Lesson Design with Brain-Based Learning in Mind: Defining and Applying the Strategies

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Table of Contents

Defining and Applying the Strategies

Brain-Based Learning

Each year, educators worldwide seek to discover how to maximize student learning. While there are millions of theories, strategies, and practices that have been shown to be effective in the classroom, the current educational trend is in a set of research promoting brain-based learning. This body of research synthesizes findings in sociology, chemistry, anthropology, environmental studies, psychiatry, psychology, education, and therapy in an effort to find the practical applications for the classroom student (Jensen, 2000a, p. 77).

Although educators worldwide would celebrate if brain-based learning were the elixir to solve all of education's problems, this comprehensive approach to instruction will not relinquish the world of the issues surrounding knowledge retention. According to Jensen (2012), "brain-based education is the active engagement of practical strategies based on learning and behavioral principles derived from neuroscience." The approach focuses on the strategies found to be most effective for student learning. Proponents of brain-based education applaud the research and focus on emphasizing how the brain learns naturally based on current scientifically proven knowledge of the structure and function of the human brain during varied developmental stages (Wilson, 2011). This teaching approach takes advantage of the way the brain is meant to learn.

Because scientific research is constantly expanding, brain-based education becomes a challenge to define when compared to other educational approaches or strategies. However, Caine and Caine (1990) pointed out that brain-based learning is not a separate movement in education (p. 70). If research in neuroscience has supported the use of a strategy as effective, it can be included under the umbrella of brain-based learning. This complicated ability to broaden parameters makes brain-based learning even more difficult to examine as an application within a

unit lesson plan or even as a definitive list of "x" amount of elements, like many other educational approaches.

Defining the Goal of Brain-Based Learning Further

Classroom teachers who use the knowledge gained through the application of brain-based research will not have students retain all information long-term. However, the retention of material long-term will be increased because these teachers are using strategies supported by science to be effective. The goal of brain-based learning is to discover the most effective way to increase meaningful learning. Caine and Caine (1994) contended that educators must accept the rules for how the brain processes information and organize instruction with those rules in mind (as cited in Duman, 2010, p. 2080). Durman (2010) noted that effective brain-based instruction uses strategies supported by research to make more beneficial decisions for students about the learning process (p. 2080). Increasing meaningful learning should be the goal of all educators, and brain-based learning provides the ideal approach for how to accomplish this task.

Brain Research Proves

Nothing. Jensen (2000a) confirmed that while the research may suggest a particular effective strategy, it does not ratify any educational practice (p. 76). This seemingly contradictory thought is not absurd. Jensen (2000a) continued, "We now know enough about the brain to justify specific strategies that only a few years ago were just good ideas without specific basis" (p. 77). Due to the exponential growth in technology during the last two decades, educators now have scientific support for effective strategies. These are not educational practices found to be successful in one school that met certain criterion. These are educational practices found to be effective in almost every school setting because of scientific research about the brain.

Strategies, whether brain-compatible or brain-antagonistic, are used in every classroom.

Brain-based research gives these strategies merit, rather than just being effective because one school found success with it in specific circumstances. Jensen (2000a) refuted the idea that brain-based research will justify every strategy of good teaching though. He continued, "In fact, most of what passes for good teaching is a collection of basic psychology and common sense refined by trial and error. New findings, however, can steer all of us in more productive directions" (p. 76). Brain-based classrooms are productive because the strategies used are research based. Yet, it is imperative to note that it will not validate every strategy. The approach is comprehensive, but it is not all-inclusive.

Perhaps the most difficult element of brain-based education to understand is the application of the research into effective classroom strategies. Research might show that the brain releases a specific chemical to improve attention, but care is required to delve into the rational for how to consistently have that chemical appear in brain of learners in the classroom setting. Jensen (2000a) argued, "Neuroscience has much to offer our understanding of teaching and learning. But, we must be cautious about taking research out of the laboratory and into the classroom" (p. 76). The application outside of the controlled laboratory setting is the challenge.

The History of Brain Research in Education

The brain is a complex three-pound organ that scientists have only recently begun to unveil the mysteries of. The interconnections of the brain exceed the Internet's by astronomical numbers. The approximately 100 billion neurons of the brain each have between one and 10,000 synaptic connections to other neurons (Weiss, 2000, p. 20). While scientists have made significant gains, brain-research is still considered to be in its infancy. If it is dismissed as a short-lived whim, learners will be the ones who suffer for the shortsightedness of this approach (Jensen, 2000a, p. 79).

In comparison to other approaches, brain-based learning is new, and it morphs as time passes and research improves. Jensen admitted that to many, brain-based learning is hazy, confusing, contradictory, and too rapidly changing to be of use (p. 77-78). However, any approach's infancy is unclear because it is new. Kinks take time and application to be effectively worked through. The new iPhone 5 is faster and more complex, but it does not invalidate the usefulness of the iPhone 4.

For the past 2,000 years, models of the human brain have been primitive. Even as recently as the mid-1900s, the brain was compared to a city's switchboard, a notion now considered misguided. In the 1970s, the idea of the right and left brain as two independently operating entities first appeared. While brain research has dispelled many of the elements of the right and left brain theory, there are still countless references to the skills of each side of the brain. Years later, Paul McClean developed the Triune brain, which has the human brain in three parts. The lower portion is intended for survival learning, the middle portion is for emotions, and the upper portion is responsible for higher order thinking. This idea marketed the idea that the brain had various parts that were specialized (Wilson, 2011). The scientific basis for brain research as it is known today began developing quietly in the 1980s (Jensen, 2000b, p. 3).

The last twenty-five years have seen a swing in the pendulum of knowledge about the human brain. In July of 1989, President George Bush declared the 1990s "the decade of the brain" (cited in Roberts, 2002, p. 281). This statement is incorrect only because in the 1990s scientific research began much of what is known about the brain, rather than being "the" decade. Weiss (2000) credited the 1990s with advancements like Magnetic Resonance Imaging, Functional Magnetic Resonance Imaging, Positron Emission, and topography scans. Scientists used these developments to explore the human brain's process for memory, emotion, attention,

patterning, and context (p. 20). Without these advancements, the brain might still be recognized as little more than a three-pound organ.

Jensen (2000b) noted that the many unconnected sub-disciplines created during the 1990s are currently being woven together as more information comes to light (p. 3). This connection provides transition from research to application in the classroom. Neuroscientists' research provides many implications for improved teaching practices. Their studies have used various methods and combinations of double blind, large, diverse, multi-age, multicultural groups to provide the best possible information for applying the research to the classroom (Wilson, 2011). In 1995, Sylwester confirmed that current brain theory and research were just "broad, tantalizing outlines" of the potential of school of the future. He continued by stating "we can anticipate that the rate of new discoveries will escalate" (p. 141). Since this statement in the mid-1990s, new discoveries have surpassed what was once believed possible.

There are three basic ideas that sum up the current brain-compatible approach to education through research findings, according to Roberts (2002). First, neuroplasticity, the ability of the human brain to change as a result of one's experiences, provides educators the ability to increase the learning of each child. Second, the brain is a complex and interconnected organ. Third, every brain is unique (p. 282). The strategies and applications of these three ideas combine together to create the basis for what is currently known about how to apply brain research into the classroom setting.

The Role of Brain-Based Learning in the Classroom

Scientists learn countless pieces of information during the studies involving the brain. However, these pieces of information provide little benefit to students if teachers are not informed of how these pieces are applied to the classroom setting. Discovering these various

fragments of information are beneficial only if there is application of the brain research in the classroom.

The Value of the Approach

The devoted educator, of all individuals, should be using strategies that help the brain retain information and commit that information into long-term memory. Brain-based education is about the professionalism of knowing why the use of one strategy is favored over another, in regards to science, and not just using the strategy by luck. If the educator can just use effective strategies without knowing why they are so, his or her knowledge is limited. Yes, he or she may use the strategy, but education morphs as students do. In ten years, that same teacher might not be able to meet the needs of the students if he or she does not understand why said strategy is effective.

The Student of Today

Jensen (2010) claimed that 90 percent of all brains are atypical, damaged, or in some way unhealthy (p. 6). Chronic stress affects 30 to 50 percent of all students every day either "moderately" or "greatly." These numbers are higher for those in poverty (Jensen, 2010, p. 5). If so few brains that teachers encounter are perfect, why do pre-service teachers create such high hopes for a perfect classroom? Perhaps, it is because they are not prepared for the differentiation required to meet the needs of the students.

Beyond noting the unhealthy number of brains and the chronic stress that plagues students, the students of today's society deserve more than the students of the past. This right is afforded because educators have the opportunity to discover the best ways to teach and bring value to the classroom. Stevens-Smith (2006) noted, "Children who are exposed to an environment that is rich with various activities and learning opportunities at a young age can

experience greater stimulation and a greater number of interconnections in the brain. The process of establishing these interconnections is greatest between the ages of 2 and 11" (p. 19). Steven-Smith's timeline matches well with the pre-school and elementary school levels.

