

6-1-2010

# The Dancing Classroom

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**The Dancing Classroom:**  
Benefits of Using Creative Dance and Movement  
to Increase Learning for Students  
With and Without ADD/ADHD

By

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Honor Thesis Presented to the Honors Committee  
of Western Oregon University  
In Partial Fulfillment of the Requirements for  
Graduation from the Honors Program

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June, 2010

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## **Abstract**

The modern classroom often requires alternative teaching methods and modified lesson plans of the core curriculum in order to reach and teach all students. Incorporating creative dance and movement into the classroom may provide students, especially those with Attention Deficit Disorder and Attention Deficit Hyperactivity Disorder, an alternative teaching method and a constructive outlet for their often restless energies. This thesis is an exploration of how creative dance and movement can be integrated with elementary-level lesson plans in the area of life science organ systems and how that influenced student learning and satisfaction with lessons for all students and, for children with ADD and ADHD, their ability to focus on lesson content.

## Introduction

As a student teacher and classroom volunteer, my time spent in the classroom has shown me that all students do not learn in the same manner. From their restless energy, lack of focus, and need for movement, students with Attention Deficit Disorder and Attention Deficit Hyperactivity Disorder are in need of alternative teaching methods. Growing up I watched my younger sister suffer through school as her Attention Deficit Disorder held her back from showing her full potential. She craved for school work to capture her attention but started to fail as she was taught with the traditional teaching methods. Being a future elementary school teacher, I have seen this same yearning in many of the students with whom I have taught and worked. From my interests in dance, health, and the creative arts, I decided to explore whether creative dance and movement could be a beneficial teaching tool, especially for those with ADD/ADHD. As an Early Elementary Education major with a focus in dance and health, this area of research aligns both areas. As a future teacher, I think it is important to have experience with alternative teaching methods and an understanding of how to reach students that learn differently and/or may need more attention in the classroom. My goal in writing this thesis was to gain both the experience and knowledge of working with students with ADD/ADHD and examine the results and benefits to integrating creative dance based movement with elementary leveled lesson plans.

It is known that all students do not learn in the same manner. Auditory and visual learners need diverse teaching methods, as do those who learn through the different intelligences from Howard Gardner's Theory of Multiple Intelligences. By including creative dance and movement within the core curriculum lessons, students will be receiving the kinesthetic and musical intelligences that are often neglected when teaching the core subjects of reading, writing, math, health, science, and social studies.

With the integration of movement and creative dance in the classroom, there are multiple benefits to all students. According to Anne Green Gilbert (2006), a leader in the area of creative dance and movement integration and the 'Brain Dance', the possible advantages and benefits for students participating in quality creative dance are numerous. The physical benefits can include: developing of healthy bodies and brains, increasing body awareness, control, balance, and coordination, and releasing energy through physical activity. Social benefits of creative dance include learning to cooperate with others and practicing self-discipline. Some emotional benefits include becoming more aware of one's self by expression through movement, increasing self-esteem, and feeling joy and satisfaction through the movement. Finally, some intellectual benefits may include: acquiring a movement vocabulary, developing problem-solving skills through experience, strengthening the ability to listen and follow directions, increasing learning in different curricular areas, and developing "neutral pathways through movement patterning that are essential to language acquisition, reading readiness, and mathematical ability" (Gilbert, 2006).

A student with ADD/ADHD, especially those at the elementary level, may show difficulty in sustaining attention for long periods of time, is hyperactive, depends on physical rather than verbal communication, and often fails to remember lessons correctly. Many children that are labeled as ADHD may be highly developed bodily-kinesthetic learners. By giving opportunities for the expressive arts to be integrated in the classroom, these students are being provided a ready-made channel for their undirected energy and thoughts to flow. Research shows that in classrooms providing engagement in movement, hands-on learning, and arts education, ADHD students' behavior is less likely problematic because these students often require higher levels of stimulation (Armstrong, 1999). I believe that creative dance and movement in the classroom would not only give these students a chance to learn and focus through physical involvement and have a constructive outlet for their energy and creativity, but it has the potential to help further their knowledge in the specific lesson topic. The purpose of this study and thesis was to investigate how creative dance and movement integrated lessons, when compared to traditional teaching methods, influenced (or affected) learning and lesson satisfaction/enjoyment for all students plus the level of focus for students diagnosed with ADD/ADHD.

The research questions for the literature review portion of this thesis were:

1. What were the main learning concerns students with Attention Deficit (Hyperactivity) Disorder hold within the classroom?
2. How could educators alter their teaching methods to benefit students with ADD/ADHD?



3. What is creative dance, what are the concepts and tools used to teach it, and how could these movement methods be integrated into elementary leveled lessons?
4. How can movement and creative dance integrated lessons be used as an effective approach to teach all students, especially those with ADD/ADHD?
5. What current research exists in the area of creative dance/movement integration in the classroom, movement benefits for all students, and movement/creative dance benefits for children with ADD/ADHD?

