td>M=7.34</td>
<td>M=10.76&lt;sup&gt;bb&lt;/sup&gt;</td>
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<td>SD=3.13</td>
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<table>
<thead>
<tr>
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<td>M=7.12</td>
<td>M=8.13</td>
<td>M=7.76</td>
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</tr>
</tbody>
</table>

*Variations in N's are a result of student absences from a lesson of the study or failure to complete the dependent measure.

<sup>a</sup>Lesson position mean is significantly different from the lesson mean producing the greatest difference.

<sup>ab</sup>Lesson position mean is significantly different from both of the other lesson means.

<sup>b</sup>Scene context mean is significantly different from the scene mean producing the greatest difference.

<sup>bb</sup>Scene context mean is significantly different from both of the other scene means.

A separate set of 3x3 ANOVAs was conducted to examine lesson and scene for each of the three Latin squares using interest scores. For the HBE Latin square, ANOVA results showed a significant interaction for lesson and scene, F (4, 161) = 4.058, p < .05. A main effect was found for lesson only, F (2, 161) = 6.025, p < .05. Scene showed no significant main effect, F (2, 161) = 1.620, p > .05. These findings are reported in Table 8. Scheffe results for multiple comparisons reported one instance where HBE taught first differed from the HBE taught later, p < .05.
Table 8

**ANOVA Summary Table for HBE Latin Square Analysis of Lesson and Scene Using Interest**

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
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<td>Lesson*scene</td>
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<td>4</td>
<td>59.946</td>
<td>4.058</td>
<td>.004</td>
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<tr>
<td>Lesson</td>
<td>189.013</td>
<td>2</td>
<td>89.007</td>
<td>6.025</td>
<td>.003</td>
</tr>
<tr>
<td>Scene</td>
<td>47.872</td>
<td>2</td>
<td>23.936</td>
<td>1.620</td>
<td>.201</td>
</tr>
<tr>
<td>Error</td>
<td>2378.515</td>
<td>161</td>
<td>14.773</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29028.120</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Similarly, for the MBE Latin square, an interaction was present between lesson and scene, \( F(4, 160) = 4.177, p < .05 \), with a main effect for lesson only, \( F(2, 160) = 13.206, p < .05 \). No main effect was present for scene, \( F(2, 160) = 1.469, p > .05 \). ANOVA findings for the MBE Latin square are reported in Table 9. At times, the Scheffe test showed that MBE taught first, second, or third showed significant differences from one another, \( p < .05 \).

Table 9

**ANOVA Summary Table for MBE Latin Square Analysis of Lesson and Scene Using Interest**

<table>
<thead>
<tr>
<th>Source</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson*scene</td>
<td>229.841</td>
<td>4</td>
<td>57.460</td>
<td>4.177</td>
<td>.003</td>
</tr>
<tr>
<td>Lesson</td>
<td>363.331</td>
<td>2</td>
<td>181.665</td>
<td>13.206</td>
<td>.000</td>
</tr>
<tr>
<td>Scene</td>
<td>40.427</td>
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<td>20.241</td>
<td>1.469</td>
<td>.233</td>
</tr>
<tr>
<td>Error</td>
<td>2201.050</td>
<td>160</td>
<td>13.757</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22623.554</td>
<td>169</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Finally, the ANOVA for the LBE Latin square reported an interaction for lesson and scene using interest scores, \( F(4, 159) = 6.574, p < .05 \). Again, a main effect was reported for lesson only, \( F(2, 159) = 21.105, p < .05 \). No main effect was present for scene, \( F(2, 159) = 1.493, p > .05 \).
.05. ANOVA findings are presented in Table 10. A Scheffe test showed that LBE taught second differed significantly in student interest from LBE taught first or third, p < .05.

Table 10

ANOVA Summary Table for LBE Latin Square Analysis of Lesson and Scene Using Interest

<table>
<thead>
<tr>
<th>Source</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
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<tr>
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<td>4</td>
<td>75.176</td>
<td>6.574</td>
<td>.000</td>
</tr>
<tr>
<td>Lesson</td>
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<td>2</td>
<td>241.339</td>
<td>21.105</td>
<td>.000</td>
</tr>
<tr>
<td>Scene</td>
<td>34.150</td>
<td>2</td>
<td>17.075</td>
<td>1.493</td>
<td>.228</td>
</tr>
<tr>
<td>Error</td>
<td>1818.203</td>
<td>159</td>
<td>11.435</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17323.334</td>
<td>168</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Findings of these ANOVAs report that lesson played a slightly more significant role for students’ interest scores. A Scheffe procedure reported a handful of significantly different interest means for lesson and scene for each embodiment level, noted in Table 11. Figure 9 shows the interaction of lesson and scene for all embodiment levels using interest scores.
Table 11

*Interest Means Showing Differences in Lesson and Scene*

<table>
<thead>
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<th>Second</th>
<th>Third</th>
</tr>
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<td><strong>HBE</strong></td>
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<td></td>
</tr>
<tr>
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<td>M=11.25</td>
<td>M=9.67</td>
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<tr>
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<td>SD=3.42</td>
<td>SD=4.33</td>
<td>SD=3.06</td>
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<tr>
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<td>n=15</td>
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<tr>
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<td>n=16</td>
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<td>M=13.61</td>
<td>M=12.89</td>
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<td>SD=3.48</td>
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<td>n=19</td>
</tr>
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<td><strong>N=54</strong></td>
<td><strong>N=57</strong></td>
</tr>
<tr>
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<td><strong>M=13.70</strong></td>
<td><strong>M=12.17</strong></td>
<td><strong>M=11.39</strong></td>
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<table>
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<th>Third</th>
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<td>M=14.23\textsuperscript{aa}</td>
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<td>SD=4.11</td>
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<tr>
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<td>n=14</td>
<td>n=22</td>
</tr>
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<td>M=8.39</td>
<td>M=10.75</td>
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<td>n=18</td>
<td>n=18</td>
<td>n=20</td>
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<td>M=9.00</td>
<td>M=13.31\textsuperscript{aa}</td>
</tr>
<tr>
<td></td>
<td>SD=2.90</td>
<td>SD=3.82</td>
<td>SD=2.98</td>
</tr>
<tr>
<td></td>
<td>n=16</td>
<td>n=21</td>
<td>n=16</td>
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<td></td>
<td><strong>N=55</strong></td>
<td><strong>N=53</strong></td>
<td><strong>N=58</strong></td>
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<td></td>
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<td><strong>M=9.11</strong></td>
<td><strong>M=12.78</strong></td>
</tr>
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<td></td>
<td>First</td>
<td>Second</td>
<td>Third</td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>LBE</td>
<td>M=9.80</td>
<td>M=8.71</td>
<td>M=8.29</td>
</tr>
</tbody>
</table>
| MAAN   | SD=3.41| SD=3.85| SD=4.35| **M=8.97**
|        | n=20   | n=21   | n=17   | **N=58**
| AMND   | M=7.89 | M=12.6**aa** | M=6.53 |
|        | SD=2.81| SD=3.72| SD=2.20| **M=8.92**
|        | n=19   | n=15   | n=15   | **N=49**
| AYLI   | M=8.06 | M=13.59**aa** | M=8.10 |
|        | SD=3.19| SD=2.75| SD=3.54| **M=10.14**
|        | n=16   | n=22   | n=21   | **N=59**
|        | **N=55** | **N=58** | **N=53** | **N=166**
|        | **M=8.63** | **M=11.57** | **M=7.71** | **M=9.37**

*Lessons mean is significantly different from the lesson mean producing the greatest difference.*

**aa**Lesson mean is significantly different from both of the other lesson means.
Figure 9. The interaction between lesson and scene for the Latin squares using interest scores.

Given the significant differences present among the Latin square means for each of the three embodiment levels, it is important to note that lesson did not have consistent effects across all embodiment levels. For example, lessons taught first only showed a significant effect on HBE scores. Lessons taught second only played a role in increasing LBE scores, and finally, lessons taught third had a singular effect on MBE scores. One interpretation of these findings is that HBE brought more interest when taught first, due to students’ initial experience with the intuitive and biofunctionally embodied aspects of the lesson (and similarly might have had carryover effects for higher LBE interest when taught second). Certainly, these interpretations are
meaningful for continued research pertaining to placement of embodied teaching within a curriculum. However, for this study, lesson impacted each condition in a different way, and therefore should not be included as a meaningful variable influencing student understanding associated with levels of embodiment.

Results of this set of 3x3 ANOVAs revealed no significant or predictable effects for extraneous variables lesson and scene on dependent variables from any of the three embodiment levels. The few differences among Latin square means could easily be attributed to chance, newness, boredom, or other factors non-related to embodiment level. The Latin square design is useful in separating the effects of the experimental variable, embodiment level, from those of extraneous variables, lesson and scene. However, the design assumes that there is no interaction among the variables involved. An additional assumption unique to this study is that the effects of the control variables are not significant. Neither of these assumptions is entirely met as far as the two extraneous variables are concerned. Nevertheless, the Latin square design allows us to collapse the data across the two control variables and then examine any treatment differences due to the embodiment level. Extraneous variables lesson and scene were collapsed for the following set of analyses pertaining to embodiment level and order.

Controlling for Order

The Latin squares were used for a set of 3x3 repeated-measure ANOVAs to determine the effects of embodiment level ($HBE$, $MBE$, and $LBE$), while accounting for the effects of order ($123$, $231$, and $312$). Embodiment level acts as a within-subjects factor and is the variable of interest for this study. Order, which was part of the Latin square counterbalanced design (Judd
& McClelland, 1989), varied across the three levels of embodiment as a between-subjects factor in these analyses.

In the first repeated-measure ANOVA using MRU scores, no interaction was found for embodiment level and order, $F(4, 304) = 1.153, p > .05$. The main effect for embodiment level approached but did not show significance, $F(2, 304) = 2.436, p > .05$, or order, $F(2, 304) = .324, p > .05$. Partial $\eta^2$ was reported at .015 and the observed power was .361. Results of the ANOVA are in Table 12. Order in which lessons of varying embodiment levels were presented did not play a significant role in MRU performance. Means for order and embodiment level using MRU scores are shown in Table 13.