What does the student of today's brain look for when learning from incoming data? Wesson (2011) listed that the brain looks for patterns, ties to emotions, relevance of material, sense making features, and context, content, and cognitively appropriate material (p. 5). If data presented to the learner's brain does not meet at least one of these criterion, it is highly unlikely that the material will be retained. Since the brain is looking for these elements, the educator should seek to fulfill at least one of these. As Willis (2007) observed, engaging the learning process increases one's capacity to learn (p. 312). Increasing the student's capacity to learn increases the likelihood the content will be mastered. This brings value to the role of the educator as a facilitator of engagement for learning. The brain has a desire and curiosity for novelty, discovery, and challenge that teachers have the potential to fulfill (Caine & Caine, 1990, p. 67).

The Role of the Teacher

Jean Piaget asserted, "If the aim of intellectual training is to form intelligence rather than to stock the memory, and to produce intellectual explorers rather than mere erudition, then traditional education is manifestly guilty of a grave deficiency" (qtd. in Caulfield and Jennings, 2002, p. 22). The goal of education should not be to create children with shelves of facts. The educator should be seeking to instill a lifelong passion for learning. Jensen (2000a) noted that in the 1960s, good teaching was categorized as all-lecture, content-laden courses with quiet students sitting still at their desks (p. 76). This classroom does not instill a passion for learning, nor does it encourage students to want anything more than the end of a school day.

David Sousa, international consultant in educational neuroscience, stated the work of

teachers and how they can be most effective well. “Teachers try to change the human brain every day. The more they know about how it learns, the more successful they can be” (qtd. in Wesson, 2011, p. 5). The tragedy is that with so much information now readily available from the increases in technology, there is still a gap in how to reach the classroom student. Roberts (2002) summarized it as the “steps from research to application are inherently complex and difficult” (p. 282). Science is creating a plethora of information about the brain that is beneficial for improving learning. However, the information is just information until it is applied in the classroom.

The role of the teacher is one of a facilitator. Sylwester (1995) encouraged that the classroom be a stimulating social environment that requires students to work both alone and together to solve the problems they confront (p. 139). The facilitator encourages passion for learning rather than provides a list of information to master. Willis (2007) confirmed that rote memorization is something that is required in the classroom, yet this requirement needs to be limited if it lacks engaging patterns or connections (p. 312).

How does the educator begin to create an atmosphere where they are a facilitator not a feeder of information? According to Sylwester (1995), “Only through our knowledge of the research and our professions own experimental fumblings will we begin to discover useful applications of brain theory and research” (p. 5). In the almost three decades since Sylwester made that statement, educators have had plenty of opportunities to fumble through the research and create a set of applications, even if rough.

Brain-Based Learning Strategies Applied

While many lesson plans incorporate the effective strategies of the brain-based learning approach, it is a challenge to find a lesson plan designed with brain-based learning in mind and

explained as such. The following sections will delve into one unit lesson plan created after researching best educational practices supported by brain-based research. The twelve applications are not intended to create an all-inclusive list from the perfect unit lesson plan with brain-based learning in mind. The intent is to provide an example for educators to see what a lesson with brain-based learning looks like in whole, rather than just a series of recommended strategies or parts.

Knowing the Individual Learners in the Classroom

O'Keefe and Nadel (1978, p. 32) noted, "Learning styles are cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (qtd. in Duman, 2010, p. 2079). Although brain-based researchers debate the inclusion of learning styles, such as VARK or Howard Garner's multiple intelligences, as a part of the brain-based approach because these strategies appeared prior to the explosion of research, it is a strategy widely incorporated into the successful lesson plan. As mentioned above with Sylwester's comment about experimental fumblings, the effective teacher knows that students learn differently. The teacher incorporating the brain-based approach knows each learner values the engagement of each of the senses differently. Students learn best via their senses in a variety of ways, which is supported through brain research (Chipongian, 2006, p. 17).

In the unit lesson plan included, there was no specific set of students in mind when it was created. The only specifications of learners are based on the 5th grade standards that are addressed during it. While if there were a specific set of students the lesson were created for, it could be even more direct in meeting the needs of any students with special needs, the lesson does incorporate teaching methods that are supported by more than one style of learning. For

example, the final project-based activity requires students choose from four separate options. Each student may choose, based on his or her strengths and weaknesses, to show learning through a blog review, book jacket design, play or skit performance, or a poem or song creation.

Each task honors the students' right to learn and show learning in the way that best represents them. The student who favors musical intelligence may opt to create a poem or song. Whereas the spatial individual chooses to use the book jacket design to create artwork, to use a specific graphic organizer to make his or her plans clear, and to use colored markers or pens. The individual favoring physical movement might opt to perform a skit to increase his or her ability to move about the room. The linguistic learner could benefit from any of the project-based activities, as all the tasks support reading, writing, spelling, and listening through their exercises (Chipongian, 2006, p. 17-19).

Caine and Caine (1990) contended that in any two "average" children, there can be a five year disparity in maturation (p. 66). The diversity found in preferences of even two students makes it necessary that differentiation occurs. The lesson plan designed with brain-based learning in mind approaches the objectives with the intent of reaching as many learners as possible. Whether that is called learning styles, multiple intelligences, or just good teaching, brain-based strategies are necessary for an effective lesson.

Maintaining High Standards that are Clear to Students

Vague requirements bring frustration to any learner at any age. Even with a range of 20 to 60 percent of a school's population battling some sort of challenge, such as depression, brain insults, Attention Deficit Disorder, drug use, dyslexia, Obsessive Compulsive Disorder, distress, alcohol, or trauma, Jensen (2000a) contends that everyone can learn (p. 79). Each learner is unique and requires different high standards be held for that individual child, rather than a

blanket set of standards for everyone.

Educators are, according to Jensen (2010), a profession of behaviorists who have learned how to manipulate factors to achieve a desired behavior (p. 3). For any desired behavior to be fulfilled, the teacher must know the learner and match high standards to that student. Jensen (2000b) urged teachers to not allow top students to be the only successful students in the classroom (p. 110). For those not currently following best practices supported by brain-based research, this may mean changing how you approach curriculum. Caulfield and Jennings (2002) warned against starving the brain by limiting instruction to texts and worksheets (p. 28). The classroom that has instruction based on research supports more learners than a worksheet is able to do effectively.

Within the unit lesson plan analyzed for this paper, the student is provided clear high standards before the assignment is given. The projects are always explained with rubrics outlining the exact nature of each point value assigned prior to beginning the task. The tasks require limited worksheets for the month long unit. For grading and planning purposes, yes, this does require additional preparation before experience is gained on how to quickly create rubrics with clear expectations. However, the students cannot approach the teacher after the graded assignment is returned and state that they did not know that "x" had to be done in a certain way. The rubric, if done effectively, explains the expectation to the student. High expectations may seem like an obvious requirement in an effective classroom, but many educators are lowering their standards for various reasons that do not benefit the learner long term.

Providing Choice and Self-Direction

There are few individuals in the world who prefer to be told what to do each minute of every single day. That sort of strict schedule is reserved for the situations of those in prison,

which is not an acceptable comparison to school. Weiss (2000) noted the value of intrinsic versus extrinsic motivation. The attempt by another to require an individual to do something is solely extrinsic motivation, and it hinders learning. Students are grounded in values and feelings, and the individual needs to want and desire to learn the information. Intrinsic motivation is what the educator should seek. In regards to learning and creativity, there is a positive correlation between creativity and intrinsic motivation (p. 20).

In the classroom, obtaining intrinsic motivators often means tapping into the creative outlets, such as music and art. Providing opportunities for students with these talents improves their desire to complete the task. According to Restaino (2011), the best strategies for learning are to study the material over time, to avoid cramming, to ask questions, and to be self-directed or self-motivated with the material (p. 200). Teachers can provide the ability for students to follow all four of these strategies for learning. However, providing opportunities for self-direction can encourage the learner to be curious about the world around him or herself.

How does this strategy look applied into a unit lesson plan? To an outside observer of the classroom, it looks like chaos. Because of limited whole group instruction, which can often lose many of the students who already grasp the material, there are often many groups of students doing very different things throughout the classroom. In this unit, the project-based activity is a perfect example. One student will need the use of computers to type his blog, while another student would prefer to handwrite her play script. Yet, another student will be in a corner focusing on creating the perfect book cover to match her fairy tale. No two students in the classroom are completing the same task in the same way. However, each student has the right to choose exactly how he or she learns and how he or she shows the learning. It is a little less like prison, and a little more self-directed learning.

Creating Relevance for the Learner

Many of the strategies of brain-based learning connect to each other. Providing student choice helps create relevance for the material, and relevance helps improve a student's desire to be self-directed. G. Caine asserted, "When we're organizing information in our minds, the way we form patterns is deeply motivated by what we're interested in" (qtd. in Weiss, 2000, p. 20). If the material never seems interesting to the learner, the attention span will wane, lessening the likelihood of retention. But, how does the educator create this relevance for the learner? Through relationships with other material already stored in memory.

According to Willis (2007), when the presentation of new material creates relationships, brain cell activity, the formation of new neural connections, and better storage and retrieval from long-term memory are generated (p. 314). The educator's goal is to increase the ability for the learner to store and retrieve information from long-term memory. Caine & Caine (1990) noted that isolated pieces of information are considered unrelated to the brain; the brain considers it meaningless knowledge and resists it. The human brain desires to perceive and generate patterns, as it was designed to do (p. 67). The educator must find a way to make the learning personally relevant. Prigge (2002) offered providing connections through stories, analogies, and "serendipities" as one way to increase memory and recall. Students can find meaning in their learning through the guided sharing of personal experiences (p. 239).