For the quasi-experimental portion of this thesis, I designed two units of lessons on organ systems. These units were taught to two fourth grade classrooms within the same school. The treatment for the experimental group consisted of eight lessons on four organ systems containing movement and creative dance integration. The control group was taught eight lessons containing the same concepts about organ systems with the omission of any creative dance and minimal tactile activities. These two groups were assessed on their pre and post knowledge through the same cognitive test, their enjoyment and satisfaction of the lessons and activities was assessed through an affective questionnaire, and the students with ADD/ADHD in both classes were assessed on their focus and participation throughout the lessons. The experimental group also was assessed on their creative dance performances, assessing their psychomotor domain.

The research questions for the experimental portion of the thesis were:

1. How could creative dance and movement be integrated into 4<sup>th</sup> grade lessons teaching about the organ systems?
2. Would the integration of creative dance and movement into the curriculum lessons be a beneficial teaching tool, helping to increase student learning?
3. Would the students have higher levels of enjoyment and satisfaction when the lessons integrated movement and creative dance?
4. Would the use of creative dance and movement have an effect on the level of focus and participation for students with Attention Deficit (Hyperactivity) Disorder?

In order to be able to conduct this experimental study, I had to have approval through Western Oregon University's IRB (Institutional Review Board). By completing an application including the purpose, design, possible risks, assessments given, and student assent and parental consent, this study was approved. In addition, I had to complete the National Institutes of Health Office of Extramural Research Web-based training course, "Protecting Human Research Participants."

## Literature Review

Attention Deficit Disorder and Attention Deficit Hyperactivity Disorder:

With the considerable amount of awareness from professionals and parents, the frequent diagnoses and treatments for Attention Deficit Disorder/ Attention Deficit Hyperactivity Disorder have been on the rise (Lemer, 2003). It is important to look carefully at these trends and evaluate what can be done by educators in the classroom. Attention Deficit/Hyperactivity Disorder is documented as one of the most frequently diagnosed childhood disorders (Dowdy et. all, 1998). According to the American Psychiatric Association, "it is estimated that there are approximately 1.6 to 2 million people who have this disorder" (Lemer, 2003). It is important to be aware that there are three combinations of Attention Deficit Disorder: predominantly inattentive- classified as ADD (in which six of the nine symptoms must be in place for proper diagnosis), predominantly hyperactivity and impulsive- known as Attention Deficit Hyperactivity Disorder (in which six of the nine symptoms must be in place), and a combination of both ADD and ADHD (Lemer, 2003).

The diagnosis of ADD/ADHD is completed in various ways. Since ADD/ADHD is considered a neurobiological disorder, only a licensed professional can make the diagnosis. This could include a pediatrician, neuropsychologist, neurologist, or psychiatrist. Diagnosing this disorder can be complicated; there is not a simple laboratory test to be completed. A professional, usually specializing in ADD/ADHD,

does an individual assessment using multiple foundations of information. This includes “medical and family history, medical exams, interviews with parents, teachers, and the child, a standardized behavior rating scale to be completed by parents and school teacher(s), observations of the child, and perhaps psychological testing to measure IQ and social/emotional adjustments” (Pierangelo & Giuliani, 2008, p.33-35). The symptoms must be present for longer than six months, some need to be observed before the age of seven, and other symptoms need to be seen in two settings (school, home, or work). There are nine specific symptoms related to both Attention Deficit Disorder and Attention Deficit Hyperactivity Disorder. The nine symptoms (six needed to be in place for diagnoses) for ADD are: “Often fails to give close attention to details or makes careless mistakes”, “Often has difficulty sustaining attention in tasks or play activities”, “Often does not listen when spoken to directly”, “Often does not follow through on instructions or fails to finish work”, “Often has difficulty organizing tasks and activities”, “Often avoids, dislikes or is reluctant to engage in tasks requiring sustained mental effort”, “Often loses things”, “Often distracted by extraneous stimuli”, and “Often forgetful in daily activities” (Lemer, 2003). The nine symptoms for Attention Deficit Hyperactivity Disorder, relating to impulsivity, are: “Often fidgets with hands or feet or squirms in seat”, “Often has difficulty remaining seated when required to do so”, “Often runs or climbs excessively”, “Often has difficulty playing quietly”, “Often ‘on the go’”, “Often talks excessively”, “Often blurts out answers to questions before they have been completed”, “Often has difficulty awaiting turn”, and “Often interrupts or intrudes on others” (Lemer, 2003). Like ADD, in order for the

diagnosis of ADHD, six of these nine symptoms need to be in place. Both children and adults diagnosed with ADD/ADHD have options for treatment and adaptations when living with this disorder.