Table 12

*Repeated-Measures ANOVA Results for Order and Embodiment Level Using MRU Scores*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig</th>
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<tr>
<td><strong>Between-Subjects</strong></td>
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</tr>
<tr>
<td>Order</td>
<td>5.088</td>
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<td>1193.994</td>
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<td>.089</td>
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<td>7.553</td>
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<td>.332</td>
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<td>Embodiment</td>
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<td></td>
<td></td>
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<tr>
<td>Error</td>
<td>1992.188</td>
<td>304</td>
<td>6.553</td>
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</table>
Table 13

<table>
<thead>
<tr>
<th>MRU Means for Embodiment Level and Order</th>
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<td>Order 123</td>
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<tr>
<td>-----------</td>
</tr>
<tr>
<td><strong>LBE</strong></td>
</tr>
<tr>
<td>M=15.27</td>
</tr>
<tr>
<td>SD=2.81</td>
</tr>
<tr>
<td>M=15.50</td>
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<tr>
<td>SD=2.82</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>M=15.30 N=155</strong></th>
<th><strong>M=15.15 N=155</strong></th>
<th><strong>M=15.77 N=155</strong></th>
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<tbody>
<tr>
<td><strong>M=15.06</strong></td>
<td><strong>M=16.04</strong></td>
<td><strong>M=16.04</strong></td>
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<tr>
<td><strong>M=2.49</strong></td>
<td><strong>M=2.54</strong></td>
<td><strong>M=2.17</strong></td>
</tr>
<tr>
<td><strong>M=50</strong></td>
<td><strong>M=52</strong></td>
<td><strong>M=53</strong></td>
</tr>
</tbody>
</table>

*Embodiment level mean is significantly different from embodiment level mean of greatest difference within the order.*

A second repeated-measure ANOVA reported in Table 14 examined embodiment level and order using RYOU scores. No interaction between embodiment level and order was found, F (4, 196) = 2.076, p > .05. No main effect for order was present, F (2, 196) = 1.087, p > .05. Order of lesson presentation was not a significant factor in student written performance. Embodiment level showed a significant main effect, F (2, 196) = 4.488, p < .05, examined in more detail with further analyses. Partial $\eta^2$ was .041 and observed power was .611. Table 15 reports RYOU means for order and embodiment level.
Table 14

Repeated-Measures ANOVA Results for Order and Embodiment Level using RYOU Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig</th>
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<tbody>
<tr>
<td><strong>Between-Subjects</strong></td>
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<td></td>
</tr>
<tr>
<td>Order</td>
<td>30.703</td>
<td>2</td>
<td>15.351</td>
<td>1.087</td>
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<td>14.127</td>
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</tr>
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<td><strong>Within-Subjects</strong></td>
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</tr>
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<td>97.197</td>
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<td>48.599</td>
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<td>.012</td>
</tr>
<tr>
<td>Order*</td>
<td>89.918</td>
<td>4</td>
<td>22.479</td>
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<td>.085</td>
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<td>Embodiment</td>
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<tr>
<td>Error</td>
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</table>

Table 15

RYOU Means for Embodiment Level and Order

<table>
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<th>Order 123</th>
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</thead>
<tbody>
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<td>M=7.57</td>
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</tr>
<tr>
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<td>SD=3.56</td>
<td>SD=3.78</td>
<td>SD=4.00</td>
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<tr>
<td>M=7.87</td>
<td>N=101</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBE</td>
<td>M=9.22</td>
<td>M=8.53</td>
<td>M=10.07</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD=3.12</td>
<td>SD=3.56</td>
<td>SD=3.46</td>
<td></td>
</tr>
<tr>
<td>M=9.31</td>
<td>N=101</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HBE</td>
<td>M=7.55</td>
<td>M=9.42</td>
<td>M=8.46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD=2.80</td>
<td>SD=3.48</td>
<td>SD=3.12</td>
<td></td>
</tr>
<tr>
<td>M=8.48</td>
<td>N=101</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M=8.09</td>
<td>M=8.84</td>
<td>M=8.70</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N=32</td>
<td>N=32</td>
<td>N=37</td>
<td></td>
</tr>
</tbody>
</table>

In the final repeated-measures ANOVA using interest scores, the interaction between order and embodiment level approached but did not show significance, F (4, 300) = 2.352, p > .05.
ANOVA results are reported in Table 16. A main effect for order was reported, $F(2, 150) = 16.506$, $p < .05$, as well as for embodiment level, $F(2, 300) = 37.352$, $p < .05$. Partial $\eta^2$ was reported as .030. Observed power was .678. In a post-hoc Scheffe test, Order 231 was found to produce significantly higher means for student interest than orders 123 and 312, $p < .05$. Figure 10 displays the interaction between order and embodiment level for students’ interest scores.

Table 17 reports the means for order and embodiment level for interest scores.

Table 16

*Repeated-Measures ANOVA Results for Order and Embodiment Level Using Interest Scores*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between-Subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order</td>
<td>829.034</td>
<td>2</td>
<td>414.517</td>
<td>16.506</td>
<td>.000</td>
</tr>
<tr>
<td>Error</td>
<td>3766.971</td>
<td>150</td>
<td>25.113</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Within-Subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Embodiment</td>
<td>659.111</td>
<td>2</td>
<td>347.556</td>
<td>37.352</td>
<td>.000</td>
</tr>
<tr>
<td>Order*Embodiment</td>
<td>87.548</td>
<td>4</td>
<td>21.887</td>
<td>2.352</td>
<td>.054</td>
</tr>
<tr>
<td>Error</td>
<td>2791.428</td>
<td>300</td>
<td>9.305</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 10. The interaction between embodiment level and order using interest scores.
Table 17

*Interest Means for Embodiment Level and Order*

<table>
<thead>
<tr>
<th>Order 123</th>
<th>Order 231</th>
<th>Order 312</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M=8.36</td>
<td>M=11.68</td>
<td>M=7.80</td>
</tr>
<tr>
<td>SD=3.13</td>
<td>SD=3.99</td>
<td>SD=3.66</td>
</tr>
<tr>
<td>M=9.16</td>
<td>M=12.51</td>
<td>M=10.42</td>
</tr>
<tr>
<td>SD=3.88</td>
<td>SD=3.55</td>
<td>SD=4.07</td>
</tr>
<tr>
<td>HBE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M=11.18</td>
<td>M=13.66</td>
<td>M=12.04</td>
</tr>
<tr>
<td>SD=4.01</td>
<td>SD=3.91</td>
<td>SD=4.05</td>
</tr>
<tr>
<td>M=9.57</td>
<td>M=12.62</td>
<td>M=10.09</td>
</tr>
<tr>
<td>N=50</td>
<td>N=53</td>
<td>N=50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M=9.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N=153</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M=10.73</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N=153</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M=12.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N=153</td>
</tr>
</tbody>
</table>

The assumption of no interaction between order and embodiment level is met. Therefore, order is collapsed in the next set of repeated-measure analyses examining the effects of embodiment level only.

**Embodiment**

A final set of repeated-measure ANOVAs were conducted to determine effects of embodiment level, the variable of interest, on student performance. Using MRU scores, the repeated-measure ANOVA found no significant effect for biofunctional embodiment, $F(2, 308) = 2.508$, $p > .05$. These findings are reported in Table 18.
Table 18

Repeated-Measures ANOVA Summary Table for Embodiment Level Using MRU Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodiment*</td>
<td>32.933</td>
<td>2</td>
<td>16.467</td>
<td>2.508</td>
<td>.083</td>
</tr>
<tr>
<td>Error</td>
<td>2022.400</td>
<td>308</td>
<td>6.566</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Sphericity assumed.

Although the ANOVA initially found no significance, paired-samples t-tests were conducted for the three levels of embodiment. HBE, M = 15.77, was shown to have significantly higher scores, p < .05, than MBE, M = 15.15. Overall, the HBE condition was higher than the other two conditions, even though the LBE, M = 15.30, to MBE, M = 15.15, were not different. Figure 11 displays the effects of embodiment level on MRU scores.

![Figure 11. Embodiment level effects using MRU scores.](image)

A separate repeated-measure ANOVA with embodiment level acting within-subjects reported a significant effect using RYOU scores, F (2, 200) = 4.779, p < .05. The reported effect size was
partial $\eta^2 = .044$ with an observed power of .763. Findings of this ANOVA are reported in Table 19. Paired sample t-tests showed a significant increase, $p < .05$, from LBE, $M = 7.87$, to MBE, $M = 9.31$. RYOU scores likewise increased from LBE, $M=7.87$, to HBE, $M= 8.48$, but showed no statistical significance. Figure 12 reflects the increases in RYOU student performance as a result of embodiment level.

Table 19

*Repeated-Measures ANOVA Summary Table for Embodiment Level Using RYOU Scores*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodiment*</td>
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<td>2</td>
<td>52.857</td>
<td>4.779</td>
<td>.009</td>
</tr>
<tr>
<td>Error</td>
<td>2122.329</td>
<td>200</td>
<td>11.061</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Sphericity assumed.

Figure 12. Embodiment level effects using RYOU scores.

The final repeated-measure ANOVA using interest scores found significant increases in student interest for all three levels of embodiment, $F (2, 300) = 36.237$, $p < .05$. The reported
effect size was partial $\eta^2 = .046$ with an observed power of .790. Results of the repeated-measure ANOVA are reported in Table 20. Paired t-tests reported that interest scores for HBE, $M = 12.32$, were significantly higher, $p < .05$, than those for MBE, $M = 10.73$, and LBE, $M = 9.32$. Effects of embodiment level on interest scores are displayed in Figure 13.

Table 20

*Repeated-Measures ANOVA Summary Table for Embodiment Level Using Interest Scores*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodiment*</td>
<td>686.357</td>
<td>2</td>
<td>343.179</td>
<td>36.237</td>
<td>.000</td>
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<tr>
<td>Error</td>
<td>2878.976</td>
<td>304</td>
<td>9.470</td>
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</tbody>
</table>

*Sphericity assumed.

*Figure 13. Embodiment level effects using interest scores.*
CHAPTER V
DISCUSSION

The purpose of this study was to examine how a biofunctionally embodied teaching model might result in better student understanding and interest. This chapter will present a discussion of the quantitative findings. Implications and limitations of this study, as well as possibilities for future research, will conclude the chapter. Thus, this chapter is organized into four sections: a) discussion of results b) implications of findings c) limitations of the study and d) possibilities for future research.

Discussion of Results

The research questions of this dissertation were whether biofunctionally embodied (BE) teaching results in better student understanding and interest. Overall, findings showed the predicted improvement with each increasing level of embodiment, even though the effects sizes were small and the results did not always reach statistical significance. Figure 14 provides a summary of the findings. The clearest data were obtained for the interest measure where HBE interest scores (M= 12.32) were higher than both MBE (M =10.73) and LBE interest scores (M= 9.32). The MRU measure of understanding revealed a trend in the predicted direction with no reliable statistical or practical significance. RYOU scores improved with embodiment when compared to the least embodied teaching level. A statistically significant increase in RYOU scores was shown from LBE (M=7.87) to MBE (M=9.31). HBE (M=8.48) also produced higher
RYOU scores than LBE (M= 7.87), although the change did not show statistical significance. While these findings are promising, no firm conclusions can be drawn without further research.

![Figure 14. Student performance across levels of embodiment.](image)

The dependent measures used in this study departed from the traditional measures of memory and content knowledge. Two of the measures here directly targeted understanding. The third measure was an affective measure also closely related to understanding according to biofunctional theory (Iran-Nejad & Cecil, 1992). There is some uncertainty as to how well these measures are to serve the purpose for which they were intended. For example, the MRU scores produced the most tentative results. This task, being in the form of multiple-choice, was perhaps less sensitive at assessing the differences in students’ higher level and metaphorical understanding targeted in this study. Perhaps students treated these types of understanding questions too similarly to traditional measures of memory and knowledge. Thus, differences in
understanding are less noticeable, and other types of measures may be needed to get at complex and metaphorical aspects of understanding.

**Implications**

The Latin square design of this study allowed the application of an experimental model in the naturalistic setting of classroom teaching. In such settings, factors most likely exist that closely relate to the treatment variable but that they can neither be ignored, nor experimentally manipulated, nor manipulated for the purpose of control. The Latin square design allowed the inclusion of lesson position (first, second, third) and scene content in the experimental design as extraneous variables. The design also allowed the order in which the classes receive the levels of treatment to be counterbalanced. Findings suggest that students can better learn from embodied teaching approaches, regardless of counterbalanced lessons and scene content.