Engaging emotions in learning is another excellent way for the educator to increase memory and recall. Prigge (2002) provided several emotion creating teaching strategies for the educator to use that can be found within the unit lesson plan discussed, such as models, music, games, story-telling, and drama (p. 239). Relevance is often tied back to the idea of choice discussed earlier. Students feel ownership of their work if they have choice on how they will

complete the task. This unit has several opportunities for student choice, which provides the individual the chance to pattern the material into something the student finds relevant. The student may select the fairy tale, the group members, and the specific choice of project used to show mastery of content.

Gaining and Sustaining Attention

Regardless of how wonderful the material or activities are in a lesson, the attention of a student can alter the effectiveness of the storage and retrieval of this information long-term. In 1995, Sylwester listed four things an effective attentional system should do. It must identify and focus without delay on the most important elements in a complex environment, maintain attention with the ability to input related information and ignore other stimuli, access from long-term memory information that could be relevant, and adjust attention quickly once new information arrives (p. 78). Not every student's brain is able to effectively and efficiently do each of these tasks. Yet, Jensen (2000a) encouraged the educator to understand the attentional brain, focusing on how the prefrontal cortex drives attention and deficits (p. 76).

How does the educator drive attention? Through teaching information in patterns or chunks, the educator can effectively drive attention. The working memory has a capacity for immediate recall of five to nine pieces of unrelated items (Willis, 2007, p. 314). If the educator can chunk that information, retention can increase. In 2008, Medina noted that limited attention spans can be combated through chunking in ten-minute blocks (qtd. in Restaino, 2011, p. 199). Jensen (2010) recommended two to four chunks at a time. For information where students have limited background, it is recommended that content be maxed at four to eight minutes. If students have more background or the concept is less complex, the max can be moved to eight to fifteen minutes of information at a time (p. 7).

Jensen's recommendations alter greatly from the way many educators approach the learning process, focusing on long lectures without breaks. Even for the class that requires lecture, there are still tasks that can break it up. If one looks over the unit pacing guide for the included lesson, they will note that there are many activities included each day. This fulfills the idea of chunking activities into small amounts of time. Even for the days where significant lecture is necessary, brain breaks and other activities can alleviate the constraints of learner attention.

Lecturing with Intent

Lecture should not be a fifty-minute period of the teacher talking while students furiously take notes. The individuals who experienced primarily this teaching method will probably not be able to recite a significant amount content covered during an entire semester, let alone a specific unit or lesson. When lecture is teacher-led with no student input, it is not engaging or effective instruction. Brain-based teaching does not discourage the use of lecture. However, it should be one strategy in the larger learning experience (Caine & Caine, 1990, p. 69).

If one looks at the instructional input section of the unit lesson plan included, he or she will note that each section has a question listed and sub-points that answer the question. This model of lecture has the teacher request information from the students, the students discussing the information in small groups, and then responding to the question in a whole group setting. This lecture format increases the time needed for this component. Why would an educator, already pressed for time to teach all the necessary standards, increase the time needed to teach content such as the writing process with a questioning format or adding in actions? The answer is the role of active processing.

Caine and Caine (1990) asserted that active processing has students review what they

know and the depth at which they know it. This processing format allows the student to take charge of his or her learning and transfer the information into something with personal meaning (p. 68). As another one of the strategies noted, building relevance is crucial for the development of long-term memory retention. The chosen lecture format builds upon other brain-based strategies, too. For example, the writing process section of the lecture also includes actions for motivating the kinesthetic learner. If a student masters the actions in fifth grade, they have another outlet and strategy for remembering the writing process ten years down the road. Yes, it will seem silly at the time. However, the relevance to the learner and laughter associated with learning the material increases long-term memory formations.

Establishing Meaning through Patterning

Roberts (2002) explained patterning as a meaningful arrangement of information (p. 282). This arrangement of content allows the learner to plug the more in-depth information learned in today's lesson in with content learned in last year's lesson. Caulfield and Jennings (2002) insisted that the brain sorts data into recognizable patterns. Each of these sets of patterns develops from experiences of the learner, and the best patterns are created in a rich and stimulating environment with a large amount of input to the brain (p. 22).

Willis (2007) claimed, "Education is about increasing the patterns students can use, recognize, and communicate" (p. 315). While it is valueable for a student to be able to master the skill or content, he or she must also be able to communicate that information with the teacher. How does an educator help the learner's brain sort this data into these patterns to show learning? If the educator is doing all of the steps above, this strategy of brain-based learning is simple to incorporate.

Within the provided unit lesson plan, there are two elements that promote the idea of

patterning especially well. Graphic organizers are a creative alternative to the typical rote memorization found in many classrooms. The learner can make connections, see patterns, access prior stored memories, and expand on existing memory through this strategy (Willis, 2011, p. 314). The students use a graphic organizer to create the patterns between the two fairy tales they are discussing. When they conference with the teacher, it is easy for the teacher to establish the student's understanding of the differences and similarities between the two stories. Another element promoting patterning is the use of fairy tales as the basis for which to show comparison. Many of the students will be familiar with one version of the fairy tale, and providing the new, unheard version allows for students to combine the new tale with patterns formed years before.

Using Repetition to Increase Recall

Weiss (2000) pointed out that "Memory is the ability to repeat a performance" (p. 20). If a student has mastered the material, he or she should be able to present that content back to the teacher, ideally in more than one way. How that information is displayed depends on the level at which the student learned. The old saying of "use it or lose it" strongly applies to content learned, and repetition allows the learner to benefit with long-term memory retention.

Some teaching strategies persuade against the use of one form of repetition, rote memorization, because it is seen as boring. While rote memorization is generally seen as brain antagonistic, there is benefit to this form of repetition of content (Jensen, 2000a, p. 78). This rote memorization needs to be repeated in unique ways. As Willis (2007) noted, "Duplication allows for greater opportunity for future cues to access this stored information" (p. 311). The repetition allows the student to better key into his or her stored memory, thus providing the opportunity for the student to display his or her learning. If rote memorization is to be successful at helping students repeat the performance of learning, it needs to be carefully designed by the educator.

In the included unit lesson plan, cooperative-learning strategies like think-pair-share with higher order questions will be used. Think-pair-share is a strong strategy supported by brain research because it requires the student to formulate an answer independently before discussing the ideas created with just one classmate. Then, there is a time for whole group sharing to solidify that all students are showing adequate comprehension. Within the lesson, there is also the repetition of groups, created by the Fairy Tale Friends Activity Sheet. In addition to these listed strategies, the unit also uses the repetition of actions with the steps of the writing process to help students retain the five steps.

Each of the uses of repetition described above, whether rote or otherwise, encourage the student's use of working memory. Willis (2007) observed that the working memory is set down as a permanent neuronal circuit. This memory is ready to be activated with information as needed (p. 312). The repetition of content helps the student master this recall of information that would otherwise be lost.

Incorporating Novelty

Willis (2007) noted, "The more ways material is introduced and reviewed, the more dendritic pathways of access will be created in the brain" (p. 311). This statement applies well to the brain-based strategy of incorporating novelty because the unfamiliarity of the way the information is presented will increase the likelihood that the student will remember it. Many adults can remember exciting and unique lessons done by third or fourth grade teachers because of the novelty of the activity. Roberts (2002) claimed that at least forty percent of activities should be novel (p. 284).

These novel activities do not have to be anything extraordinarily difficult to plan for on the part of the educator. The ideal activities are those that incorporate sensory associations with

experiences through seeing, touching, smelling, hearing, and tasting. Even visuals that are classified as silly can improve student recall of the fact, such as picturing a washing machine filled with lemons being used to help students remember that Olympia is the capital of Washington (Prigge, 2002, p. 239).

The Fairy Tale Friends Activity Sheet from the included unit provides one example of the incorporation of novelty in a unit lesson plan. The activity sheet provides a new way to approach creating groups. Not only is it a new way to create the groups, but this activity provides novelty throughout the unit, too. Each time a task is completed, the student is grouped with a different set of students. The skills necessary for working with a group of four are different from a group of two, so the novelty also lies in unique surroundings. If an educator has not previously used brain-based strategies, even the activities like actions for learning the writing process or the question and lecture format will be novel for the student.

Making Movement a Feature to Learning

Stevens-Smith (2006) noted that brain scans have shown that children learn best when moving (p. 19). Why is this? Research has shown that movement raises the chemicals noradrenaline, dopamine, and cortisol, which are known for being chemicals beneficial for thinking, focusing, learning, and memory (Jensen, 2010). Educators strive to increase each of those elements listed while presenting new information, so it would seem logical to incorporate movement as a way to boost learning. Some educators may fear the chaos that can result from having a room full of students up and moving. However, mingling movement into a lesson will increase student focus on the content and lessen the likelihood of re-teaching being necessary.

While games or activities with an entire classroom full of kids jumping around might first come to mind when one thinks movement, the inclusion of this strategy can be simpler. Making

movement a feature of learning could be as easy as the movement as students transfer to small groups, as the included lesson frequently does. Movement could also be in the actions for the writing process, a movement that does not require any student to even get out of his or her seat. Manipulatives are generally categorized with math lessons in the upper elementary ages, but even the story sort cards used in the unit lesson plan would be considered movement. These little pieces of time are not burdensome, do not disrupt the classroom process, nor require a lot of extra preparation. However, the increased oxygen to the students' brains will improve their ability to learn the material.