Some physicians and professionals often recommend that ADD and ADHD be treated with medication and/or therapy. These treatments include stimulant medications, special education, and counseling. Many of the common drugs used to treat ADD/ADHD (such as Ritalin and Cylert) can cause negative side effects. These include a decrease in appetite, sleep, and can even stunt growth (Lemer, 2003). While there are many assumptions that the most effective move toward treating and minimizing symptoms related to ADD/ADHD involves prescribing psycho-stimulants, these cause a number of outcomes. In addition to the decrease in appetite and sleep, and potential for stunting growth, these medications can have positive benefits as well. These benefits may include an enhancement in attentiveness, an improvement in compliance with both parental and teacher instructions, reduced aggressions, and an increase in positive social relationships. It is important to note that these positive benefits should be weighed with the negative side-effects in decision making for appropriate treatment. These medications are also offering a temporary control, not a cure long-term for ADD/ADHD. Being a controversial topic, choosing to medicate or not medicate children and adults with ADD/ADHD is up to the parents, families, and person. However, it is important to consider the view of not making medication the first and most effective treatment. There are many tools that can assist children with

attention and behavioral difficulties often related to Attention Deficit (Hyperactivity) Disorder (Thomas, 1999, p. 35-36).

In the classroom there may be students who have trouble sitting still, daydream, or act without thinking; this doesn't necessarily mean they have ADD/ADHD. "When the student's hyperactivity, distractibility, poor concentration, or impulsivity begin to affect performance in school, social relationships with other children, or behavior at home, ADHD may be suspected" (Pierangelo & Giuliani, 2008, p. 9-10). Every child with ADD/ADHD may have different symptoms. For those that are predominantly the inattentive type, ADD, the symptoms may be present in different ways. Inside the classroom walls, these students may not be able to sustain attention long enough, especially during perceived uninteresting or tedious tasks. The inattention problems may be with resisting distractions or with not paying adequate attention to details and instructions. These students may be seen as 'slow-moving' and easily confused. They often have a hard time finishing homework since they often forget to write down instructions or take it home. Those that are primarily inattentive usually are not impulsive or hyperactive. Excessive activity or hyperactivity is the most visible indication in students with ADHD. In school, these students may be seen dashing around the room, touching and playing with any materials that are close by, and may talk frequently. It is hard for these students to sit still, especially for long periods of time. Another main characteristic that can appear in students with ADD/ADHD is impulsivity. This can be seen in the classroom with students that often act without thinking about the circumstances or consequences. Students may talk out

of turn, engage in risky-behaviors, or interrupt classmates or the teacher. Along with the inattentiveness, impulsivity, and hyperactivity, teachers may see other signs in students related to ADD/ADHD. These could include: “weak problem solving, poor sense of time and timing, inconsistency, difficulty resisting distraction, difficulty delaying gratification, problems working toward long-term goals, low ‘boiling points’ for frustration, emotional over-reactivity, changeable mood, and poor judgment” (Pierangelo & Giuliani, 2008, p. 14).

#### An Educators’ Role for Teaching Students with ADD/ADHD:

As this disorder is becoming much more commonly found in the classroom, it is unfortunate that teachers are assuming that children have ADD/ADHD, wondering if they should be tested, and what medications could help. Instead, when a child is having problems paying attention and sitting still in class, it is important that the classroom teacher asks her/himself questions like: How does this child learn best? What kind of learning environment could I create for this child in order to bring out his/her natural abilities? How can I change and alter my lessons to gain this students attention? (Armstrong, 1999).

There are countless books, articles, and journals that offer instructional techniques for educators to use, in order to help teach students with ADD/ADHD. With the U.S. Centers for Disease Control claiming that approximately 7.8 percent of children in the United States between ages 4-17 are diagnosed with Attention Deficit/Hyperactivity Disorder, it is likely that classroom teachers will have at least a

couple of students with ADD/ADHD in each class they teach (Brown, 2007). From Dr. Harvey Parker's book titled *The ADHD Handbook for Schools: Effective Strategies for Identifying and Teaching students with Attention-Deficit/Hyperactivity Disorder*, he offers twenty critical ideas for teaching students with ADD/ADHD. The first step is developing a relationship with the student in order to show that the teacher cares, respects, and understands the student. This includes determining a positive and successful way to deal with discipline. The second tip Dr. Parker offers is forming an effective partnership with parents and other professions that may be helping the child with their ADD/ADHD disorder. Third, it is important for teachers to keep their classroom highly structured containing clear rules and expectations. While this is beneficial to all students, it is especially important to students with ADD/ADHD. Developing routines for daily activities and making organization a priority will help keep students with ADD/ADHD calm and comfortable with the environment. In this classroom, the teacher should make sure that directions are stated clearly and follow up with the students to make sure they are understood. The seating arrangements in classrooms should be structured or organized in a way where students with ADD/ADHD are in "distraction-free areas of the classroom and in close proximity" to the teacher. The classroom and teaching style should focus on motivation. Using computers, with their colorful graphics and interactive learning, may be beneficial for these students to use to help motivate their learning. Assignments and transitions in the classroom should be aligned with attention spans for those students with ADD/ADHD and each student's ability level should be taken into consideration. Helping