Direct instruction of the past is gradually giving way to multiple-source learning and intuitive approaches in the classroom. From a theoretical standpoint, the “Meaning to Me” model provides a framework for the evaluation of student outcomes associated with biofunctionally embodied teaching—metaphorical understanding, critical reflection, and interest in a lesson. These outcomes best reflect the intuitive, constructive, creative, and holistic learning that needs to take place. The teacher’s role is more and more often recognized as ‘facilitator of one’s own learning experience’ (Iran-Nejad, 2000), and the “Meaning to Me” Model is a powerful tool for achieving understanding and interest in everyday classroom learning.

In truth, pedagogical approaches that place importance on biofunctional processes for understanding are already in place in the curricula of many teachers. Enacted practice in language learning (Asher, 1966), film studies on Shakespeare, or similar notions that place real-world, subjective experiences at the center of learning need continued foundational research to
support their use (Harris, 2008). Newer pedagogical approaches, like online self-paced learning (http://accessdl.state.al.us) and intuitive presentation tools (http://prezi.com), are effectively implementing whole theme learning and embodied theory.

Limitations

The researcher recognizes the following limitations of this study:

1) Teacher involvement: Finding teachers to participate proved fairly difficult for the study, since scheduling, class sizes, and interruptions proved to be daunting challenges. None of the participating teachers completed the demographic sheets or the debriefing sheets properly, due to lack of extra time. The researcher assumes that teachers followed the information provided to them (most importantly, the lesson scripts). No irregularities were reported. This study is perhaps better suited to one, highly involved teacher.

2) Student exposure time: In hindsight, the study would have benefited from longer student involvement in the teaching models. Lesson extending over weeks or entire units may have resulted in more insightful data.

3) Scope: The research was conducted on classes in northwest Alabama. Localized teacher training, student socioeconomic factors, and other extraneous variables could play a role in student data outcomes.

4) Limited demographics: Class size and gender were reported about most of the classes involved in the study. More demographics would have been useful. Again, this was a result of limited teacher involvement on the information sheets.

5) MRU: The objective, multiple-choice assessment was found to limit the
effective evaluation of students’ literal and metaphorical understanding in ways that the RYOU measure did not. The nature of the measure was suggestive of the correct answer at times, facilitating the student’s processes of creating his/her own understanding.

6) **MRU grading procedure**: There was an error in grading on a single response choice for the scene *A Midsummer Night’s Dream*. Question #5 should have switched B and C responses. This change could have altered the student score by one point for one condition of the study. It is possible that this one point change would have impacted statistical significance for differences in student scores across embodiment level.

**Further Research**

With RYOU scores showing positive results for embodied teaching, this study leaves room for further research, more qualitative in nature. A qualitative examination of student writing could best distinguish the levels of understanding, as well as evidence of constructive and creative modes of learning. Presented in the following sections are case studies of two students’ RYOU responses for each of the three embodiment levels. These case studies apply the grading rubric in a more qualitative way. At times, student responses indicate intuitive insights into the relationships and events of the scene. Lengthy and accurate explanations, as well as writing in first person, are aspects which show that students are often using constructive and creative modes of learning. With this in mind, consider the following student writings which get stronger with increasing embodiment levels:

**Case Study #1: Hannah**

Hannah’s RYOU written responses reflect an ideal differentiation for the conditions of the study. For LBE, presented with the scene from *A Midsummer Night’s Dream*, Hannah writes simply one sentence:
Bottom is wanting to play all the parts.

This is an accurate statement, albeit minimal. Hannah has given no summary, detail, or reflection of understanding on a literal or metaphorical level. She has the main character’s name correct and one detail from the plot.

For MBE, Much Ado About Nothing, Hannah writes:

I understand that Beatrice & Benedict are in love, but they try to hide it from their friends and the people that do not know they like each other.

She makes a nice attempt to convey her understanding, but her statement that the lovers hide their affection is vague. She fails to reflect on the banter and wit portrayed between the characters. The so-called hate between them that is masking their love is not a topic of Hannah’s discussion. She reverts to using first person in her writing, reflecting some internalization of the scene. Notice the length and sentence structure of her MBE response are less than the HBE response.

For HBE, As You Like It, Hannah writes the following:

Rosalind has dressed up as a boy to see how Orlando feels about her. Phebe loves Rosalind who she thinks is Ganymede. Rosalind is trying to tell them all without giving away who she really is. Rosalind loves Orlando and she is trying to tell him. She can’t because she is in Ganymede’s body.

This response is a fairly good one, because she has conveyed her understanding with some use of detailed examples from the scene. Hannah comments that Rosalind is in Ganymede’s body, which is inaccurate; however, most of her writing creates an accurate picture of the scene. Her insight that Rosalind is trying to tell them without giving away her identity reflects a deeper level
of understanding. Hannah has come a long way from her understanding of the traditional LBE lesson.

Overall, Hannah’s effort and understanding on the RYOU written responses for each condition is right on target with the expectations of this study. For her, increases in embodied teaching have resulted in increases in the level of understanding. This deeper understanding can be seen in her varying use of detail and her attempts to discuss meaning.

Case Study #2: Jeremy

Jeremy’s RYOU written responses show some differentiation across embodiment level as well. For LBE, *A Midsummer Night’s Dream*, Jeremy writes:

> As the scene starts off, the characters are all together trying to act a Shakespeare play. The title of the play is Playmus and Thespes. In which Thespes kills himself as an overwhelmed response to Playmus’s love. Each of the characters described fight over roles to be the one to be the most recognized.

In this writing, Jeremy is faulty in his recollection of details and their relevance to the scene. His genuine mistakes reflect a lack of understanding as a result of LBE, and exactly what is expected for this level of embodiment. Several details are wrong, particularly the characters of the play within the play and the title itself. Also, his focus on the play within the play is askew from other truly important aspects of the plot that would be worth mentioning in the written response.

For MBE, *As You Like It*, Jeremy writes the following:

> Orlando is in love with Rosalind and talks to Ganymede about his love problems, but Orlando does not know it is actually in disguise. Phebe has a fake relationship with Ganymede, but ignores the fact that Silvius is in love with her.
Jeremy writes with fairly good insight into the relationships among the characters. There is some understanding of Rosalind’s disguise, Phebe’s false love for Ganymede, and Silvius’s pining for Phebe’s love. This is writing consistent with the expectations of MBE.

For HBE, *Much Ado About Nothing*, Jeremy writes the following:

* Benedick uses poetry to express his love for Beatrice. Though Beatrice does not seem that interested in him. She ultimately gives in. Not only is she confused about him, she also has a faint love about him.

Most noticeable in Jeremy’s HBE writing is his analysis of the emotions between the characters. There is an understanding of the details, and Jeremy reminds the reader of Benedick’s effort to write poetry, which is a section of the scene laden with metaphoricity. To analysis the emotions of the characters is to examine their motivations in the world and requires a connection to the writer’s real-world. The quality of this written response is consistent with HBE.

Overall, Jeremy’s RYOU written responses for each condition show some important differentiations across embodied teaching models. His responses are quite similar to Hannah’s in the way they reflect varying levels of understanding as result of the teaching models. While he uses no first person in his writing, he analyzes the emotions and motivations of the characters for the HBE lesson, which reflects an internalization of what it happening.

The qualitative case studies of the RYOU students’ written responses reflect the visible changes in student writing across teaching models. Students showed increased understanding and recall of the complexities of the Shakespeare scenes as a result of increased levels of
embodied teaching. RYOU tasks appear to be successful at demonstrating these changes in student understanding, and similar qualitative research is needed to build upon this study.

Studies examining the effects of embodied teaching over a longer period of time would contribute further to this study’s findings. This study showed outcomes associated with lessons conducted within a short period of time, yet prior research suggests that sustaining an enacted training program over a course of weeks has more effect on interest and understanding than a short-training experiment (Asher 1966). The embodied learning experience could perhaps be examined over an entire unit or semester.

Using a developmental approach, depth of understanding needs to be examined at a higher grade level. Shakespeare is taught throughout high school and college. The lessons of this study could be replicated, since Shakespeare’s work lends itself to many indicators of constructive and creative modes of learning. Older students would be capable of fully understanding the metaphoricity of the Shakespeare lessons, allowing more insights into the effects of biofunctionally embodied teaching without the developmental barrier to understanding.

Further research is needed on the style and content of the measures used for student performance. In this study, RYOU tasks reflected changes in depth of understanding, while MRU tasks did not. The difference outcomes suggest that there are powerful and distinct differences in the evaluations that teachers use on a daily basis. As students critically reflect on lesson material, teachers must also critically examine their choice of evaluative measures that best engage students in constructive and creative modes of learning.

Finally, this study’s findings produced some meaningful results concerning lesson position. RYOU means were significantly higher for HBE when taught first. Similarly, RYOU means for LBE were often higher when they followed a lesson with embodiment. These findings have
implications as to the timing of embodied and traditional lessons within a curriculum.

Traditional teaching styles are still prevalent in today’s classrooms because they are tried and true methods. Yet, there should be a place in the curriculum for intuitive approaches to learning that teachers might familiarize themselves with, much in the way they have come to know and apply the theory of multiple intelligences to their everyday teaching (Gardner, 1993). Like Gardner’s theory of multiple intelligences, embodied teaching speaks to the art of teaching, integrates multiple sources in the world, and engages students in constructive and creative modes. Embodied teaching, paired at the right time with traditional teaching, empowers teachers to choose the appropriate strategies to facilitate deep understanding and create a high interest learning environment.

Conclusion

Biofunctionally embodied teaching shows promising outcomes for student understanding and interest. Embodied teaching models often bring about greater literal and metaphorical understanding, reflected in students’ written responses. They also improve student interest in a lesson. Teachers need foundational research for the practices of using wholetheme instruction, cultural tools, enhanced student rehearsal, and many others. The complex nature of the learning experience means that more studies should address how to best engage the intuitive processes at work within the individual’s moments of understanding.

More experimental and quasi-experimental studies are needed in educational research. Theory and philosophy abound in education, yet very rarely are these theological frameworks visibly conveyed to the teaching and learning taking place. Educators often talk of the art of teaching. Ironically, those leading the way for teachers so often see education as a science, bringing along expectations about the empirical outcomes of student performance. Educational
research must continue to merge the two worlds, reconciling the need for students’ success on paper with what teachers know too well to be mysterious individual processes in the journey to achieving those outcomes. Promising findings about embodied teaching models through continued experimental and quasi-experimental educational research can better identify and implement these pedagogical approaches in today’s schools.
References


Bransford, John D., Jeffery J. Franks, Nancy J. Vye, and Robert D. Sherwood. (1989). *New approaches to instruction: because wisdom can’t be told.* In Similarity and Analogical Reasoning,


Kintsch, W. (1980). Learning from text, levels of comprehension, or “why anyone would read a story anyway?” *Poetics, 9,* 87-98.


Scene Info:  Shakespeare’s A MIDSUMMER NIGHT’S DREAM

Act I Scene 2

Character Descriptions:

Bottom: a weaver who will play Pyramus.

Quince: a carpenter who is overseeing the play production and assigning roles.

Snug: a joiner who will play a lion.

Flute: a bellows-mender who will play the female, Thisby.

Snout: a tinker who will play Pyramus' father.

Starveling: a tailor who will play Thisby's mother.

Setting: Athens (Ancient Greece); nearby woods. The play has an atmosphere of a land of enchantment that could be anywhere.