Developing Social and Collaborative Groupings

An educator's knowledge of how the social brain of the learner affects the ability to master content is vital for long-term memory retention. Jensen (2010) asserted that the classroom's social conditions should have ten to twenty percent maximum per day of random social groupings. Research better supports the use of intentional and diverse groups through mentoring, teams, and buddy systems (p. 3). While the students may prefer selection of their own groups, ensuring diversity among learners will better prepare the student for mastery of content.

Some educators may fear that in order to get each student engaged with the information, it is necessary to speak with each individual student. However, Willis (2007) provided examples like partner discussions or think-pair-share activities that engage the student without requiring one-on-one attention with the teacher (p. 314). These examples link back to the value of the social brain for mastering content and both may be found in the attached unit lesson plan. The teacher does not have to individually ask 25 students a question about what makes a good discussion member in order to check comprehension levels. The question can be posed all at once to the group, and each student can discuss it with one other student. Then, the teacher can

assess comprehension through whole group discussion.

Offering Feedback for Increasing Learning

Research describing the computational brain focuses on how feedback plays a role in forming the neural connections necessary to help promote long-term memory formation (Jensen, 2000a, p. 76). There are two ways feedback is often seen in the classroom, through review of content or the display of achievement. The form of feedback used at any point is dependent upon the educator's discretion, but feedback is a necessary strategy for increasing memory and retention.

Jensen (2010) stated review is best used halfway between the original learning and the test (p. 11). In many classrooms, the review is only a day or two prior to testing, which is not the ideal window for presenting the review. Jensen (2010) continued that the review process should be mediated to ensure quality control, such as activities like structured review with quizzes or group work (p. 11). The provided unit plan has several occurrences of halfway checkpoints for each student. There are two one-on-one conferences with the teacher that each student must participate in to ensure they understand what is expected of them and that they understand the assignment. There are also numerous instances of group work that is used to help build up feedback levels from peers as well.

Caulfield and Jennings (2002) believed students develop pride and ownership in their work when it is displayed. The research showed that the ideal circumstances needed to have the feedback prominent and frequently changed to be most successful for the student (p. 15). Within the provided lesson plan, each student is able to share his or her thoughts with other students. This display might not have a visual space on the wall filled, but it does provide a student the opportunity to display knowledge in front of peers for additional feedback. Students write their

fractured fairy tales and have the opportunity to share them with peers through revision, editing, and as a final copy prior to the teacher's feedback via the rubric.

Benefit for the Pre-Service Teacher

Although the list above does not exhaust every brain-research supported strategy found within the attached lesson plan, it does provide an educator with specific examples of twelve strategies and how those look within a lesson plan. As a pre-service teacher investigating brain-based research because it would provide the most solid foundation for building my teaching skills, I struggled to find specific examples of what a brain-based lesson plan looked like. The books and articles could provide illustrations of strategies pulled out of diverse types of lessons, but I wanted to see what a completed unit supported by strategies included. No such example could be found. There were many definitions of the strategies, but it was a struggle to find applications of those strategies that were not isolated elements.

Through the research within this project, I was able to create a unit lesson plan that exemplified the characteristics that current educational neuroscience supports. The overall goal was not to create a unit that was an assortment of unconnected strategies. I wanted one unit that could be practically implemented into any classroom where the strategies were unnoticeably incorporated. The lesson also needed to be flexible enough to be feasible in more than just the grade level and content area it was created for so that the ease of incorporating brain-based learning was evident to a range of educators. Even though fifth grade standards were selected to base the unit on, the concepts covered in the unit can be easily modified for younger or older grade levels.

Brain-based research is a relatively new field in the educational world. New strategies often take a significant amount of time before they are noticed on a wide-scale as practical within

the classroom environment. Although brain-based research is still in its infancy, it shows strong promise for benefit to the educational field. The unit lesson plan created will have flaws for certain schools, certain classrooms, and certain students. However, it is a starting point for other educators to see the ease of incorporating brain research supported strategies to meet the needs of the largest variety of students.

As a beginning educator, I need to be equipped with the most successful strategies for retention of material. The springboard the research and unit creation provided demonstrates the best practices for helping students retain information long-term. As a pre-service teacher, I need all of the tools I can find to best equip myself for the needs of the classroom student. Brain-based research provides the strongest and most reliable basis for building the foundational skills that will make me a successful educator. More importantly, it builds the foundation for learning how to do more than just teach at students. The foundation is now set for teaching students who can retain the information long-term.

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Fairy Tales Across Cultures

Grade Level: 5th

Content: Communication Arts

Lesson: Fairy Tales Across Cultures

Time to Teach Unit: Approximately 20 days

I. Anticipatory Set

a. Purposes and Objectives

1. Following instruction, students will create a fractured fairy tale using the writing process to be assessed by rubric.

- *W.5.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)*
- *W.5.5 With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.*

2. Following instruction, students will compare overall structure and approach to themes in a minimum of two fairy tales from different counties of origin through a choice of project-based activities to be assessed by rubric.

- *RL.5.9 Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.*

3. Following instruction, students will practice engaging in a range of collaborative discussions with diverse groups and settings to be evaluated by checklist.
    - *SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.*
        - *Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.*
        - *Follow agreed-upon rules for discussions and carry out assigned roles.*
        - *Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.*
        - *Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.*

b. Teaching Resources and Special Instructions

1. Technology
    - Computer with SMARTboard capabilities
    - Internet Access
2. Resources (All found in Appendix A)
    - Unit Materials
        - Unit Pacing Guide
    - Student Activity Sheets

- Fairy Tale Friends Activity Sheet [Day 1-20]
- Story Sort Cards [Day 16]
- Vocabulary Self-Awareness Activity Sheet [Day 3,6,13,15,20]

- Teacher Resources & Rubrics
  - Fractured Fairy Tale Rubric [Day 6-16]
  - Blog Review Rubric [Day 14-20]
  - Book Jacket Design Rubric [Day 14-20]
  - Play/Skit Performance Rubric [Day 14-20]
  - Poem/Song Rewrite Rubric [Day 14-20]
  - Checklist of Discussion Role [Day 4,5,9,12]
  - Focus Fairy Tales List [Day 1-20]

c. Motivation

1. Unit Anticipatory Set

- Students will complete the Fairy Tale Friends Activity Sheet, a differentiated grouping strategy to ensure students are paired in different breakdowns with diverse classmates. Options for groups of 2, 3, and 4 will be included on the activity sheet and will be used throughout the unit.

2. Daily Anticipatory Set

These are a few of the specific anticipatory sets that will be used during the unit.

- Story Sort: Students will work in pairs while participating in a word sort with various characters and phrases from fairy tales. *It will be used as a*

background check before students select their individual fairy tales for comparison. [Day 16]

- Write a Letter as a Background Object: Write a rough draft quality letter as a background object in a popular fairy tale complaining about something one of the characters is doing. Examples include but are not limited to the ring on the girl's finger in Rumplestiltskin, Little Red's hood, Cinderella's slipper, Rapunzel's hair. *It will provide one example of a point of view from which to write the fractured fairy tale. They will see several examples.* [Day 8]
- Tongue Twister: Create a tongue twister using alliteration with your tablemates about a fairy tale of your choosing. *It will be used to encourage skills of describing characters or setting in the student's fractured fairy tale.* [Day 14]
- Comic: Create a comic for one of your selected fairy tale versions. Be sure to include a beginning, middle, and end. *It will be used to demonstrate student understanding of the plot of story for one of the versions for their fairy tale.* [Day 17]

d. Background and Prerequisite Knowledge Check

1. Cinderella: Students should know the Disney character and/or the basic story. *Assessed during small group work, so students have the collaborative help of classmates, if their background knowledge lacks.*
2. Writing Process: Students should be familiar with the idea that there are steps to writing and different tasks are completed during each step.

Assessed during instructional input during questioning/construction of knowledge by using think-pair-share model.

3. Genres: Students should realize that different texts are written differently and there are different reasons for writing each text.

   Assessed during instructional input during questioning/construction of knowledge by using think-pair-share model.

4. Group Work: Students should understand that group work could be more effective if each member knows what is expected of them.

   Assessed during instructional input during questioning/construction of knowledge by using think-pair-share model.

e. Vocabulary Development

To be assessed throughout unit using the Vocabulary Self-Awareness Chart found in Appendix A.

1. Vocabulary Self-Awareness Chart: This chart is used to help the student gauge his or her understanding of the vocabulary. Each word has a place for a definition and a sentence. The student puts a smiley face, in-between face, or frowning face in to show his or her knowledge. A smile is if students can correctly write a sentence and define the word. One or the other is an in-between face. If he or she can do neither yet, frowning face goes in the space. *It will provide the teacher and the student with the opportunity to view what the student knows before the unit and learns throughout the unit in regards to vocabulary development.*

   - Pre-writing—thinking or planning about writing

- Drafting—writing or creating your first copy
- Revising—making your draft have better organization, make more sense, and improve the smoothness of the writing
- Editing—proofreading for elements like spelling, capitalization, and punctuation
- Publishing—sharing the finished product
- Genre—a particular type, sort, or category
- Compare—similarities between two items
- Contrast—finding the differences between two items
- Theme—the main subject or topic; the lesson or moral
- Author's purpose—the reason why the text was written
- Plot—the storyline or order of events in a book, play, or movie; it's what the characters do
- Point of view—a way of thinking or looking at something; a perspective
- Diverse—of different kinds or sorts

f. Differentiating Instruction

1. The needs for differentiation depend upon the classroom setting. This section will be modified as needed with the specific students of whom the unit will be covered.