ADD/ADHD students create realistic goals includes splitting large assignments into smaller parts, monitoring their work, and providing frequent praise along the way. Classroom teachers should teach study strategies for students, helping them improve on note-taking, test-taking, organizing their materials and work, and completing assignments. It is also important to give students with ADD/ADHD special responsibilities. By assigning the child a leadership position, they can feel like an important contributor to the class and build confidence. As a teacher, it is important to collaborate with other professionals in the school and district to get ideas for teaching and discipline. Children with ADD/ADHD often have the hardest time during school hours. Their inattentiveness, hyperactivity, and impulsiveness can get in the way of their learning, organization, and social interactions (Parker, 2005, p. 81-92). By trying to prepare an environment where the student's needs are being addressed, tailoring the environment (to minimize sensory overload), and providing lots of practice for children to following the directions and know the procedures will help create motivation and accomplishment (Greenspan, 2006). By being aware of these difficulties and making adaptations in the classroom, teachers can help students with ADD/ADHD become more successful. While many of these principles and tips can be extremely beneficial for teaching students with ADD/ADHD, I will take a deeper look into how movement and creative dance in the classroom can provide students, especially those with ADD/ADHD, a stimulating learning experience.

Creative Dance:

Creative dance may be defined in many ways and can be approached from multiple perspectives. The main goal of creative dance is to communicate through movement. There is no right or wrong in creative dance, it is merely what the dancer is drawing upon to make a direct and clear statement. There are no routines to be learned; the individual is the composer and creator. However, creative dance does have some structure; it begins with the elements of dance. The elements of creative dance are body, space, force, and time. The body element refers to the body parts and the actions, moves, and relationships among them. The body parts include anything a person can move; it includes: outer parts such as head, shoulders, hips, arms, legs and inner parts such as the heart, lungs, and muscles. The body element also includes the body moves. This includes movements such as stretching, twisting, bending, rising, and falling, swinging, suspending, swaying, and shaking. There are multiple ways the body parts and body moves can be performed. The third part of the body element is steps. These are referred to as locomotor steps and include: walking, running, leaping, jumping, hopping, skipping, galloping, and sliding. The next element of creative dance is space. When people are moving and standing still, their body creates different shapes at certain levels in space. Each move contains a direction, size, focus, place, and pathway, which are all elements of space. The next element is force. This refers to how movements can be altered depending on the attack (sharp or smooth), the weight (heavy or light), the flow (free flowing, bound, or in balance), and the strength (tight or loose). The last element of creative dance is time. This includes the underlying beat or pulse of movements. The movement can have an accent, certain speed, and duration

(long or short). By combining these elements of time, the movements can produce a certain rhythmic pattern (Joyce, 1994).

Through creative dance, children are able to discover a great amount about their bodies, minds, language, thoughts, imagination, and ideas. By having these experiences, children can learn how to speak through their bodies and become aware of their growth and development. The experience of body movements during part of the day has shown to benefit children's ability to concentrate more. While most elementary schools have physical education, many do not include dance. It is possible for a teacher to include dance in the classroom, merely push chairs and desks aside, teach the elements of dance and let the children experiment and grow (Joyce, 1994). Creative dance is beneficial for student's well-being in so many ways. It helps build confidence, builds self-respect, and increases an individual's physical and emotional welfare. According to Brehm and McNett (2008),

Movement helps to stimulate the brain activity by coordinating different areas of the brain. Because the two sides of the brain control different sides of the body, contra-lateral movements activate neural connections between the sides of the brain. Activities such as reading and logical investigation require cross-brain integration. Brain gym movements developed by Paul and Gain Dennison harness this connection between movement and thinking... While it may not be necessary to "dance" to allow these important nerve connections to mature, dance offers movement opportunities that stimulate and

ground them. The natural movements of creative dance wake up the brain of the dancer (p.21).

Dance and movement can easily be connected to curriculum subjects such as math, social studies, language, and science. The art of dance becomes most valuable to children when they see its connection to their own lives. By preparing students for creative dance, they must be taught the elements. (Joyce, 1994). Movement and dance can be easily integrated with different subjects, because everything, at one point or another, moves. Relationships of growth, action, reaction, and change are responsible for making up the world and the people in it. By linking movement and dance to curriculum, it creates a thrilling, stimulating, logical, and creative process that leads to rhythmic forms in dance, causing the memories to not fade easily. Dance can be integrated in many academic themes. Movement can introduce material or develop and deepen students' understanding of the topic. By creating dances on the certain topic or concept, students can show their mastery for the subject area, creating a useful tool for assessment (Brehm & McNett, 2005).