Plot Summary:

Only four days remain until the marriage of the duke and the duchess. Meanwhile, tradesmen in Athens plan to put on a play as part of the festivities celebrating the wedding. Among them are Bottom, a weaver; Snout; a tinker; Snug, a joiner; Quince, a carpenter; and Flute, a bellows-mender. Their play is to be called ‘The most lamentable comedy, and most cruel death of Pyramus and Thisby’. Although the workmen know nothing of play-making, they fancy themselves to be great actors. When Bottom is told he will play Pyramus, a young man who kills himself after mistakenly thinking his beloved Thisby is dead, Bottom predicts he will be a hit who will win the audience’s sympathy.
Act I, Scene 2  A Midsummer Night's Dream

Athens. QUINCE'S house.

[Enter QUINCE, SNUG, BOTTOM, FLUTE, SNOT, and STARVELING]

QUINCE
    Is all our company here?

BOTTOM
    You were best to call them generally, man by man, according to the scrip.

QUINCE
    Here is the scroll of every man's name, which is thought fit, through all Athens, to play in our interlude before the duke and the duchess, on his wedding-day at night.

BOTTOM
    First, good Peter Quince, say what the play treats on, then read the names of the actors, and so grow to a point.

QUINCE
    Marry, our play is, The most lamentable comedy, and most cruel death of Pyramus and Thisbe.

BOTTOM
    A very good piece of work, I assure you, and a merry. Now, good Peter Quince, call forth your actors by the scroll. Masters, spread yourselves.

QUINCE
    Answer as I call you. Nick Bottom, the weaver?

BOTTOM
Ready. Name what part I am for, and proceed.

QUINCE
You, Nick Bottom, are set down for Pyramus.

BOTTOM
What is Pyramus? a lover, or a tyrant?

QUINCE
A lover, that kills himself most gallant for love.

BOTTOM
That will ask some tears in the true performing of it: if I do it, let the audience look to their eyes; I will move storms, I will condole in some measure. To the rest: yet my chief humour is for a tyrant: I could play Ercles rarely, or a part to tear a cat in, to make all split.

The raging rocks
And shivering shocks
Shall break the locks
Of prison gates;
And Phibbus' car
Shall shine from far
And make and mar
The foolish Fates.
This was lofty!

QUINCE
Francis Flute, the bellows-mender?

FLUTE
Here, Peter Quince.

QUINCE
Flute, you must take Thisbe on you.

FLUTE
What is Thisbe? a wandering knight?

QUINCE
It is the lady that Pyramus must love.

FLUTE
Nay, faith, let me not play a woman; I have a beard coming.

QUINCE
That's all one: you shall play it in a mask, and you may speak as small as you will.

BOTTOM
An I may hide my face, let me play Thisbe too, I'll speak in a monstrous little voice. 'Thisne, Thisne;' 'Ah, Pyramus, lover dear! thy Thisbe dear, and lady dear!' 

QUINCE
No, no; you must play Pyramus: and, Flute, you Thisbe.

BOTTOM
Well, proceed.

QUINCE
Robin Starveling, the tailor?

STARVELING
Here, Peter Quince.

QUINCE
Robin Starveling, you must play Thisbe's mother.

SNOUT
Here, Peter Quince.

QUINCE
You, Pyramus' father-- myself, Thisbe's father--

SNUG
Snug, the joiner; you, the lion's part-- and, I hope, here is a play fitted.
Have you the lion's part written? pray you, if it be, give it me, for I am slow of study.

QUINCE

You may do it extempore, for it is nothing but roaring.

BOTTOM

Let me play the lion too: I will roar, that I will do any man's heart good to hear me; I will roar, that I will make the duke say 'Let him roar again, let him roar again.'

QUINCE

An you should do it too terribly, you would fright the duchess and the ladies, that they would shriek; and that were enough to hang us all.

ALL

That would hang us, every mother's son.

BOTTOM

I grant you, friends, if that you should fright the ladies out of their wits, they would have no more discretion but to hang us: but I will aggravate my voice so that I will roar you as gently as any sucking dove; I will roar you an 'twere any nightingale.

QUINCE

You can play no part but Pyramus; for Pyramus is a sweet-faced man; a proper man, as one shall see in a summer's day; a most lovely gentleman-like man: therefore you must needs play Pyramus.
A Review Activity: *A Midsummer Night's Dream*

Based on your memory of the scene just presented to you, choose the correct word that goes in the lines from the scene. You may look back in the text to help you choose.

BOTTOM

That will ask some (1)_____ in the true performing of it: if I do it, let the audience look to their eyes; I will move (2)_____, I will condole in some measure. To the rest: yet my chief humour is for a (3)_____: I could play Ercles rarely, or a part to tear a (4)_____ in, to make all split.

The raging rocks
And shivering shocks
Shall break the locks
Of prison gates;
And Phibbus' car
Shall shine from far
And make and mar
The foolish Fates.
This was (5)_____!

1. ____________
   a. Emotion
   b. Heart
   c. Tears
   d. Sweat

2. ____________
   a. Mountains
   b. Clouds
   c. Thunderbolts
   d. Storms

3. ____________
   a. Gallant
   b. Tyrant
   c. Lover
   d. Lion

4. ____________
   a. Monkey
   b. Lion
   c. Cat
   d. Dog

5. ____________
   a. Foolish
   b. Chivalry
   c. Lovely
   d. lofty
**Multiple Choice Activity: *A Midsummer Night’s Dream***

Based on your understanding of the scene selection, choose the best response to the following questions.

You may refer to the relevant sections of the scene that are included below. Read all questions carefully and take your time in choosing your response.

---

**QUINCE**
You, Nick Bottom, are set down for Pyramus.

**BOTTOM**
What is Pyramus? a lover, or a tyrant?

**QUINCE**
A lover, that kills himself most gallant for love.

**BOTTOM**
That will ask some tears in the true performing of it: if I do it, let the audience look to their eyes; I will move storms, I will condole in some measure. To the rest: yet my chief humour is for a tyrant: I could play Ercles rarely, or a part to tear a cat in, to make all split.
The raging rocks
And shivering shocks
Shall break the locks
Of prison gates;
And Phibbus' car
Shall shine from far
And make and mar
The foolish Fates.
This was lofty!

**QUINCE**
Francis Flute, the bellows-mender.

**FLUTE**
Here, Peter Quince.

**QUINCE**
Flute, you must take Thisbe on you.

**FLUTE**
What is Thisbe? a wandering knight?

**QUINCE**
It is the lady that Pyramus must love.

**FLUTE**
Nay, faith, let me not play a woman; I have a beard coming.

**QUINCE**
That's all one: you shall play it in a mask, and you may speak as small as you will.

**BOTTOM**
An I may hide my face, let me play Thisbe too, I'll speak in a monstrous little voice. 'Thisne, Thisne;' 'Ah, Pyramus, lover dear! thy Thisbe dear, and lady dear!'

---

1. **By his words, “I will move storms,” Bottom has what intentions for the audience?**
   a. Fear will grip them
   b. Rain will refresh them
   c. Emotion will overwhelm them
   d. Illusion will deceive them

2. **Bottom discusses playing Ercles, saying it is a part to “make all split,” which means to bring immense violence. Based on his discussion of the roles, Bottom feels that...**
   a. Tyranny is more powerful than gallantry
   b. Gallantry is more powerful than tyranny
   c. Tyranny is sadder than gallantry
   d. Gallantry and tyranny are equally important to the role of the lion
SNUG
Have you the lion's part written? pray you, if it be, give it me, for I am slow of study.

QUINCE
You may do it extempore, for it is nothing but roaring.

BOTTOM
Let me play the lion too: I will roar, that I will do any man's heart good to hear me; I will roar, that I will make the duke say 'Let him roar again, let him roar again.'

QUINCE
An you should do it too terribly, you would fright the duchess and the ladies, that they would shriek; and that were enough to hang us all.

QUINCE
You can play no part but Pyramus; for Pyramus is a sweet-faced man; a proper man, as one shall see in a summer's day; a most lovely gentleman-like man: therefore you must needs play Pyramus.

3. Bottom can best be described as...
   a. Angry that he cannot play the part of a lion
   b. Willing to stretch his talents
   c. Eager to play a lover’s role
   d. Able to be a gentle player, no matter what the role

4. The lion’s part is best suited for Snug because...
   a. Bottom wants it too badly
   b. He likes to roar
   c. It requires no preparation
   d. It could get the player hanged

5. Quince’s reaction to Bottom’s theatrics is best described as...
   a. Excited
   b. Flattering
   c. Disagreeable
   d. Decisive
Scene Info: Shakespeare’s *AS YOU LIKE IT*

Act V, Scene II

**Character Descriptions:**

**Orlando:** in love with Rosalind; does not know that Ganymede (a friend) is Rosalind (his love) in disguise.

**Rosalind:** in love with Orlando; disguises herself as Ganymede while in the Arden Forest; heroine of the play; intelligent, beautiful, and morally upright; best friend is marrying Oliver.

**Silvius:** shepherd in love with Phebe.

**Phebe:** shepherdess falsely in love with Ganymede (really Rosalind).

**Setting:** Arden Forest.

**Plot Summary:**

Rosalind is the central character; she is destined to be in love with Orlando. Meanwhile, her best friend is marrying Orlando’s brother. Rosalind and her best friend are taking refuge in the Forest of Arden after being banished because of a family conflict. Unbeknownst to Orlando, Rosalind is disguising herself as a boy named Ganymede. Her best friend is pretending to be Ganymede’s sister. These disguises lead to all sorts of miscommunication, as Phebe thinks she is love with Ganymede. A shepherd Silvius is in love with Phebe, and Rosalind is sympathetic to him, since she knows how it feels not to be united with the one you love. Rosalind sets out to secretly devise a plan to ensure happiness for everyone.
ACT V, Scene 2  As You Like It

ROSALIND

Your brother and my sister no sooner
met but they looked, no sooner looked but they
loved, no sooner loved but they sighed, no sooner
sighed but they asked one another the reason, no
sooner knew the reason but they sought the remedy;
and in these degrees have they made a pair of stairs
to marriage.

ORLANDO

They shall be married to-morrow, and I will bid the
duke to the nuptial. But, O, how bitter a thing it
is to look into happiness through another man's
eyes! By so much the more shall I to-morrow be at
the height of heart-heaviness, by how much I shall
think my brother happy in having what he wishes for.

ROSALIND

Why then, to-morrow I cannot serve your turn for Rosalind?

ORLANDO

I can live no longer by thinking.

ROSALIND

I will weary you then no longer with idle talking.
Believe then, if you please, that I can do strange things: I have,
since I was three years old, conversed with a
magician, most profound in his art and yet not
damnable. If you do love Rosalind so near the heart
as your gesture cries it out, when your brother
marries Aliena, shall you marry her: I know into
what straits of fortune she is driven; and it is
not impossible to me, if it appear not inconvenient
to you, to set her before your eyes tomorrow human
as she is and without any danger.

ORLANDO

Speakest thou in sober meanings?

ROSALIND

If you will be

married to-morrow, you shall, and to Rosalind, if you will.

Enter SILVIUS and PHEBE

PHEBE

Youth, you have done me much ungentleness,
To show the letter that I writ to you.

ROSALIND

I care not if I have: it is my study
To seem spiteful and ungentle to you:
You are there followed by a faithful shepherd;

Look upon him, love him; he worships you.

**PHEBE**

Good shepherd, tell this youth what 'tis to love.

**SILVIUS**

It is to be all made of sighs and tears;

And so am I for Phebe.

**PHEBE**

And I for Ganymede.

**ORLANDO**

And I for Rosalind.

**ROSALIND**

And I for no woman.

**SILVIUS**

It is to be all made of faith and service;

And so am I for Phebe.

**PHEBE**

And I for Ganymede.