II. Instructional Input

MID: All instructional input is written in a way that requires students to construct the knowledge. Under each category, questions will be asked and discussed in a think-pair-share

or shoulder partner format. The time is more than a lecture, but memory retention is more long term.

a. Writing Process

The writing process is in steps created using motions to help students lock the kinesthetic learners into the lesson. Each step requires motions that help students to link the steps with the actions.

1. Prewriting—think (tap head with one finger)
    - What do you do during pre-writing?
        - Decide on a topic to write about.
        - Consider who will read or listen to your written work.
        - Brainstorm ideas about the subject.
        - List places where you can research information.
        - Do your research.
2. Drafting—write (write with one hand on your other hand as if holding a pencil)
    - What do you do during drafting?
        - Put the information you researched into your own words.
        - Write sentences and paragraphs even if they are not perfect.
        - Read what you have written and judge if it says what you mean.
        - Show it to others and ask for suggestions.
3. Revising—make it better (grab a "word" with each hand and switch them by crossing one hand over the other)
    - What do you do during revising?
        - Read what you have written again.

- Think about what others said about it.
- Rearrange words or sentences.
- Take out or add parts.
- Replace overused or unclear words.
- Read your writing aloud to be sure it flows smoothly.

4. Editing—make it correct (make a checkmark in the air)

- What do you do during editing?
  - Proofread
  - Be sure all sentences are complete.
  - Correct spelling, capitalization, and punctuation.
  - Change words that are not used correctly.
  - Have someone check your work.
  - Recopy it correctly and neatly.

5. Publishing—shared the finished product (hold out hands together as if it were an open book)

- What do you do during publishing?
  - Read your writing aloud to a group.
  - Create a book of your work.
  - Send a copy to a friend or relative.
  - Put your writing on display.
  - Illustrate, perform, or set your creation to music.
  - Congratulate yourself on a job well done!

b. Comparing Two Stories

1. Genre—a particular type, sort, or category
    - What are some examples of genres in literature?
        - Nonfiction
        - Biographies
        - Poetry
        - Fantasy
        - Traditional Literature (Fairy tales/fables/myths)
        - Science fiction
        - Realistic fiction
        - Historical Fiction
        - Mystery
2. What does it mean to compare and contrast?
    - Finding similarities and differences between the stories, characters, or other elements
3. What could you compare in two different stories?
    - The themes
    - The main characters and how they are different
    - The author's purpose
    - What happens in the story/ plot of the story
    - The point of view
4. What is a theme?
    - Theme—*the main subject or topic; the lesson or moral*
    - What are some examples of themes in stories you've read?

- *Diary of a Wimpy Kid* by Jeff Kinney—friendship, growing up, middle school
- *Charlotte's Web* by E.B. White—loss, friendship, coping with death, farm life
- *The Lightening Thief* by Rick Riordan—courage, honor, leadership, responsibility, school life

5. How can you compare the main characters?
   - Attitude/Feelings
   - Good versus evil
   - Reactions of others
   - Lessons learned
   - Actions
   - Appearance
6. What is an author's purpose? *The reason why the text was written*
   - To persuade—wants the reader to agree with the author's position
     - What are some examples where the author's purpose is to persuade?
       - Advertisements, commercials, editorials
   - To inform—facts are used to teach
     - What are some examples where the author's purpose is to inform?
       - Textbooks, cookbooks, newspapers, encyclopedias
   - To entertain—tell a story
     - What are some examples where the author's purpose is to entertain?
       - Poems, stories, plays, comic strips

- What are some questions you could ask yourself to determine the author's purpose?
    - Did the author try to make me laugh? (Entertain)
    - Did the author want to tell me a story? (Entertain)
    - Did the author try to amuse me? (Entertain)
    - Did the author give me facts? (Inform)
    - Did the author try to teach me something? (Inform)
    - Did the author try to convince me? (Persuade)
    - Did the author want to change my opinion? (Persuade)

7. What is the plot of a story? *The storyline or order of events in a book, play, or movie; it's what the characters do*
    - What is the plot of a story about how to make a peanut butter and jelly sandwich?
8. What is point of view? *A way of thinking or looking at something. A perspective*
    - What are the four types of point of view in a story?
        - 1st person: the one telling the story is in the story
        - 3rd person: the one telling the story is a witness of the story
        - Omniscient: the one telling the story is outside of the story; the reader knows everything about the story
        - Limited omniscient: the one telling the story is outside of the story; the reader knows more than the characters, but some parts are still hidden

c. Working in Diverse Collaborative Groups

1. What are some purposes for small groups?

- Generate ideas
- Summarize main points
- Review material
- Compare & contrast
- Brainstorm

2. Why is it important to have diverse groupings?
    - Diverse—of different kinds or sorts
    - Everyone has a unique background
    - Allow for a better understanding of discussion piece
3. Being a Prepared and Contributing Member of a Group
    - Importance of Being Prepared
        - Prepared—composed in advance; not impromptu
        - To be prepared in a discussion group, what do you have to do?
            - Read or study the material beforehand
            - Have some understanding of the material
            - Know the rules of the discussion group
            - Have questions prepared to ask about the material
        - Why should you be prepared?
            - Discussion members respect you
            - You know what you are talking about
            - Time of your group mates and yourself valued
    - Why is it important to contribute to a group?
        - Contribute—to give for a purpose

- Everyone has a unique contribution
- All members are needed for success
- All members learn the material better

4. What are some possible rules for discussion groups?
    - Do your part before, during, & after the discussion
    - Do wait your turn to speak
    - Do give everyone the opportunity to speak
    - Do respect the opinions of all group members
    - Do think before speaking
    - Do summarize the ideas of others before commenting on them
5. Why should you ask & answer specific questions?
    - Makes the discussion purposeful
    - Provides definite understanding
6. What should you do after the discussion?
    - Reviewing the Group's Discussion
        - You can remember it better
        - You get a better idea of what you know
        - You can form any questions you still have
        - Provides conclusion/closure

d. Checking for Understanding

1. Included in Section III.a.

e. MID/Pacing Guide

1. Included in Section II. via the lecture format note in italics

2. Included in Appendix A as Unit Pacing Guide

III. Student Accountability

a. Checking for Understanding

1. See questions written in instructional input: Students will answer questions written throughout instructional input. Students will take an active and constructivist approach to learning the material by creating the responses. (Obj. 1-3) [Day 1-20]
2. Inside Outside Circle: A collaborative grouping strategy where two circles are formed with one circle inside of the other. The students on the inside and outside circles face each other. One circle is rotated "x" amount of students. The students then comment on the teacher's given question. (Obj. 1-3) [Day 2,3,14-16]
3. Vocabulary Self-Awareness Chart: Students will create a vocabulary self-awareness chart to show an understanding of the vocabulary development as the unit progresses. Students will write in pencil so that it may be revised as they go. (Obj. 1-3) [Day 3,6,13,15,20]
4. Think-Pair-Share: During this collaborating teaching strategy, the student thinks about his or her response to a question posed by the teacher before pairing with one other student or a small group of students to discuss each student's thoughts on the question and reinforce ideas. Finally, the students will share their group's thoughts with the class. This strategy allows teachers to correct misconceptions. (Obj. 1-3) [Day 3,5-9,13,15-16,18,20]

5. Entrance Slip or Exit Slip: These slips of paper contain questions to be answered independently relating to the unit, and they are used as a checking for understanding tool. If completed at the beginning of class, it is an entrance slip. If completed at the end of class, it is an exit slip. (Obj. 1-3) [Day 4,17-18]

b. Guided Practice

1. Graphic Organizer/Prewriting for Fractured Fairy Tale: Teacher models process with Cinderella. Students will complete a graphic organizer or other proof of prewriting for their fractured fairy tale. A fractured fairy tale is a retelling of a traditional fairy tale in a new way. It could be that it is from a unique point of view, a different setting, or the characters are altered. Students will have read the articles of the appropriate grade level text for their reading ability. (Obj. 1) [Day 8]
2. T-Chart: Teacher models process with Cinderella. Students will create a t-chart comparing the two selected works of fairy tales selected for their project. Students may have read more than one set of fairy tales to ensure they are happy with their choice. (Obj. 2) [Day 16]
3. Teacher-Led Conference (Project-Based Activity Conference & Proposal of Idea/Fairy Tale): Students will conference with teacher to highlight why the selected fairy tale was chosen. Student must present their final project ideas, as outlined and discussed in class. Teacher will ensure the fairy tale is at the appropriate interest and reading level for the student and that the project is manageable for the students. Illustrates student's ability to work independently

and collaborate with teacher. This conference will be teacher-led. (Obj. 3) [Day 9]