The theory of multiple intelligences developed by Gardner was originally described in his 1983 book *Frames of Mind*. The theory originally outlined seven different forms of intelligences: musical, linguistic, logical-mathematic, spatial, bodily-kinesthetic, interpersonal, and intrapersonal (Gardner, 1983). Gardner's theory provides a structure for planning and instruction that encourages active learning. Active learning includes the integration of the arts into the classroom, supports individualism, and offers means to potentially engage all students. Each person and

student is a unique blend of these intelligences. By teaching and addressing multiple intelligences at a time, learning develops. With his acknowledgement of the bodily-kinesthetic intelligence, Gardner provides credibility with the belief that “movement is an essential mode for learning and expression” (Brehm & McNett, 2005). By having the category of bodily-kinesthetic, it gives educators a tool or method to find ways to incorporate movement and dance into the classroom. While creative dance does highlight this intelligence, it also stimulates many of the others (Brehm & McNett, 2005). According to Minton (2008), the movement-based approach to teaching complements the Multiple Intelligence in many ways:

When ideas are described with words, the lesson relates to linguistic intelligence, while bodily-kinesthetic intelligence comes into play during the movement portion of a lesson. When students create their own dances, they frequently visualize the dance beforehand and must imagine how the dancers in a piece can travel without bumping. If movements or dances are created individually, the work involves intrapersonal intelligence, but working in a group to make a dance requires interpersonal intelligence. Finally, if a dance is created to music, the creating involves a level of musical intelligence. Sometimes it is necessary to count the number of times an action is performed or to count beats in the music, which touches on mathematical intelligence. When movement is used as a teaching strategy, lessons naturally appeal to students who have a strong kinesthetic intelligence. Adding other

elements to lessons, such as pictures, music, or verbal descriptions, helps students to use the other forms of intelligence. In this way, lesson content allows children to process information with their preferred intelligence, and the information becomes more meaningful to them (p.5).

*Movement/Dance Integration for ADD/ADHD:*

In Armstrong's (1999) book titled, *ADD/ADHD Alternative in the Classroom*, he notes that students with Attention Deficit/Hyperactivity Disorder often thrive when put into alternative learning environments. These include, but are not limited to, art studios, wood shop, outdoors, or on the dance floor. From his research, in classrooms where ADD/ADHD students had the opportunity to engage in movement, hands-on education, cooperative learning, art, project-based assignments, their actions and behavior were less likely to be problematic. Because children with ADHD require higher levels of stimulation than the average child, they need alternative teaching methods and techniques that get them moving and creating. In relation to Gardner's multiple intelligences, students labeled as ADHD may be highly developed bodily-kinesthetic learners. Because this intelligence is rarely focused on in the classroom, these students may have difficulties paying attention because their most developed intelligence is being neglected. Learning their best through "movement, touching, building, dramatizing, and experiencing the material of the curriculum in other physical ways" (Armstrong, 1999, p. 73) may help these students become more successful and focused in their education. By incorporating creative dance and movement into the

classroom, as well as the other expressive arts, students are being provided a “ready-made channel” within which their undirected energies can be allowed to flow (Armstrong, 1999, p. 36).

In the article titled, *Dance/Movement Therapy as an Alternative Treatment for Young Boys Diagnosed as ADHD: A Pilot Study* by Grönlund, Renck, and Weibull, the authors conducted a pilot study with two young boys with ADHD and studied the benefits of using short-term dance and movement therapy (DMT) as the treatment. The DMT lasted ten sessions and took place over a span of three months, having one session each week. In hopes of helping with the boys ADHD symptoms, the study concluded that the dance and movement therapy only partially reduced the behavioral and emotional symptoms the boys were having. The therapy did however have a positive effect on the motor function for the young boys (ages 5-7). The article suggests that using both kinesthetic approaches and motor coordination may be a start to the successful management for young boys diagnosed with ADHD. While ADHD cannot be treated, and the disorder presents life-long challenges, the authors of this article believe that DMT can reduce and relieve the symptoms (Grönlund et al., 2005).

Another article examining movement in relation to ADHD is *The Active Classroom: Supporting Students with Attention Deficit Hyperactivity Disorder Through Exercise* written by Mulrine, Prater, and Jenkins, (2008). This article discusses Ms. Kau’s classroom where several of her students had been diagnosed with ADHD. After reading an article that suggested regular movement could help students with concentration and controlling impulsivity, she decided to incorporate “exercise, lesson

energizers, and structured movement games for recess” into her classroom (Mulrine et al., p.16). By establishing a classroom environment in which students are receiving movement throughout the day (during lessons, transitions and during recess), it can improve the problematic behavior that ADHD students sometimes have as well as help them focus better. Because students with ADD/ADHD are easily distracted, they are often missing assignments and tasks. These assignments are then often made up during recess times or after school due to discipline and need for completion. This time is where the students are having opportunities for physical activities and it is the first thing to be taken away. “There is even evidence that indicates keeping students with ADHD from exercise may actually cause some classroom-related problems” (Mulrine, et al., 2008, p.16). Along with reducing problematic behavior in the classroom, the research shows that implementing exercise and movement in the class can help progress academic performance and social trouble behaviors as well.