**ORLANDO**

And I for Rosalind.
SILVIUS

It is to be all made of fantasy,
All made of passion and all made of wishes,
All adoration, duty, and observance,
All humbleness, all patience and impatience,
All purity, all trial, all observance;
And so am I for Phebe.

PHEBE

And so am I for Ganymede.

ORLANDO

And so am I for Rosalind.

ROSALIND

And so am I for no woman.

PHEBE

If this be so, why blame you me to love you?

SILVIUS

If this be so, why blame you me to love you?

ORLANDO

If this be so, why blame you me to love you?

ROSALIND

Who do you speak to, 'Why blame you me to love you?'

ORLANDO

To her that is not here, nor doth not hear.
**ROSALIND**

Pray you, no more of this; 'tis like the howling
of Irish wolves against the moon.

*To SILVIUS*

I will help you, if I can:

*To PHEBE*

I would love you, if I could. To-morrow meet me all together.

*To PHEBE*

I will marry you, if ever I marry woman, and I'll be
married to-morrow:

*To ORLANDO*

I will satisfy you, if ever I satisfied man, and you
shall be married to-morrow:

*To SILVIUS*

I will content you, if what pleases you contents
you, and you shall be married to-morrow.
To ORLANDO

As you love Rosalind, meet:

To SILVIUS

as you love Phebe, meet: and as I love no woman,

I'll meet. So fare you well: I have left you commands.

SILVIUS

I'll not fail, if I live.

PHEBE

Nor I.

ORLANDO

Nor I.

Exeunt
A Review Activity: *As You Like It*

Based on your memory of the scene just presented to you, choose the correct word that goes in the lines from the scene. You may look back in the text to help you choose.

**ROsalind**

Your brother and my sister no sooner
met but they looked, no sooner looked but they
loved, no sooner loved but they sighed, no sooner
sighed but they asked one another the reason, no
sooner knew the reason but they sought the (1)______;
and in these degrees have they made a pair of (2)______
to marriage.

**Orlando**

They shall be married to-morrow, and I will bid the
duke to the nuptial. But, O, how (3)______ a thing it
is to look into happiness through another man's
eyes! By so much the more shall I to-morrow be at
the (4)_______ of heart-heaviness, by how much I shall
think my brother happy in (5)_______ what he wishes for.

1. __________
   a. Union
   b. Virtue
   c. residence
   d. remedy

2. __________
   a. steps
   b. doves
   c. stairs
   d. star-crossed lovers

3. __________
   a. bitter
   b. remorseful
   c. sorrowful
   d. charming

4. ____________
   a. pinnacle
   b. pits
   c. depth
   d. height

5. ____________
   a. achieving
   b. hoping
   c. having
   d. getting
Multiple Choice Activity: *As You Like It*

Based on your understanding of the scene selection, choose the best response to the following questions.

You may refer to the relevant sections of the scene that are included below. Read all questions carefully and take your time in choosing your response.

---

**ROSSALIND**

Your brother and my sister no sooner met but they looked, no sooner looked but they loved, no sooner loved but they sighed, no sooner sighed but they asked one another the reason, no sooner knew the reason but they sought the remedy; and in these degrees have they made a pair of stairs to marriage.

**ORLANDO**

They shall be married to-morrow, and I will bid the duke to the nuptial. But, O, how bitter a thing it is to look into happiness through another man's eyes! By so much the more shall I to-morrow be at the height of heart-heaviness, by how much I shall think my brother happy in having what he wishes for.

---

1. In discussing their relatives’ upcoming marriage, Rosalind says “they made a pair of stairs to marriage.” She is...
   
   a. Surprised at how long it took them
   
   b. Excited by the depth of their love
   
   c. Implying that marriage elevates them in society
   
   d. Describing how they will be on a platform to say their nuptials

2. Which choice best describes Orlando’s feelings about his brother’s wedding the following day?
   
   a. His heart is filled with happiness
   
   b. His heart is filled with emotions
   
   c. His heart is empty
   
   d. His heart is filled with bitterness toward Rosalind
PHEBE
Good shepherd, tell this youth what 'tis to love.
SILVIUS
It is to be all made of sighs and tears; And so am I for Phebe.
PHEBE
And I for Ganymede.
ORLANDO
And I for Rosalind.
ROSALIND
And I for no woman.
SILVIUS
It is to be all made of faith and service; And so am I for Phebe.
PHEBE
And I for Ganymede.
ORLANDO
And I for Rosalind.
ROSALIND
And I for no woman.
SILVIUS
It is to be all made of fantasy, All made of passion and all made of wishes, All adoration, duty, and observance, All humbleness, all patience and impatience, All purity, all trial, all observance; And so am I for Phebe.
PHEBE
And so am I for Ganymede.
ORLANDO
And so am I for Rosalind.
ROSALIND
And so am I for no woman.

3. Rosalind continues to say “And so am I for no woman.” Based on your understanding of the scene, why does she need to say this?
   a. Rosalind misunderstands Phebe
   b. Phebe misunderstands Silvius
   c. Phebe misunderstands Rosalind
   d. Silvius misunderstands Rosalind
Appendix A

Participant Materials

ROSALIND
Pray you, no more of this; 'tis like the howling of Irish wolves against the moon.

To SILVIUS
I will help you, if I can:

To PHEBE
I would love you, if I could. To-morrow meet me all together.

To PHEBE
I will marry you, if ever I marry woman, and I'll be married to-morrow:

To ORLANDO
I will satisfy you, if ever I satisfied man, and you shall be married to-morrow:

To SILVIUS
I will content you, if what pleases you contents you, and you shall be married to-morrow.

To ORLANDO
As you love Rosalind, meet:

To SILVIUS
as you love Phebe, meet: and as I love no woman, I'll meet. So fare you well: I have left you commands.

SILVIUS
I'll not fail, if I live.

PHEBE
Nor I.

ORLANDO
Nor I.

Exeunt

4. Rosalind’s promises to each person at the end of the scene are best described as...

a. Playful but not truthful
b. Playful and truthful
c. Hurtful and misleading
d. Playful but misleading

5. At the end of the scene, the characters plan...

a. To meet to watch someone get married
b. To trust Rosalind
c. To fail to meet
d. To watch Rosalind pick her favorite
Scene Info: Shakespeare’s MUCH ADO ABOUT NOTHING

Act V, Scene II

Character Descriptions:

Benedick: young lord from Padua who thinks he hates Beatrice but really loves her.

Beatrice: niece of the governor of Messina who thinks she hates Benedick but really loves him.

Setting: city of Messina, Sicily; close to Italy.

Plot Summary:

Benedick, a valiant soldier, and Beatrice, the governor’s niece, are old acquaintances who inwardly love each other but outwardly display nothing but contempt for each other. Whenever they meet, they spend most of their time insulting each other in a long-standing verbal war. Of course, as they parry savage insults that burn to the quick, the audience and the reader realize that the sparks they make will eventually ignite the fires of passion. They eventually profess their love for one another.
Act V, Scene 2  Much Ado About Nothing

BENEDICK

Sings

The god of love,
That sits above,
And knows me, and knows me,
How pitiful I deserve,--
I mean in singing; but in loving, Leander the good
swimmer, Troilus the first employer of panders, and
a whole bookful of these quondam carpet-mangers,
whose names yet run smoothly in the even road of a
blank verse, why, they were never so truly turned
over and over as my poor self in love. Marry, I
cannot show it in rhyme; I have tried: I can find
out no rhyme to 'lady' but 'baby,' an innocent
rhyme; for 'scorn,' 'horn,' a hard rhyme; for,
'school,' 'fool,' a babbling rhyme; very ominous
endings: no, I was not born under a rhyming planet,
nor I cannot woo in festival terms.
Enter BEATRICE

Sweet Beatrice, wouldst thou come when I called thee?

BEATRICE

Yea, signior, and depart when you bid me.

BENEDICK

O, stay but till then!

BEATRICE

'Then' is spoken; fare you well now: and yet, ere
I go, let me go with that I came; which is, with
knowing what hath passed between you and Claudio.

BENEDICK

Only foul words; and thereupon I will kiss thee.

BEATRICE

Foul words is but foul wind, and foul wind is but
foul breath, and foul breath is noisome; therefore I
will depart un kissed.

BENEDICK

Thou hast frighted the word out of his right sense,
so forcible is thy wit. But I must tell thee
plainly, Claudio undergoes my challenge; and either
I must shortly hear from him, or I will subscribe
him a coward. And, I pray thee now, tell me for
which of my bad parts didst thou first fall in love with me?

**BEATRICE**

For them all together; which maintained so politic
a state of evil that they will not admit any good
part to intermingle with them. But for which of my
good parts did you first suffer love for me?

**BENEDICK**

Suffer love! a good epithet! I do suffer love
indeed, for I love thee against my will.

**BEATRICE**

In spite of your heart, I think; alas, poor heart!
If you spite it for my sake, I will spite it for
yours; for I will never love that which my friend hates.

**BENEDICK**

Thou and I are too wise to woo peaceably.

and now tell me, how doth your cousin?

**BEATRICE**

Very ill.

**BENEDICK**

And how do you?

**BEATRICE**

Very ill too.
BENEDICK

Serve God, love me and mend

here comes one in haste.

(URSULA calls out to the couple.)

BEATRICE

Will you go hear this news, signior?

BENEDICK

I will live in thy heart, die in thy lap, and be

buried in thy eyes; and moreover I will go with

thee to thy uncle's.

Exeunt

Some lines have been omitted.
A Review Activity: *Much Ado About Nothing*

Based on your memory of the scene just presented to you, choose the correct word that goes in the lines from the scene. You may look back in the text to help you choose.

The god of love,
That sits above,
And knows me, and knows me,
How (1)_______ I deserve,--

I mean in singing; but in loving, Leander the good swimmer, Troilus the first employer of panders, and a whole (2)_______ of these quondam carpet-mangers, whose names yet run smoothly in the even road of a blank verse, why, they were never so truly turned over and over as my poor self in love. Marry, I cannot show it in (3)_______; I have tried: I can find out no rhyme to 'lady' but 'baby,' an innocent rhyme; for 'scorn,' 'horn,' a hard rhyme; for, 'school,' 'fool,' a babbling rhyme; very ominous endings: no, I was not born under a rhyming (4)_______, nor I cannot woo in (5)_______ term.

### Questions

1. ________________
   a. Merciful
   b. Pitiful
   c. Amicable
   d. Regretful

2. ________________
   a. Journal
   b. List
   c. Bookful
   d. Ledger

3. ________________
   a. Prose
   b. Rhyme
   c. Reason
   d. Virtue

4. ________________
   a. Star
   b. Moon
   c. God
   d. Planet

5. ________________
   a. Shakespearian
   b. poetic
   c. festival
   d. Greek
Multiple Choice Activity: *Much Ado About Nothing*

Based on your understanding of the scene selection, choose the best response to the following questions.

You may refer to the relevant sections of the scene that are included below. Read all questions carefully and take your time in choosing your response.

**BENEDICK**

*Sings*

The god of love,  
That sits above,  
And knows me, and knows me,  
How pitiful I deserve,--  
I mean in singing; but in loving, Leander the good swimmer, Troilus the first employer of panders, and a whole bookful of these quondam carpet-mangers, whose names yet run smoothly in the even road of a blank verse, why, they were never so truly turned over and over as my poor self in love. Marry, I cannot show it in rhyme; I have tried: I can find out no rhyme to 'lady' but 'baby,' an innocent rhyme; for 'scorn,' 'horn,' a hard rhyme; for, 'school,' 'fool,' a babbling rhyme; very ominous endings: no, I was not born under a rhyming planet, nor I cannot woo in festival terms.