4. Hansel & Gretel Color Changing Opinions: Teacher models process with another familiar story covered earlier in year on SMARTboard. For the activity, two trios of students will come together prepared to discuss their idea of Hansel & Gretel fairy tale. As students are reminded of additional elements of the story they forgot, they will use a red pen to add in those details. The activity will be repeated with a purple pen in another group. Students will respond to why their ideas changed within a group. This is to be completed prior to reading the story. This task will be completed in five steps: write the fairy tale before reading, meet with group one, meet with group two, read the fairy tale, and add additional corrections. (Obj. 3) [Day 4]

c. Independent Practice

1. Rough Draft, Revision, & Editing of Fractured Fairy Tale: Students will work independently and in small groups to revise and edit their final works. Students will be able to seek teacher support for submission of rough draft and suggestions of possible areas of improvement. Students will be responsible to move the piece from rough draft quality to final draft. (Obj. 1) [Day 9-13]
2. Student-Led Conference (Project-Based Activity Conference & Proposal of Idea/Fairy Tale): Students will conference with teacher to highlight why the selected fairy tale was chosen. Student must present their final project ideas, as outlined and discussed in class. Teacher will ensure the fairy tale is at the appropriate interest and reading level for the student and that the project is

manageable for the students. Illustrates student's ability to create large-scale project demonstrating comparing two texts. Students will be assessed based on checklist of preparedness. This conference will be student-led. (Obj. 2) [Day 17-18]

3. Self-Selected Fairy Tale Color Changing Opinions: The student will come to a small group of three, prepared to discuss their independently written idea of the group's fairy tale. As the student is reminded of additional elements of the story he or she forgot, they will use a red pen to add in those details. The student will review their writing again with a purple pen, making any revisions they see necessary. The student will respond to why their ideas changed within the groups. This is to be completed prior to reading the story. This task will be completed in five steps: write the fairy tale before reading, meet with group one, meet with group two, read the fairy tale, and add additional corrections. (Obj. 3) [Day 5]

d. Transfer and Application

1. Fractured Fairy Tale: Students will compose a typed final draft of their fractured fairy tale. Students will provide evidence of the writing process throughout the completion of this work. Content of finished work should show understanding of themes, characters, setting, and other characteristics discussed during the unit. Students will submit this work to their portfolios as part of the demonstration of improvement over time. (Obj. 1) [Day 14-15]

2. Project-Based Activity: Students will complete their proposed project. The project process must show understanding of each version of the fairy tale. (Obj. 2) [Day 14-20]
    - Choose one of the following:
        - Blog Review—Student will create a blog review describing the two versions and comparing which they feel is the better version.
        - Book Jacket Design—Student will create a book jacket including a cover with appropriate features, a brief summary for the inside left cover, and a short biography of the author or country of origin for each version.
        - Play/Skit Performance—Students will work in groups of 2 or 3 to write a play or skit for each version of the fairy tale that will be performed for the class.
        - Poem/Song Creation—Student will follow writing process to write a poem or song for each version of the fairy tale. Student may opt to write one piece for both versions as long as the comparison between the two is clear.
3. Revision of Fractured Fairy Tale Discussion Groups: Students will come prepared to discuss their rough draft fractured fairy tale in brief conferences with other students and the teacher. Teacher will grade students based on preparedness, rule maintenance, discussion, and apparent revision or thought to revision of writing. (Obj. 3) [Day 12]

IV. Closure

a. Review with Student Participation

1. Numbered Heads Together: Students will work in table groups to form one answer to a given higher-order question. Each student will be numbered within each group 1-4. Then, the teacher will call on a specific number to stand up. The first one up provides the answer. If it is correct, their team gets a point. The game continues until the questions are finished or a certain number of points are reached. [Day 20]
2. Quarter's Worth: Students will write three quarter's worths summarizing the most valuable information they learned about the writing process, comparing two stories, and working in diverse collaborative groups. A quarter's worth has exactly 25 words, no more and no less. [Day 19-20]

b. Anticipatory Set

1. Sneak peak at whatever content is to be covered next.

V. Self-Evaluation and Reflection

a. Things that worked. Why?

b. Things that didn't work. Why?

c. Specific plans for improvement.

Appendix A—

Teacher Resources

Unit Pacing Guide				
Day 1	Day 2	Day 3	Day 4	Day 5
A-Set: FT friends A.S. **Activities**: -3's: Write story of Cinderella -Teacher Reads: "The Little Glass Slipper" by Perrault **Closure**: 4's: Favorite FT & Why	**A-Set**: 3's: Add to your group's story from D1. **Activities**: -Q (Cinderella): →5W1H? Themes? A girl's story? Written for kids? -4's: Read "Aschenputtel" by Grimm Brothers **Closure**: IOC -Most surprising? -Best version? Why?	**A-Set**: FT friends A.S. groups: Find each group when prompted **Activities**: -Voc. SA: Initial -Lec: Collaborative Groups (IIc1-6) **Closure**: IOC -How can you contribute to a group? -Which of your skills are most helpful?	**A-Set**: ES -How can you be a good group member? -Why is it important to be one? **Activities**: -GP: Hansel & Gretel Color Changing Opinion (Write, Group 1 & 2) -Read Hansel & Gretel -Add corrections **Closure**: ES -How were you a good group member? -How can you improve?	**A-Set**: 3's: Select 1 FT (don't read yet; to be used in IP below) **Activities**: -IP: Self-Selected FT Color Changing Opinion (Write, Group 1 & 2) -Read FT -Add corrections **Closure**: TPS -Why was revision important to the story? -Who benefits most from the revision process and why?
Day 6	Day 7	Day 8	Day 9	Day 10
A-Set: Voc. SA Chart: Update **Activities**: -Read your selected FT -Lec/Explain Assignment (What is a FF & rubric) **Closure**: TPS -I selected _____ FT because of _____	**A-Set**: TPS: What are the five steps of the writing process? **Activities**: -Lec (actions): 5 Steps of the Writing Process (IIa1-5) -Exploration of FT options to prep for conferences **Closure**: Show your partner the 5 steps to the writing process (w/ words & silently)	**A-Set**: Write a letter as a background object **Activities**: -FT explorations -GP: Teacher example from Cinderella -GO/Prewriting FF -Conference prep to show you are ready **Closure**: TPS -Where are you in the process? -What do you need to do to be ready for tomorrow?	**A-Set**: TPS: My fractured FT will be written from the POV of _____ because _____. **Activities**: -Teacher-led conference each approx. 2 min. -Continue Pre-writing -RD after conference **Closure**: -What progress have you made today? - Show partner the writing step you are on.	**A-Set**: 4's: Show step in writing process. **Activities**: -RD -Teacher conferences 1-on-1 as needed **Closure**: -Show partner the writing step you are on -Teacher comments for common student issues

Day 11	Day 12	Day 13	Day 14	Day 15
A-Set: 2's: Show step in writing process. **Activities**: -RD -Revise -Teacher conferences 1-on-1 as needed **Closure**: -Show partner the writing step you are on -Teacher comments for common student issues	**A-Set**: 3's: Show step in writing process. **Activities**: -Finish RD -Revision of FF Discussion Groups -Revise -Edit -Teacher conferences 1-on-1 as needed **Closure**: -Show partner the writing step you are on -Teacher comments for common student issues	**A-Set**: Update Voc. SA **Activities**: -Revise -Edit -Type FD -Teacher conferences 1-on-1 as needed **Closure**: TPS -Explain one way your current draft is better than your first draft.	**A-Set**: Tongue Twister **Activities**: -Type FD (due D15) -Teacher conferences 1-on-1 as needed -Explain Project-based activity requirements **Closure**: IOC -Which option are you leaning towards? Why? -Describe one idea you have to your partner.	**A-Set**: Submit FF—Show your final to two other students **Activities**: -Lec: Comparing Two Stories (IIb1-3)/(IIb4-5) -Voc. SA: Update halfway through lec. for brain break **Closure**: IOC -What's your favorite genre? Why? -Compare 2 characters in Cinderella.
Day 16	**Day 17**	**Day 18**	**Day 19**	**Day 20**
A-Set: Story Sort **Activities**: -Lec: Finish Comparing Two Stories (IIb6-8) -T-chart comparing fairytales (1 ex. w/ teacher; 1 ex. w/ partner) **Closure**: IOC -Which author's purpose is your favorite to read? Why? -What do I need to do to prepare for my PBA?	**A-Set**: Comic (beg., middle, end) **Activities**: -PBA: Preparations & work -Student-led conference each approx. 2 minutes **Closure**: ES -What was one thing you learned today while working independently?	**A-Set**: TPS What preparations do you still need to make to finish your PBA? **Activities**: -PBA: Work day -Student-led conference; each approx. 2 minutes (if more remain) **Closure**: ES -What was one thing you learned today while working independently?	**A-Set**: TPS: In order to finish my PBA, I need to do these three things… **Activities**: -PBA: Work day (due D21) **Closure**: -Unit Closure: QW #1	**A-Set**: Submit PBA—Show your final to two other students -Voc. SA & Submit **Activities**: -Unit Closure: QW #2 -Unit Closure: Numbered Heads Together **Closure**: -Unit Closure: QW#3

Abbreviations in the Unit Pacing Guide Explained:

2's, 3's, 4's—*Number of students within a group.* The number listed is based on the groupings created by the Fairy Tale Friends Activity Sheet.