It is known that exercise is great for our bodies and well-being, so why shouldn't it be integrated into the classroom? Mulrine et al. (2008) say that “exercise helps students to cope more effectively with stress, and promotes positive self-image, clearer thought, and improved memory. In addition, exercise can increase activity in the parts of the brain involved in memory, attention, spatial perception, language, and emotion; there are indications that movement can strengthen learning and memory and boost learner motivation and morale” (p.17). Ms. Kau integrated movement into her classroom in three ways. First, she used movement during transition times between subjects to get her students up and moving. Second, she used lesson



'energizers' which are short (ten minute) activities that integrate the lesson-subject matter with physical activity. Third, the teacher created structured activities to be played at recess to guarantee movement and involvement for all students (Mulrine et al., 2008).

As Ms. Kau's class found, when movement is incorporated into the daily schedule, all students are affected. For those students diagnosed with ADD/ADHD, the movement helped with both their concentration and attention. Not only does movement and exercise help with behavior problems, but it can have a positive effect on the child's well-being and learning (Mulrine et al., 2008). By integrating movement and creative dance in the everyday classroom, there is great potential that it can be a beneficial tool for all students. Those with ADD/ADHD can especially benefit from this movement as it may help with their behavioral problems, concentration, attentiveness, and can be a valuable tool to increase and deepen learning.

## Methods and Design

### *Research Methods:*

The research design of this thesis was quasi-experimental. The study took place within an elementary school in a mid-sized Oregon city (population approx. 50,000 people). The population consisted of two fourth grade classrooms at this school. The experimental group consisted of a classroom containing 24 students, 13 boys and 11 girls, with students ranging in ages nine to ten. This class was where I completed two terms of my student teaching in a teacher education program, for the College of Education at a mid-sized university in Oregon. I have been with this class since September, so they were comfortable and familiar with my teaching style and classroom management. A sub-sample of students with ADD/ADHD included two students who had been diagnosed; one with Attention Deficit Disorder and one with Attention Deficit Hyperactivity Disorder. At the time the lessons were being taught, there were two students in the process of being tested for ADD/ADHD. Since they had not yet been formally diagnosed, these two students were not included in the ADD/ADHD sub-sample.

The control group for this study consisted of another fourth grade classroom at the same school. This class consisted of 22 students, 11 boys and 11 girls, with students ranging in age from nine to ten. Over a third of these students were familiar with me because they came into my classroom for advanced math groups four times a

week. Like the experimental group, this class also has a sub-sample of two students diagnosed with ADD/ADHD (one each).

Both classes were taught an eight-lesson unit on the body organ systems. These lessons, lasting 45 minutes each, consisted of two lessons each for the nervous system, the circulatory system, the respiratory system, and the digestive system. The lessons focused on the state standards that students would be able to identify the function of each organ system, the parts of each organ system, and at least two ways to keep each organ system healthy or protect it. The same information was used in all of the eight lessons (teaching the function, parts, and how to keep each organ system healthy); the different group's sets of lessons were just presented in different ways. Both sets of lessons (i.e., for the experimental and control groups) included the same material taught through activities, PowerPoint presentations, and student worksheets. The experimental group, however, had lessons that also integrated both creative dance and movement. The students created movements for each organ system's functions and parts, to help them remember. The students in the experimental group also received a creative dance lesson plan after each organ system was taught, for a total of four creative dance lessons (see experimental group lesson plans in appendix A). During these creative dance lessons, students were previously taught the elements of dance (body, space, time, and force), and were required to include at least one element during their organ system dance. The lessons would begin with experimenting with different movements and dance elements with music, then students were directed to experiment with the key concepts about a particular organ system (for

example, move like the food traveling through the digestive system). During the last portion of the creative dance lessons, students would work in small groups to create a dance for one organ system that displayed one key concept learned and then they were shared with the class. These lessons containing the creative dance still lasted approximately 45 minutes. Those in the control group however, received more time for worksheets, word searches, and partner/whole group questioning from the PowerPoint information (see control group lesson plans in appendix B).

The variables examined in this study were a) student learning gains for both groups, b) student satisfaction/enjoyment of the lessons for both groups, c) focus and attentiveness of the ADD/ADHD sub-sample within both groups, and d) creative dance performances for the experimental group. To test the students' learning gains, each student was given a pre and post knowledge test. Prior to the teaching of the first lesson, both the experimental and control groups were given the pre-test. This pre-test (see test samples in appendix C) helped identify the student's prior knowledge about the organ systems function, parts, and ways to keep it healthy or protect it. The pre-test was twelve multiple choice questions, making it worth a total of twelve points. Once the lessons had been completed, students were given the same test for their post-test. This test, since it was a replica, was also worth a total of 12 points.