1. Benedick describes himself as a lover who is...
   a. A festival writer  
   b. An anguished singer  
   c. A good swimmer  
   d. An insufficient poet

2. His use of the expression “turned over and over as my poor self in love,” could best be explained by the following phrase:
   a. He is restless while he sleeps  
   b. He is restless while he sings  
   c. He is restless while he writes  
   d. He is restless while he prays
BEATRICE
Foul words is but foul wind, and foul wind is but foul breath, and foul breath is noisome; therefore I will depart un kissed.

BENEDICK
Thou hast frighted the word out of his right sense, so forcible is thy wit. But I must tell thee plainly, Claudio undergoes my challenge; and either I must shortly hear from him, or I will subscribe him a coward. And, I pray thee now, tell me for which of my bad parts didst thou first fall in love with me?

BEATRICE
For them all together; which maintained so politic a state of evil that they will not admit any good part to intermingle with them. But for which of my good parts did you first suffer love for me?

BENEDICK
Suffer love! a good epithet! I do suffer love indeed, for I love thee against my will.

3. The mannerisms between Benedick and Beatrice can best be described as...
   a. In suffering toward one another
   b. In secret from Claudio
   c. In jest toward one another
   d. In fright toward Claudio

4. Based on her description of ‘foul words,’ Beatrice implies to Benedict that...
   a. Words are more powerful than actions
   b. Actions are more powerful than words
   c. Wind is more powerful than words
   d. Words will get the point across best

5. Benedick’s suffering is because...
   a. Beatrice will not return his love
   b. Beatrice loves him
   c. He has nothing to suffer from
   d. Claudio will likely kill him
Appendix A

Participant Materials

**Interest Activity**

Please circle the option that applies to your thoughts about the lesson today.

1. The lesson today was ______________ other lessons I have been taught.
   a. less interesting than
   b. equally interesting to
   c. more interesting than
   d. much more interesting than
   e. exceptionally more interesting than

2. The lesson was interesting ______________ the other lessons I have had before.
   a. but I did not like it as much as
   b. and I liked it as much as
   c. and I liked it much more than
   d. and I liked it very much more than
   e. and I liked it extremely more than

3. I _______________ the way this lesson was presented to me today.
   a. did not enjoy
   b. enjoyed a little
   c. enjoyed
   d. enjoyed very much
   e. exceptionally enjoyed

4. I have ______________ of the lesson today because of the way it was presented to me.
   a. no understanding
   b. very little understanding
   c. some understanding
   d. a good understanding
   e. an excellent understanding
In a paragraph below, please explain the scene you have been presented today to the best of your ability. Include your understanding of the events that take place, as well as the characters and their relationships. Be as specific as possible.
LESSON 3

ENACTED SCRIPT

Act I, Scene 2  A Midsummer Night's Dream

ALL CHARACTERS  -------  CAP
Athens. QUINCE'S house.

[Enter QUINCE, SNUG, BOTTOM, FLUTE, SNOUT, and STARVELING]

QUINCE  (Wave arm in front of you.)
Is all our company here?

BOTTOM  (Point your finger.)
You were best to call them generally, man by man,
according to the scrip.

QUINCE  (Read your scroll.)
Here is the scroll of every man's name, which is
thought fit, through all Athens, to play in our
interlude before the duke and the duchess, on his
wedding-day at night.

BOTTOM  (Raise your finger to make a point.)
First, good Peter Quince, say what the play treats
on, then read the names of the actors, and so grow
to a point.

QUINCE  (Emphasize the title of the play.)
Marry, our play is, The most lamentable comedy, and
most cruel death of Pyramus and Thisbe.

BOTTOM  (Raise your finger to make a point).
A very good piece of work, I assure you, and a
merry.
(Fold arms.)
Now, good Peter Quince, call forth your
actors by the scroll. Masters, spread yourselves.

QUINCE  (Read your scroll.)
Answer as I call you. Nick Bottom, the weaver?

BOTTOM  (Step forward.)
Ready. Name what part I am for, and proceed.

QUINCE  (Look him in the eye.)
You, Nick Bottom, are set down for Pyramus.

BOTTOM  (Scratch your head.)
What is Pyramus? a lover, or a tyrant?

QUINCE  (Smile.)
A lover, that kills himself most gallant for love.

BOTTOM  (Pace the floor and look down.)
That will ask some tears in the true performing of
it: if I do it, let the audience look to their
eyes; I will move storms, I will condole in some
measure. To the rest: yet my chief humour is for a
tyrant: I could play Ercles rarely, or a part to
tear a cat in, to make all split.

(Perform loudly.)
The raging rocks
And shivering shocks
Shall break the locks
Of prison gates;
And Phibbus’ car
Shall shine from far
And make and mar
The foolish Fates.
This was lofty!

QUINCE  (Read your scroll.)
Francis Flute, the bellows-mender?

FLUTE  (Respond like a student.)
Here, Peter Quince.

QUINCE  (Look at Flute.)
Flute, you must take Thisbe on you.

FLUTE  (Fold arms.)
What is Thisbe? a wandering knight?

QUINCE  (Hesitate.)
It is the lady that Pyramus must love.

FLUTE  (Shake finger ‘no’.)
Nay, faith, let me not play a woman; I have a beard coming.

QUINCE  (Place imaginary mask on your face.)
That's all one: you shall play it in a mask, and you may speak as small as you will.
BOTTOM  
(Raise your finger to make a point.)
An I may hide my face, let me play Thisbe too, I'll speak in a monstrous little voice.

(Perform comically.)
'Thisne, Thisne;' 'Ah, Pyramus, lover dear! thy Thisbe dear, and lady dear!' 

QUINCE  
(Place hand on Bottom’s shoulder.)
No, no; you must play Pyramus: and, Flute, you Thisbe.

BOTTOM  
(Walk away.)
Well, proceed.

QUINCE  
(Read your scroll.)
Robin Starveling, the tailor?

STARVELING  
(Respond like a student.)
Here, Peter Quince.

QUINCE  
(Read your scroll.)
Robin Starveling, you must play Thisbe's mother.
Tom Snout, the tinker?

SNOUT  
(Respond like a student.)
Here, Peter Quince.

QUINCE  
(Read your scroll.)
You, Pyramus' father-- myself, Thisbe's father--
Snug, the joiner; you, the lion's part-- and, I hope, here is a play fitted.

**SNUG**  *(Interrupt.)*  
Have you the lion's part written? pray you, if it be, give it me, for I am slow of study.

**QUINCE**  *(Respond like a director.)*  
You may do it extempore, for it is nothing but roaring.

**BOTTOM**  *(Raise fists high in the air.)*  
Let me play the lion too: I will roar, that I will do any man's heart good to hear me; I will roar, that I will make the duke say 'Let him roar again, let him roar again.'

**QUINCE**  *(Shake head ‘no’.)*  
An you should do it too terribly, you would fright the duchess and the ladies, that they would shriek; and that were enough to hang us all.

**ALL**  *(Speak to your neighbor.)*  
That would hang us, every mother's son.

**BOTTOM**  *(Pace the floor.)*  
I grant you, friends, if that you should fright the ladies out of their wits, they would have no more discretion but to hang us: but I will aggravate my voice so that I will roar you as gently as any sucking dove; I will roar you an 'twere any
nightingale.

QUINCE  

(Place hand on Bottom’s shoulder.)
You can play no part but Pyramus; for Pyramus is a sweet-faced man; a proper man, as one shall see in a summer's day; a most lovely gentleman-like man: therefore you must needs play Pyramus.
LESSON 3 ENACTED SCRIPT

Act V, Scene 2 As You Like It

ORLANDO, SILVIUS, ROSALIND (disguised as Ganymede)

-------- CAP

PHEBE ------- SCARF
ROSALIND  (Place hand on Orlando’s shoulder.)

Your brother and my sister no sooner
met but they looked, no sooner looked but they
loved, no sooner loved but they sighed, no sooner
sighed but they asked one another the reason, no
sooner knew the reason but they sought the remedy;
and in these degrees have they made a pair of stairs
to marriage.

ORLANDO  (Walk away from Rosalind.)

They shall be married to-morrow, and I will bid the
duke to the nuptial. But, O, how bitter a thing it
is to look into happiness through another man's
eyes! By so much the more shall I to-morrow be at
the height of heart-heaviness, by how much I shall
think my brother happy in having what he wishes for.

ROSALIND  (Walk toward Orlando.)

Why then, to-morrow I cannot serve your turn for Rosalind?
ORLANDO  
(Turn Around.)

I can live no longer by thinking.

ROSALIND  
(Fold Arms.)

I will weary you then no longer with idle talking.

Believe then, if you please, that I can do strange things: I have, since I was three year old, conversed with a magician, most profound in his art and yet not damnable.

(Speak quietly.)

If you do love Rosalind so near the heart as your gesture cries it out, when your brother marries Aliena, shall you marry her:

(Place hand on Orlando’s shoulder.)

I know into what straits of fortune she is driven; and it is not impossible to me, if it appear not inconvenient to you, to set her before your eyes tomorrow human as she is and without any danger.

ORLANDO  
(Place hand on Rosalind’s shoulder.)

Speakest thou in sober meanings?
ROSALIND  (Smile.)

If you will be

married to-morrow, you shall,

and to Rosalind, if you will.

Enter SILVIUS and PHEBE

PHEBE  (Fold arms.)

Youth, you have done me much ungentleness,

To show the letter that I writ to you.

ROSALIND  (Throw hands up.)

I care not if I have: it is my study

To seem despiteful and ungentle to you:

You are there followed by a faithful shepherd;

(Emphasize.)

Look upon him, love him; he worships you.

PHEBE  (Turn to Silvius.)

Good shepherd, tell this youth what 'tis to love.
SILVIUS (Turn to Rosalind.)

It is to be all made of sighs and tears;
And so am I for Phebe.

PHEBE (Turn to Rosalind.)

And I for Ganymede.

ORLANDO (Step forward with energy.)

And I for Rosalind.

ROSALIND (Pull cap down.)

And I for no woman.

SILVIUS (Walk to Phebe.)

It is to be all made of faith and service;
And so am I for Phebe.

PHEBE (Raise finger to make a point.)

And I for Ganymede.

ORLANDO (Raise finger to make a point.)

And I for Rosalind.
ROSALIND  
(Raise finger to make a point.)
And I for no woman.

SILVIUS  
(Step away to speak to the distance.)
It is to be all made of fantasy,
All made of passion and all made of wishes,
All adoration, duty, and observance,
All humbleness, all patience and impatience,
All purity, all trial, all observance;
And so am I for Phebe.

PHEBE  
(Raise finger to make a point.)
And so am I for Ganymede.

ORLANDO  
(Raise finger to make a point.)
And so am I for Rosalind.

ROSALIND  
(Raise finger to make a point.)
And so am I for no woman.
PHEBE (Place hand on Rosalind’s shoulder.)
If this be so, why blame you me to love you?

SILVIUS (Place hand on Phebe’s shoulder.)
If this be so, why blame you me to love you?

ORLANDO (Speak out to everyone.)
If this be so, why blame you me to love you?

ROSALIND (Place hands on head.)
Who do you speak to, 'Why blame you me to love you?'

ORLANDO (Kneel down.)
To her that is not here, nor doth not hear.