5W1H—*Who? What? Where? When? Why? How?* Teachers may use these questions to encourage students to think about concepts on a deeper level.

A.S.—*Activity sheet*. A worksheet used to reinforce concepts.

ES—*Entrance Slip or Exit Slip.* These slips of paper contain questions to be answered independently relating to the unit, and they are used as a checking for understanding tool. If completed at the beginning of class, it is an entrance slip. If completed at the end of class, it is an exit slip.

FD—*Final Draft*. After following the writing process, the student creates a published copy of his or her work.

FF—*Fractured Fairy Tale.* It is a retelling of a traditional fairy tale in a new way. It could be that it is from a unique point of view, a different setting, or the characters are altered.

FT—*Fairy Tale.* It is a story that tells of magical events and creatures in a make-believe world. The setting is typically in the past.

GO—*Graphic Organizer*. A visual organization tool used to communicate knowledge or ideas and the relationships between them.

GP—*Guided Practice*. These activities provide the student the opportunity to learn the concepts while still being closely monitored by the teacher.

II—*Instructional Input*. The section of the lesson where the teacher teaches the skills or information needed for the student to reach the objectives.

IOC—*Inside Outside Circle.* A collaborative grouping strategy where two circles are formed with one circle inside of the other. The students on the inside and outside circles face each other. One circle is rotated "x" amount of students. The students then comment on the teacher's given question.

IP—Independent Practice. These activities provide the student the opportunity to reinforce skills and synthesize their new knowledge with limited teacher guidance.

Lec—*Lecture.* In this unit, all lectures are student driven and engage multiple areas of the brain. The teacher poses a question that the students will work together to create the desired answer, thus learning the necessary instructional input.

PBA—*Project Based Activity.* In this unit, it is the student driven project created to show their understanding of the objectives. While the teacher places guidelines on the project, students are given freedom for how to express their learning.

POV—*Point of View.* The author's chosen way to think about or approach his or her work.

Q—*Questioning.* A teaching strategy used to reinforce concepts through repetition of content. A combination of lower order and higher order questions maybe used in order to help students gain the deepest understanding possible.

QW—*Quarter's Worth.* A piece of writing that has exactly 25 words, no more and no less.

RD—*Rough Draft.* When following the writing process, this is the first copy of a work. It is not intended to be perfect and will be revised, edited, and rewritten before publication.

TPS—*Think. Pair. Share.* During this collaborating teaching strategy, the student thinks about his or her response to a question posed by the teacher before pairing with one other student or a small group of students to discuss each student's thoughts on the question

and reinforce ideas. Finally, the students will share their group's thoughts with the class. This strategy allows teachers to correct misconceptions.

Voc. SA—*Vocabulary Self-Awareness Chart*. This chart is used to help the student gauge his or her understanding of the vocabulary. Each word has a place for a definition and a sentence. The student puts a smiley face, in-between face, or frowning face in to show his or her knowledge. A smile is if students can correctly write a sentence and define the word. One or the other is an in-between face. If he or she can do neither yet, frowning face goes in the space.

Name _____

Fairy Tale Friends Activity Sheet

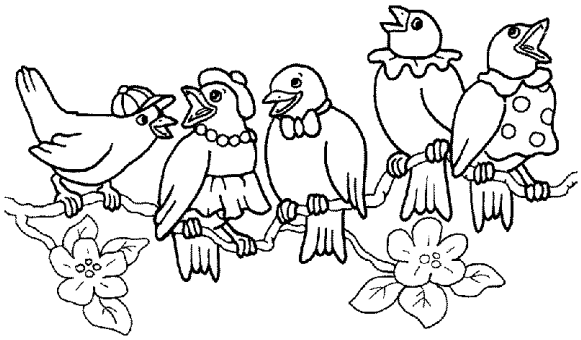
Directions: When directed, get into a small group with the correct number of people. Write the name of the small group in the correct section. You are number one in each group. Each classmate may only be on your paper once. This means he or she cannot be in any other group you are in during this unit.

Hansel & Gretel
They Are Two of a Kind

1. _____
2. _____

Cinderella & Her Sisters
A Trio with Three

1. _____
2. _____
3. _____



Cardinal Directions
to Stay on the Path

1. _____
2. _____
3. _____
4. _____

Story Sort Cards

Directions: Working with your "Hansel & Gretel" partner, cut out and sort each set of facts by the correct fairy tale. The fact could be describing a character, setting, or conflict of the story.

Rumpelstiltskin	Hansel & Gretel	The Frog Prince
Puss in Boots	Snow White	Sleeping Beauty
Rapunzel	Little Red Riding Hood	Beauty & the Beast

One of the main characters was forced to spin straw into gold for the king	The two main characters are lost in the woods	The main character is inherited by the youngest son and brings his new master great reward
The main character is locked in a tower	The main character travels to see her grandmother	The main character's stepmother tries to kill her several times because of her jealousy
The main character was put under a curse by an evil fairy	The main character returns to the enchanted castle in an effort to save her father's life	The main character is truly a prince who has been cursed

Name _____

Vocabulary Self-Awareness Activity Sheet

Sentence—I can write in a complete sentence that shows I understand the meaning of the word.
Define—I can write a definition in my own words that shows the meaning of the word.

Level of Knowledge (LOK)

☺ *I can define it & write it in a sentence.* 😐 *I can define it OR write it in a sentence.* ☹ *I can't do either yet, but I plan to.*

Word	Sentence	Definition	LOK
author's purpose			
compare			
contrast			
diverse			
drafting			
editing			
genre			
plot			
point of view			
pre-writing			
publishing			
revising			
theme			

Name: _____ Fractured Fairy Tale

Following instruction, students will create a fractured fairy tale using the writing process to be assessed by rubric.

> *W.5.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)*
> *W.5.5 With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.*

Goal	4	3	2	1
Student shows understanding of themes, setting, characters, and content of selected fairy tale.	*Understanding of themes, setting, characters, and content of original fairy tale are clearly present.*	*Understanding of themes, setting, characters, and content of original fairy tale are present.*	*Understanding of themes, setting, characters, and content of original fairy tale are blurry.*	*Understanding of themes, setting, characters, and content of original fairy tale are absent.*
Student was prepared for all conferences.	*Active discussion participant prepared for all meetings.*	*Discussion participant prepared for all meetings.*	*Discussion participant but not prepared for all meetings.*	*Did not show effort to come prepared to participate in discussion.*
Student used time management effectively.	*Time management skills evident through work ethic.*	*Time management skills were used almost always.*	*Time management skills were used sometimes.*	*Time management skills were rarely if ever used.*
Student's work is polished and shows evidence of all steps of the writing process.	*Work is polished and has seen several levels of revision with minimal errors.*	*Work is polished and has seen revision with minimal errors.*	*Work is semi-polished and has seen revision but still has several errors.*	*Work is not polished and lacks revision and/or is filled with errors.*
Student writes from a unique point of view, a different setting, or the characters are altered from the original version.	*Fairy tale is written in a way that creatively shows a unique point of view, a different setting, or that the characters are altered from the original version.*	*Fairy tale is written in a way that shows a unique point of view, a different setting, or that the characters are altered from the original version.*	*Fairy tale is written showing attempt at a unique point of view, a different setting, or that the characters are altered from the original version.*	*Fairy tale is written in a way that does not clearly distinguish between the point of view, setting, or characters from the original version.*

Total Score: _____ / _____
Comments:

Name: _____ PBA: Blog Review

Following instruction, students will compare overall structure and approach to themes in a minimum of two fairy tales from different counties of origin through a choice of project-based activities to be assessed by rubric.

RL.5.9 Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.

Goal	4	3	2	1
Student shows understanding of themes and content of both versions of fairy tale.	*Plot and themes of both versions are clearly present.*	*Plot and themes of both versions are present.*	*Plot and themes of one version are present.*	*Plot and themes of neither version are clearly present.*
Student was prepared for all conferences.	*Active discussion participant prepared for all meetings.*	*Discussion participant prepared for all meetings.*	*Discussion participant but not prepared for all meetings.*	*Did not show effort to come prepared to participate in discussion.*
Student used time management effectively.	*Time management skills evident through work ethic.*	*Time management skills were used almost always.*	*Time management skills were used sometimes.*	*Time management skills were rarely if ever used.*
Student's work is polished and shows evidence of all steps of the writing process.	*Work is polished and has seen several levels of revision with minimal errors.*	*Work is polished and has seen revision with minimal errors.*	*Work is semi-polished and has seen revision but still has several errors.*	*Work is not polished and lacks revision and/or is filled with errors.*
Student will form a clear opinion about which version is preferred and why in their review.	*Blog writing shows student's opinion of the preferred version and strong reasoning for selection.*	*Blog writing shows student's opinion of the preferred version and reasoning for selection.*	*Blog writing shows student's opinion of the preferred version but lacks reasoning for selection.*	*Blog writing does not select one opinion for a preferred version.*

Total Score: _____ / _____
Comments:

Name: _____ PBA: Book Jacket Design

Following instruction, students will compare overall structure and approach to themes in a minimum of two fairy tales from different counties of origin through a choice of project-based activities to be assessed by rubric.