In addition to the post test, once the lessons were taught to both the experimental and control groups, a satisfaction/enjoyment questionnaire and survey was given to all students. On this questionnaire, students evaluated the lessons, activities, and their own levels of focus, participation, and how much they thought

they learned. There were four questions, assessed using a Likert scale: I had fun learning about the organ systems, I think I learned a lot about the organ systems, I was able to stay focused and was interested in the lessons, and I wanted to participate during all the lessons and activities. In addition to these four questions, there were also three open-ended questions: What part of the organ systems did you like learning about the most, which lesson activity did you enjoy the most, and what lesson activities helped you learn the most? (See sample of questionnaire in appendix C).

Within the assessments, there was a focus on the students diagnosed with Attention Deficit /Hyperactivity Disorder. Having two students in each class diagnosed with ADD/ADHD, their participation, focus, and attentiveness was assessed and observed during each lesson and activity. During each lesson, I would check every three minutes (by using a stop watch) and quickly mark if the two students with ADD/ADHD were on task, focusing, listening to me, or working on their activity. The students were given a 0, 1 or 2 every three minutes. The 0 showed that the student was not listening, off-task, or distracting other students, the 1 showed that the student was somewhat listening yet slightly distracted, and a 2 showed that the student looked focused, was looking at the teacher, participating, working on the activity/worksheet, or staying on task. With a total of fifteen check-in points (every three minutes during the 45 minute lessons), the students' score of 0's, 1's, and 2's was divided by 15. After each lesson, I would watch the video to help increase intra-rater reliability, and come up with a total percentage for each student for the amount of time they were on-task and focused. In addition, for each of the creative dance lessons, students were

assessed on their participation, incorporation of a main concept learned, and inclusion an aspect of creative dance (time, space, force).

From these evaluations, assessments, and tests, students were assessed through cognitive, psychomotor, and affective domains as well as behavioral. Each of these measurement tools was created by the researcher.

Knowledge scores were compared using a 2 (group) x 2 (time: pre-post) analysis of variance with repeated measures on the second factor. Reliability of the student satisfaction questionnaire was measured using Cronbach's alpha. Student satisfaction was assessed post intervention using an independent t-test. Qualitative questions were analyzed by frequency of themes identified. ADD/ADHD students' level of focus was assessed using the Chi square test for each of the eight lessons on three levels (0, 1, 2) for the experimental versus control group to determine whether individual lessons were experienced differently by the students in each respective group. Friedman's non-parametric repeated measures analysis of variance was used to compare all ADD/ADHD children's level of focus, regardless of group, across the eight lessons. Means were used to summarize the scores of each item assessed in the creative dances performed by the students in the experimental group.

## Results

Responses to research question number one, "How could creative dance and movement be integrated into the 4<sup>th</sup> grade lessons teaching about the organ systems?", can be found in Appendix A and Table 1. Appendix A includes the eight lesson plans for the experimental group. These lesson plans contain descriptions of the activities that were used to integrate movement in each lesson as well as a creative dance lesson for each of the organ systems. Table 1 shows a summary of the differences between the experimental and control groups' lesson plans. Activities that are bolded represent the movement and creative dance activities that were provided only to the experimental group. Activities that are italicized represent the additional activities provided only to the control group

Table 1. Lesson Content Summaries for Experimental and Control Groups (below)

Lessons	Experimental Group	Control Group
1	<p>The Nervous System (functions and parts):</p> <ul style="list-style-type: none"> <li>• Introduce organ/body systems by using sequence of pictures with Legos</li> <li>• Fill out KWL chart for nervous system</li> <li>• PowerPoint for information- <b>create movements for function and parts</b></li> <li>• <b>Activity investigating signals to brain; hot/cold water</b></li> <li>• Exit tickets writing out function for nervous system</li> </ul>	<p>The Nervous System (functions and parts):</p> <ul style="list-style-type: none"> <li>• Introduce organ/body systems by using sequence of pictures with Legos</li> <li>• Fill out what the students <u>Know</u>, what they <u>Want</u> to know, and then what they <u>Learn</u> (KWL chart) for nervous system</li> <li>• PowerPoint for information-</li> <li>• <i>Create group questions from PowerPoint to ask to classmates</i></li> <li>• Exit tickets writing out function for nervous system</li> </ul>
2	<p>The Nervous System (how to keep it safe):</p> <ul style="list-style-type: none"> <li>• <b>Class circle and hold hands to practice how the brain sends signals</b></li> <li>• <b>Practice function and part movements</b></li> <li>• PowerPoint</li> <li>• Complete worksheet for keeping the nervous system safe</li> <li>• <b>Creative dance lesson</b></li> </ul>	<p>The Nervous System (how to keep it safe):</p> <ul style="list-style-type: none"> <li>• <i>Review the function and parts of the nervous system</i></li> <li>• PowerPoint</li> <li>• <i>Complete worksheet for the parts; label for partner</i></li> <li>• Complete worksheet for keeping the nervous system safe, sketch picture if extra time</li> <li>• Complete KWL chart</li> </ul>
3	<p>The Circulatory System (functions and parts):</p> <ul style="list-style-type: none"> <li>• <b>Have students locate their pulse and count for 60 seconds, have students jump up and down for one minute and take pulse</b></li> </ul>	<p>The Circulatory System (functions and parts):</p> <ul style="list-style-type: none"> <li>• <i>KWL chart</i></li> <li>• PowerPoint</li> <li>• Practice saying function and parts of circulatory system</li> </ul>