ROSALIND (Place hands on head.)
Pray you, no more of this; 'tis like the howling
of Irish wolves against the moon.

To SILVIUS (Place hand on his shoulder.)
I will help you, if I can:

To PHEBE. (Place hand on her shoulder.)

I would love you, if I could.

(Look up to everyone.)

To-morrow meet me all together.

To PHEBE (Point to her.)

I will marry you, if ever I marry woman, and I'll be married to-morrow:

To ORLANDO (Point to him.)

I will satisfy you, if ever I satisfied man, and you shall be married to-morrow:

To SILVIUS (Point to him.)
I will content you, if what pleases you contents you, and you shall be married to-morrow.

To ORLANDO  
(Raise him up from kneeling.)

As you love Rosalind, meet:

To SILVIUS  
(Turn to him.)

as you love Phebe, meet: and as I love no woman,

I'll meet. So fare you well: I have left you commands.

SILVIUS  
(Place hand on your heart.)

I'll not fail, if I live.

PHEBE  
(Place hand on your heart.)

Nor I.

ORLANDO  
(Place hand on your heart.)

Nor I.

Exeunt
LESSON 3

ENACTED SCRIPT

Act V, Scene 2 Much Ado About

Nothing

BENEDICK       -------
CAP

BEATRICE       ------- SCARF
LESSON 3 SCRIPT

**Act V, Scene 2 Much Ado About Nothing**

*(You need two seats for this enactment.)*

**BENEDICK**  
*(Read this script dramatically like a scroll.)*  
*Sings...*

The god of love,
That sits above,
And knows me, and knows me,
How pitiful I deserve,--

*(Pace the floor as you say your lines.)*

I mean in singing; but in loving, Leander the good swimmer, Troilus the first employer of panders, and a whole bookful of these quondam carpet-mangers, whose names yet run smoothly in the even road of a blank verse, why, they were never so truly turned over and over as my poor self in love.

*(Scratch your head.)*

Marry, I cannot show it in rhyme; I have tried: I can find out no rhyme to 'lady' but 'baby,' an innocent rhyme; for 'scorn,' 'horn,' a hard rhyme; for, 'school,' 'fool,' a babbling rhyme; very ominous
endings: no, I was not born under a rhyming planet,
nor I cannot woo in festival terms.

(Call out.)

Sweet Beatrice, wouldst thou come when I called thee?

BEATRICE  (Place hand on Benedick’s shoulder.)

Yea, signior, and depart when you bid me.

BENEDICK  (Gesture to have a seat.)

O, stay but till then!

BEATRICE  (Sit down).

'Then' is spoken; fare you well now: and yet, ere
I go, let me go with that I came; which is, with
knowing what hath passed between you and Claudio.

BENEDICK  (Lean toward Beatrice.)

Only foul words; and thereupon I will kiss thee.

BEATRICE  (Get up and walk away from Benedick.)
Foul words is but foul wind, and foul wind is but foul breath, and foul breath is noisome; therefore I will depart un kissed.

**BENEDICK** *(Walk toward Beatrice.)*

Thou hast frighted the word out of his right sense, so forcible is thy wit. But I must tell thee plainly, Claudio undergoes my challenge; and either I must shortly hear from him, or I will subscribe him a coward. And, I pray thee now, tell me for which of my bad parts didst thou first fall in love with me?

**BEATRICE** *(Turn toward Benedick.)*

For them all together; which maintained so politic a state of evil that they will not admit any good part to intermingle with them. But for which of my good parts did you first suffer love for me?

**BENEDICK** *(Laugh; place hand on her shoulder.)*

Suffer love! a good epithet! I do suffer love indeed, for I love thee against my will.
BEATRICE  (Laugh; remove Benedick’s hand.)
In spite of your heart, I think; alas, poor heart!
If you spite it for my sake, I will spite it for
yours; for I will never love that which my friend hates.

BENEDICK  (Sit down.)
Thou and I are too wise to woo peaceably.
and now tell me, how doth your cousin?

BEATRICE  (Sit down.)
Very ill.

BENEDICK  (Speak softly.)
And how do you?

BEATRICE  (Speak softly.)
Very ill too.

BENEDICK  (Place hand on Beatrice’s shoulder.)
Serve God, love me and mend
here comes one in haste.
BEATRICE (Get up to leave.)

Will you go hear this news, signior?

BENEDICK (Get up to go with Beatrice.)

I will live in thy heart, die in thy lap, and be

buried in thy eyes;

(Get up.)

and moreover I will go with thee to thy uncle's.

Exeunt
TEACHING PHASE (LESSON 3)
Purpose: To orient students to today’s lesson and present the scene through modern film format.

Teacher says:
Today you will participate in a lesson about a scene from William Shakespeare’s “________________________.” The goal today is to see how deeply you understand this scene as it is presented to you out of context. In other words, you may not understand everything right away, but try to understand as much as you can, based on the short scene presented to you. Do you have any questions so far?

You will be presented a short scene, then you will get a chance to practice the scene. Finally, you will be asked to complete a few activities to wrap up. Please give your very best effort on these activities.

Distribute packets.

Teacher says:
Please read along silently as I give you some information about characters and plot.

Read “Scene Info” sheet.

Teacher says:
Now I will present the scene to you. Please pay attention and turn your packet over until we are finished.

Play DVD.
STUDENT REHEARSAL PHASE  

LESSON 3

Purpose: To allow students to enact/rehearse the scene in an animated and dramatic way.

Teacher says:
Please turn your packet back over. Now we will do a short review activity. Please see p. _____. Read the instructions along with me.

[Based on your memory of the scene just presented to you, choose the correct word that goes in the lines from the scene. You may look back in the text to help you choose.]

Pause for 2-3 minutes for students to complete review activity.

Teacher reads slowly:

Let’s review the correct answers. #1 should be ________. #2 should be ________. #3 is ________. #4 is ______________. Finally, #5 is ________.

Now you will be given a chance to rehearse the scene together as groups. When I call your packet number, please come forward for your group.

_____, ________, ________, ________, ________ come forward to collect your rehearsal set.

_____, ________, ________, ________, ________ come forward to collect your rehearsal set.

_____, ________, ________, ________, ________ come forward to collect your rehearsal set.

_____, ________, ________, ________, ________ come forward to collect your rehearsal set.

_____, ________, ________, ________, ________ come forward to collect your rehearsal set.

_____, ________, ________, ________, ________ come forward to collect your rehearsal set.

_____, ________, ________, ________, ________ come forward to collect your rehearsal set.

_____, ________, ________, ________, ________ come forward to collect your rehearsal set.
Pause briefly to allow groups to situate themselves in places around the room.

*Teacher says:*
Quickly decide which character you will be, and place your label around your neck. Please note on p. ____ whether you should collect a newsboy cap or a scarf for your character’s role. Please go collect these props at this time.

*(Pause for students to get labels on.)*
*(Pause for students to go collect caps and scarves.)*
Stand in a circle to begin. Face each other. When I read your character’s line, notice the suggested action next to the line. Then repeat your line with me as you act out the line to the best of your ability. Use exaggerated gestures and acting cues to express your part as you wish. You may think back to the video to inspire you. Try to convey your character’s emotions, similar to the way an actor would.

STUDENT REHEARSAL PHASE (continued)  (LESSON 3)

Let’s try an example together:
In the play, ________ says:
“________________________________________________________________________.”

Now, when I say this line again, ________________________________.
Ready… “____________________________________________________________________.”
*(See if students are acting, give some guidance for this warm-up and try again if necessary!)*
Good Job!
Please have fun and use your own intuitions when it comes to acting out your parts together. As true actors would, play off of one another’s choices! Ok, here we go!
*Read scene script* slowly, loudly, and in an animated way.
*Say character’s name* before his/her lines to prompt the appropriate student to act out.
Take some liberties to encourage students to act out and have fun, even in an exaggerated and comical way.
*(Remember--- read each line slowly, then repeat the line a second time with students as they act out!)*
Read through the scene only once, but if you are losing student engagement, you may choose to repeat a few lines if necessary. Encourage fun and entertainment! Have students return to their desks afterwards.
TESTING PHASE (LESSON 3)
Purpose: To lead students through a series of tasks that determine their basic and metaphorical understanding of the scene.
Teacher says:
Now that you have rehearsed the scene, I want you to complete some activities for me. Please turn to p. ______, the Interest Activity. Please read the instructions with me, then begin to work. When you are finished, please look up at me.

Read [Circle the option that applies to your thoughts about the lesson today.]

Pause for students to complete the task.
Please turn to p. ____ of your packet. This page is a multiple choice activity about your understanding of the scene. Please take your time with this activity. Read the instructions with me, then begin to work. Do NOT look back in the text. When you are finished, please look up at me.

Read [Based on your understanding of the scene selection, choose the best response to the following questions. You may refer to the relevant sections of the scene that are included below. Read all questions carefully, and take you time in choosing a response.]

Pause for students to complete the task.

Teacher says:
Finally turn the page to p. ___, the “Remembering Your Own Understanding” activity. Please read the instructions with me, then begin to work. Again, please do not look back at the text. When you are finished, please look up at me.

Read [In a paragraph below, please explain the scene you have been presented to the best of your ability. Include your understanding of events that take place, as well as characters and their relationships. Be as specific as possible.]

Pause for students to complete the task.

Teacher says:
This completes our activities for today’s lessons. Thank you for your participation.
TEACHING PHASE  
(LESSON 2)

Purpose: To orient students to today’s lesson and present the scene through traditional film format.

Teacher says:
Today you will participate in a lesson about a scene from William Shakespeare’s “_________________________________.” The goal today is to see how deeply you understand this scene as it is presented to you out of context. In other words, you may not understand everything right away, but try to understand as much as you can, based on the short scene presented to you. Do you have any questions so far? You will be presented a short scene, then you will get a chance to practice the scene. Finally, you will be asked to complete a few activities to wrap up. Please give your very best effort on these activities.

Distribute packets.

Teacher says:
Please read along silently as I give you some information about characters and plot. Read “Scene Info” sheet.

Teacher says:
Now I will present the scene to you. Please pay attention and turn your packet over until we are finished.

Play DVD.

STUDENT REHEARSAL PHASE  
(LESSON 2)

Purpose: To allow students to rehearse the scene aloud in a group read-through.

Teacher says:
Please turn your packet back over. Now we will do a short review activity. Please see p. _____ . Read the instructions along with me.

[Based on your memory of the scene just presented to you, choose the correct word that goes in the lines from the scene. You may look back in the text to help you choose.]

Pause for 2-3 minutes for students to complete review activity.
Teacher reads slowly:
Let’s review the correct answers. #1 should be ________. #2 should be __________. #3 is __________. #4 is ______________. Finally, #5 is __________.

Now you will be given a chance to rehearse the scene together as groups. When I call your packet number, please come forward for your group.

________, __________, __________, __________ come forward to form the first group.

________, __________, __________, __________ come forward to form the second group.

________, __________, __________, __________ come forward to form the third group.

________, __________, __________, __________ come forward to form the first group.

________, __________, __________, __________ come forward to form the second group.

________, __________, __________, __________ come forward to form the third group.

________, __________, __________, __________ come forward to form the first group.

________, __________, __________, __________ come forward to form the second group.

________, __________, __________, __________ come forward to form the third group.

________, __________, __________, __________ come forward to form the third group.

Teacher says:
Now that you have a group, please find a set of desks for your group to sit together.
*Pause for groups to situate themselves.*

Teacher says:
Take a moment to assign roles.
*(Pause for students to assign roles.)*

Read scene script slowly, loudly, and in an animated way. You may use the presentation you just saw to inspire you. Do only one read-through. Look up at me when your group is finished. Your group may begin.
TESTING PHASE (LESSON 2)
Purpose: To lead students through a series of tasks that determine their basic and metaphorical understanding of the scene.