RL.5.9 Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.

Goal	4	3	2	1
Student shows understanding of themes and content of both versions of fairy tale.	*Plot and themes of both versions are clearly present.*	*Plot and themes of both versions are present.*	*Plot and themes of one version are present.*	*Plot and themes of neither version are clearly present.*
Student was prepared for all conferences.	*Active discussion participant prepared for all meetings.*	*Discussion participant prepared for all meetings.*	*Discussion participant but not prepared for all meetings.*	*Did not show effort to come prepared to participate in discussion.*
Student used time management effectively.	*Time management skills evident through work ethic.*	*Time management skills were used almost always.*	*Time management skills were used sometimes.*	*Time management skills were rarely if ever used.*
Student's work is polished and shows evidence of all steps of the writing process.	*Work is polished and has seen several levels of revision with minimal errors.*	*Work is polished and has seen revision with minimal errors.*	*Work is semi-polished and has seen revision but still has several errors.*	*Work is not polished and lacks revision and/or is filled with errors.*
Student will create two book jackets including a cover with appropriate features, a brief summary for the inside left cover, and a short biography of the author or country of origin for each version.	*Polished book jackets include cover w/ artwork, title, & author or country of origin. Summary of the book and a biography of the author or the country of origin included for both book jackets.*	*Book jackets include cover w/ artwork, title, & author or country of origin. Summary of the book and a biography of the author or the country of origin included for both book jackets.*	*One book jacket with cover w/ artwork, title, & author or country of origin. Summary of the book and a biography of the author or the country of origin included for book jacket.*	*Book jackets are missing all or most of the requirements OR only one book jacket was submitted with significant errors.*

Total Score: _____ / _____
Comments:

Name: _____ PBA: Skit/Play Performance

Following instruction, students will compare overall structure and approach to themes in a minimum of two fairy tales from different counties of origin through a choice of project-based activities to be assessed by rubric.

RL.5.9 Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.

Goal	4	3	2	1
Student shows understanding of themes and content of both versions of fairy tale.	*Plot and themes of both versions are clearly present.*	*Plot and themes of both versions are present.*	*Plot and themes of one version are present.*	*Plot and themes of neither version are clearly present.*
Student was prepared for all conferences.	*Active discussion participant prepared for all meetings.*	*Discussion participant prepared for all meetings.*	*Discussion participant but not prepared for all meetings.*	*Did not show effort to come prepared to participate in discussion.*
Student used time management effectively.	*Time management skills evident through work ethic.*	*Time management skills were used almost always.*	*Time management skills were used sometimes.*	*Time management skills were rarely if ever used.*
Student's work is polished and shows evidence of editing and revision.	*Work is polished and has seen several levels of revision with minimal errors.*	*Work is polished and has seen revision with minimal errors.*	*Work is semi-polished and has seen revision but still has several errors.*	*Work is not polished and lacks revision and/or is filled with errors.*
Student performance follows script, and shows evidence of preparation. Script follows version used.	*Scripts are written following the original work and skit/play features a polished performance.*	*Scripts are written following the original work and skit/play features a rehearsed performance.*	*One script is written following the original work and skit/play features a polished performance.*	*Script does not follow original work and/or does not look rehearsed.*

Total Score: _____ / _____
Comments:

Name: _____ PBA: Poem/Song Creation

Following instruction, students will compare overall structure and approach to themes in a minimum of two fairy tales from different counties of origin through a choice of project-based activities to be assessed by rubric.

RL.5.9 Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.

Goal	4	3	2	1
Student shows understanding of themes and content of both versions of fairy tale.	*Plot and themes of both versions are clearly present.*	*Plot and themes of both versions are present.*	*Plot and themes of one version are present.*	*Plot and themes of neither version are clearly present.*
Student was prepared for all conferences.	*Active discussion participant prepared for all meetings.*	*Discussion participant prepared for all meetings.*	*Discussion participant but not prepared for all meetings.*	*Did not show effort to come prepared to participate in discussion.*
Student used time management effectively.	*Time management skills evident through work ethic.*	*Time management skills were used almost always.*	*Time management skills were used sometimes.*	*Time management skills were rarely if ever used.*
Student's work is polished and shows evidence of editing and revision.	*Work is polished and has seen several levels of revision with minimal errors.*	*Work is polished and has seen revision with minimal errors.*	*Work is semi-polished and has seen revision but still has several errors.*	*Work is not polished and lacks revision and/or is filled with errors.*
Student will follow writing process to write poem or song(s) with clear comparison between versions.	*Poem is a polished final draft that shows evidence of the writing process. Student thought to writing one or two poems is clear.*	*Poem is a final draft that shows evidence of the writing process. Student thought to writing one or two poems is clear.*	*Poem is a final draft that shows evidence of the writing process. Student thought to writing one or two poems unclear.*	*Poem or poems did not follow the writing process. Student thought to one or two poems is missing.*

Total Score: _____ / _____
Comments:

Checklist of Discussion Role

Student Name _____
Student has…

Read the material prior to coming and is prepared for discussion.	
Participated in each discussion based on necessary role.	
Asked and answered specific questions.	
Commented in a way that contributes to the discussion.	
Commented in a way that elaborates on the remarks of others.	
Shown understanding of key ideas and drawn conclusions based on discussions.	

Comments:

Checklist of Discussion Role

Student Name _____
Student has…

Read the material prior to coming and is prepared for discussion.	
Participated in each discussion based on necessary role.	
Asked and answered specific questions.	
Commented in a way that contributes to the discussion.	
Commented in a way that elaborates on the remarks of others.	
Shown understanding of key ideas and drawn conclusions based on discussions.	

Comments:

Checklist of Discussion Role

Student Name _____
Student has…

Read the material prior to coming and is prepared for discussion.	
Participated in each discussion based on necessary role.	
Asked and answered specific questions.	
Commented in a way that contributes to the discussion.	
Commented in a way that elaborates on the remarks of others.	
Shown understanding of key ideas and drawn conclusions based on discussions.	

Comments:

Focus Fairy Tales					
Fairy Tale	**Pub. Year**	**Author**	**Country**	**FK-Grade Level**	**Avg Rdg Level**
Cinderella					
The Little Rag Girl	1894	Nutt	Georgia	4.4	5.3
Aschenputtel	1812	Grimm	Germany	4.6	5.7
Aschenputtel	1857	Grimm	Germany	5.8	6.6
The Indian Cinderella	1920	Macmillan	Canada	5.9	6.6
The Glass Slipper	1697	Perrault	France	8.2	8.7
Pepelyouga	1914	--	Serbia	9.8	10.1
Cinder Maid	1916	Jacobs	England	11.3	10.2
Beauty and the Beast					
The Summer and Winter Garden	1812	Grimm	Germany	5.4	6.3
The Enchanted Tsarevich	1916	Magnus	Russia	5.5	5.6
Zelinda and the Monster	1885	Crane	Italy	9.4	9.7
Beauty and the Beast	1783	Beaumont	France	11.5	11.1
Puss in Boots					
How the Beggar Boy Turned into Count Piro	1903	Lang	Scottish	4.8	5.2
The Earl of Cattenborough	1916	Jacobs	England	6.2	6.5
The Poor Miller's Boy and the Cat	1884	Grimm	Germany	7.1	7.2
The Master Cat	1889	Perrault	France	9.9	9.3
Snow White					
Gold-Tree and Silver Tree	1892	Jacobs	Scottish	3.5	3.9
Little Snow White	1819	Grimm	Germany	5.1	5.8
Maria, the Wicked Stepmother, and the Seven Robbers	1870	Gonzenbaoh	Italy	5.7	6.2
The Crystal Casket	1885	Crane	Italy	7.4	7.6
Sleeping Beauty					
Little Brier-Rose	1812	Grimm	Germany	5.6	6.7
The Petrified Mansion	1920	Francis	India	7.9	9.1
Rapunzel					
Prunella	1900	Lang	Scottish	5	5.8
Rapunzel	1857	Grimm	Germany	6.8	7.5
The Fair Angiola	1885	Crane	Italy	7.6	7.8

Focus Fairy Tales					
Fairy Tale	**Pub. Year**	**Author**	**Country**	**FK-Grade Level**	**Avg Rdg Level**
Rumpelstiltskin					
Tom Tit Tot	1898	Jacobs	English	3.1	4
Peerie Fool	1903	Black	Orkney Is.	4.9	5
Rumpelstiltskin	1857	Grimm	Germany	5.3	5.8
KinKach Martinko	1896	Chodsko	Slav	6.2	6.7
Little Red Riding Hood					
The True History of Little Golden Hood	1895	Lang	Scottish	4	5.2
Little Red Cap	1857	Grimm	Germany	4.1	5.2
Little Red Riding Hood	1891	Perrault	France	6.5	7.1
Hansel and Gretel					
Jan and Hanna	1863	Haupt	Poland	3.5	4.2
Hansel and Gretel	1857	Grimm	Germany	4.7	5.5
Little Thumb	1697	Perrault	France	7.1	7.5
The Frog Prince					
The Frog Who Became Emperor	1958	--	China	4.1	5.1
The Wonderful Frog	1889	Jones	Hungary	4.9	5.3
The Frog King/Iron Heinrich	1812	Grimm	Germany	6.1	6.4