Teacher says:
Now that you have rehearsed the scene, I want you to complete some activities for me. Please turn to p. _____, the Interest Activity. Please read the instructions with me, then begin to work. When you are finished, please look up at me.

Read [Circle the option that applies to your thoughts about the lesson today.]

Pause for students to complete the task.
Please turn to p. ____ of your packet. This page is a multiple choice activity about your understanding of the scene. Please take your time with this activity. Read the instructions with me, then begin to work. Do NOT look back in the text. When you are finished, please look up at me.

Read [Based on your understanding of the scene selection, choose the best response to the following questions. You may refer to the relevant sections of the scene that are included below. Read all questions carefully, and take you time in choosing a response.]

Pause for students to complete the task.

TESTING PHASE (continued) (LESSON 2)
Teacher says:
Finally turn the page to p. ___, the “Remembering Your Own Understanding” activity. Please read the instructions with me, then begin to work. Again, please do not look back in the text. When you are finished, please look up at me.

Read [In a paragraph below, please explain the scene you have been presented to the best of your ability. Include your understanding of events that take place, as well as characters and their relationships. Be as specific as possible.]

Pause for students to complete the task.

Teacher says:
This completes our activities for today’s lessons. Thank you for your participation.
TEACHING PHASE (LESSON 1)

Purpose: To orient students to today’s lesson and present the scene through audio format.

*Teacher says:*  
Today you will participate in a lesson about a scene from William Shakespeare’s “________________________.” The goal today is to see how deeply you understand this scene as it is presented to you out of context. In other words, you may not understand everything right away, but try to understand as much as you can, based on the short scene presented to you. Do you have any questions so far? You will be presented a short scene, then you will get a chance to practice the scene. Finally, you will be asked to complete a few activities to wrap up. Please give your very best effort on these activities.  
*Distribute packets.*  
*Teacher says:*  
Please read along silently as I give you some information about characters and plot. *Read “Scene Info” sheet.*  

*Teacher says:*  
Now I will present the scene to you. Please pay attention and turn your packet over until we are finished. *Play CD.*

STUDENT REHEARSAL PHASE (LESSON 1)

Purpose: To allow students to practice the scene in a silent read-through.

*Teacher says:*  
Please turn your packet back over. Now we will do a short review activity. Please see p. _____. Read the instructions along with me.  

[Based on your memory of the scene just presented to you, choose the correct word that goes in the lines from the scene. You may look back in the text to help you choose.]

*Pause for 2-3 minutes for students to complete review activity.*  
*Teacher reads slowly:*  
Let’s review the correct answers. #1 should be _______. #2 should be __________. #3 is _________. #4 is _______________. Finally, #5 is __________.
Appendix C
Teacher Materials

Now you will be given a chance to practice the scene in a silent read-through. Please read the scene to yourself, then look up at me when you are done.

TESTING PHASE
(LESSON 1)
Purpose: To lead students through a series of tasks that determine their basic and metaphorical understanding of the scene.
Teacher says:
Now that you have rehearsed the scene, I want you to complete some activities for me. Please turn to p. _____, the Interest Activity. Please read the instructions with me, then begin to work. When you are finished, please look up at me.

Read [Circle the option that applies to your thoughts about the lesson today.]

Pause for students to complete the task.
Please turn to p. ____ of your packet. This page is a multiple choice activity about your understanding of the scene. Please take your time with this activity. Read the instructions with me, then begin to work. Do NOT look back in the text. When you are finished, please look up at me.

Read [Based on your understanding of the scene selection, choose the best response to the following questions. You may refer to the relevant sections of the scene that are included below. Read all questions carefully, and take you time in choosing a response.]

Pause for students to complete the task.

TESTING PHASE (continued)
(LESSON 1)
Teacher says:
Finally turn the page to p. ___, the “Remembering Your Own Understanding” activity. Please read the instructions with me, then begin to work. Again, please do not look back in the text. When you are finished, please look up at me.

Read [In a paragraph below, please explain the scene you have been presented to the best of your ability. Include your understanding of events that take place, as well as characters and their relationships. Be as specific as possible.]

Pause for students to complete the task.

Teacher says:
This completes our activities for today’s lessons. Thank you for your participation.
# Teacher Rubric

## Qualitative Examination: RYOU Immediate and Delayed Tasks

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summarization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student summarizes the scene accurately and clearly describes what the scene is about.</td>
<td>Student uses several sentences to accurately describe what the scene is about.</td>
<td>Student summarizes most of the scene accurately, but has some slight misunderstanding.</td>
<td>Student has great difficulty summarizing the scene.</td>
<td></td>
</tr>
<tr>
<td>Identifies details</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student recalls extensive detail for each main point</td>
<td>Student recalls several details for each main point</td>
<td>Student is able to incorporate some detail for each main point</td>
<td>Student cannot locate details with accuracy.</td>
<td></td>
</tr>
<tr>
<td>Identifies Literal Meaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student accurately gives a clear and concise explanation of nearly all of the literal meanings of the characters’ dialogues and the events that take place</td>
<td>Student accurately gives a clear explanation of most of the literal meanings of the characters’ dialogues and the events that take place</td>
<td>Student gives a partial explanation of some of the literal meanings of the characters’ dialogues and the events that take place</td>
<td>Student fails to explain the literal meaning behind any of the characters’ dialogues or the events of the scene</td>
<td></td>
</tr>
<tr>
<td>Identifies Metaphorical Meaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student accurately gives a clear and concise explanation of nearly all of the metaphorical meanings of the characters’ dialogues and the events that take place</td>
<td>Student accurately gives a clear explanation of most of the metaphorical meanings of the characters’ dialogues and the events that take place</td>
<td>Student gives a partial explanation of some of the metaphorical meanings of the characters’ dialogues and the events that take place</td>
<td>Student fails to explain the metaphorical meaning behind any of the characters’ dialogues or the events of the scene</td>
<td></td>
</tr>
</tbody>
</table>
ACT V, SCENE 2 from *As You Like It* has a complex plot, in which Rosalind is disguised as a male. The scene is the beginning of a resolution to the play, in which several of the relationships are conflicted and Rosalind plans to resolve the problems partly by revealing her own identity. During this scene, Rosalind often refers to herself in the third person, since she is disguised.

A young maid by the name of Phebe decides that she has fallen for Ganymede, Rosalind’s alias. Rosalind makes the point several times that she is not “for” Phebe, or any other woman for that matter. She plots to have various lovers meet the following day to marry, including her own lover, Orlando. An embodied teaching model that includes this scene, centering round Rosalind’s disguise, would need to best convey these complexities of characters and relationships.

The most embodied teaching model of this study uses the film-version of this scene (the 2006 Kenneth Branagh adaptation) which draws from gesture, artistry, and the senses (see stills below). Rosalind frequently touches the other characters, both to convey her plans and conceal her identity. The artistry of the natural setting in the forest brings about cues for visual and aural stimulation. Close-ups of Rosalind remind the students that she is, in fact, a girl—an observation that might not be made through readings alone. Body language conveys each character’s feelings in terms of whom he or she loves.
Appendix D

In-Depth Look at Film-Version Artistry of *As You Like It*
For the example scene, Act V, Scene II from *As You Like It*, students were given a section of the text to read:

**Rosalind**

Your brother and my sister no sooner met but they looked, no sooner looked but they loved, no sooner loved but they sighed, no sooner sighed but they asked one another the reason, no sooner knew the reason but they sought the remedy; and in these degrees have they made a pair of stairs to marriage.

**Orlando**

They shall be married to-morrow, and I will bid the duke to the nuptial. But, O, how bitter a thing it is to look into happiness through another man's eyes! By so much the more shall I to-morrow be at the height of heart-heaviness, by how much I shall think my brother happy in having what he wishes for.

Then the students were given questions that reflect their literal and metaphorical understanding of the material. Several of Lakoff and Johnson’s (2003) conceptual metaphors are revealed in Rosalind’s lines above: LOVE IS A PATIENT, GOOD IS UP (or even MORE IS UP), and TIME IS STATIONERY AND WE MOVE THROUGH IT. The two lovers sought to remedy their lovesickness through marriage. Marriage is something to be had that is reached from a set of stairs, implying that it is oriented above the lesser degrees of the affair. Finally, the lovers ‘no sooner’ moved through one temporal stage of their relationship than they reached another stage. As the authors describe it, they are moving toward the object- their goal of marriage. Orlando’s lines also abound with metaphor about his heart-heaviness: THE MIND’S EYE, EMOTIONAL STATES ARE ENTITIES WITHIN A PERSON and DIFFICULTIES ARE
BURDENS. Orlando’s heart and body hold his emotions about his brother’s happiness and his own pining for lost love; he claims to ‘see happiness’ through another’s eyes.

Consider the following example that might be included on an evaluation of students’ understanding of the play or scene:

*Example Question #1*

In discussing her and Orlando’s relatives’ upcoming marriage, Rosalind is…

- a. Surprised at how long it took them
- b. Excited by the depth of their love
- c. implying that marriage elevates them in society
- d. will be on a platform to say their nuptials

This question would be coded for understanding on a *metaphorical* level. The conceptual metaphors discussed earlier such as LOVE IS A PATIENT, TIME IS STATIONERY AND WE MOVE THROUGH IT, and GOOD IS UP come together to create a more complex metaphor for the depth of the love between the two relatives.

Choice B is the correct response. This description of their emotions begetting other, deeper emotions makes sense. One might imagine the emotions as stair-steps, or degrees, to the final step of marriage. This is a direct representation of a metaphorical concept that the students need to capture for understanding. A more literal, yet incorrect, understanding might be reflected in another response. Response C, for example, says that marriage elevates them in society. This is a likely choice for a literal understanding since there is mention of stairs, but does not reflect the deepest metaphorical meaning that was intended. The essence of Rosalind’s description is to
reflect on the degrees of how successfully they fell in love and achieve the goal of marriage. Choice A might represent the closest choice to the best choice, B. After all, one could argue that she is remarking on how soon these advancements took place. Yet, response A still does not reflect the essence of Rosalind’s comment about the degrees of love between them, making a “pair of stairs to marriage”. Thus, all of these conclusions show that Choice B is the best response.

Example Question #2:

“Heart-heaviness” best describes Orlando’s feelings about his brothers wedding in which way?

a. His heart is filled with happiness
b. His heart is filled with emotions
c. His heart is empty
d. His heart is filled with bitterness toward Rosalind

This question would likely be directed at metaphorical understanding instead of literal understanding. The metaphors of THE MIND’S EYE, EMOTIONAL STATES ARE ENTITIES WITHIN A PERSON and DIFFICULTIES ARE BURDENS can together be understood solely within Orlando’s comments. His two lines are very straightforward to convey that it is bittersweet for him to see happiness through another man’s eyes (his brother’s). There is some ambiguity to Orlando’s use of “heart-heaviness”. Is he happy for his brother at the same time as feeling bitter toward him as well? Thus, the response choices are worded very carefully to reflect the student’s understanding of these nuances. He is not bitter toward Rosalind; he is not empty. Both of those responses would simply be inaccurate. The broader, more ambiguous choice of
response B reflects a recognition that Orlando both admitted to being bitter, while in fact, he likely cares for his brother’s happiness.