	<p><b>again- compare</b></p> <ul style="list-style-type: none"> <li>• PowerPoint</li> <li>• <b>Create movements for the functions and parts of the circulatory system</b></li> <li>• Fill out worksheet for the parts and function</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Fill out worksheet for the parts and function</i></li> <li>• <i>Review the KWL chart and continue to fill out</i></li> </ul>
4	<p>The Circulatory System (how to keep it safe):</p> <ul style="list-style-type: none"> <li>• Interactive read aloud</li> <li>• PowerPoint</li> <li>• Complete 'how to keep it safe' worksheet</li> <li>• <b>Creative dance lesson</b></li> </ul>	<p>The Circulatory System (how to keep it safe):</p> <ul style="list-style-type: none"> <li>• Interactive read aloud</li> <li>• PowerPoint</li> <li>• <i>Ask partner questions/quiz over material from PowerPoint</i></li> <li>• Complete 'how to keep it safe' worksheet</li> <li>• <i>Review/complete KWL chart</i></li> </ul>
5	<p>The Respiratory System (function and parts):</p> <ul style="list-style-type: none"> <li>• Make a model lung</li> <li>• PowerPoint</li> <li>• <b>Create movements for function and parts</b></li> <li>• Start WANTED poster</li> </ul>	<p>The Respiratory System (function and parts):</p> <ul style="list-style-type: none"> <li>• <i>Start KWL chart</i></li> <li>• Make a model lung</li> <li>• PowerPoint</li> <li>• Practice saying function and parts</li> <li>• Start WANTED poster</li> <li>• <i>Fill in KWL chart</i></li> </ul>
6	<p>The Respiratory System (how to keep it safe):</p> <ul style="list-style-type: none"> <li>• Interactive read aloud</li> <li>• PowerPoint</li> <li>• Finish WANTED poster</li> <li>• <b>Creative dance lesson</b></li> </ul>	<p>The Respiratory System (how to keep it safe):</p> <ul style="list-style-type: none"> <li>• Interactive read aloud</li> <li>• PowerPoint</li> <li>• Finish WANTED poster</li> <li>• <i>Share posters</i></li> <li>• <i>Complete KWL chart</i></li> </ul>
7	<p>The Digestive System (functions and parts):</p> <ul style="list-style-type: none"> <li>• Stretched out string to see length of digestive system</li> <li>• PowerPoint</li> <li>• <b>Create movements for function and parts</b></li> <li>• Fill out parts/function on worksheet</li> </ul>	<p>The Digestive System (functions and parts):</p> <ul style="list-style-type: none"> <li>• <i>Fill in KWL chart</i></li> <li>• Stretched out string to see length of digestive system</li> <li>• PowerPoint</li> <li>• Practice function and parts</li> </ul>

		<ul style="list-style-type: none"> <li>• Fill out parts/function on worksheet</li> </ul>
8	<p>The Digestive System (how to keep it safe):</p> <ul style="list-style-type: none"> <li>• Interactive read aloud/ <b>travel the digestive system</b></li> <li>• PowerPoint</li> <li>• Finish worksheet</li> <li>• <b>Creative dance lesson</b></li> </ul>	<p>The Digestive System (how to keep it safe):</p> <ul style="list-style-type: none"> <li>• Interactive read aloud</li> <li>• PowerPoint</li> <li>• <i>Quiz partner about information from PowerPoint</i></li> <li>• Finish worksheet</li> <li>• <i>Share 'inside the body' books</i></li> <li>• <i>Complete KWL chart</i></li> </ul>

In response to research question number two, “Would the integration of creative dance and movement into the curriculum lessons be a beneficial teaching tool, helping increase student learning?”, results can be seen in the following figures and tables. Figures 1 and 2 show learning gains for each individual student in each respective group over time. Tables 2 and 3 and Figure 3 show ANOVA test results of both groups’ learning over time. There were no group differences ( $F[1,41]=0.09, p=.76$ ). However, both groups improved over time ( $F[1,41]=169.65, p<.0001$ ). While there is an interaction in a descriptive sense (see Figure 3), the statistical interaction did not achieve statistical significance ( $F[1, 41]=0.99, p=.35$ ).

Figure 1. Experimental Group Participants' Individual Pre-Test and Post-Test

Knowledge Scores

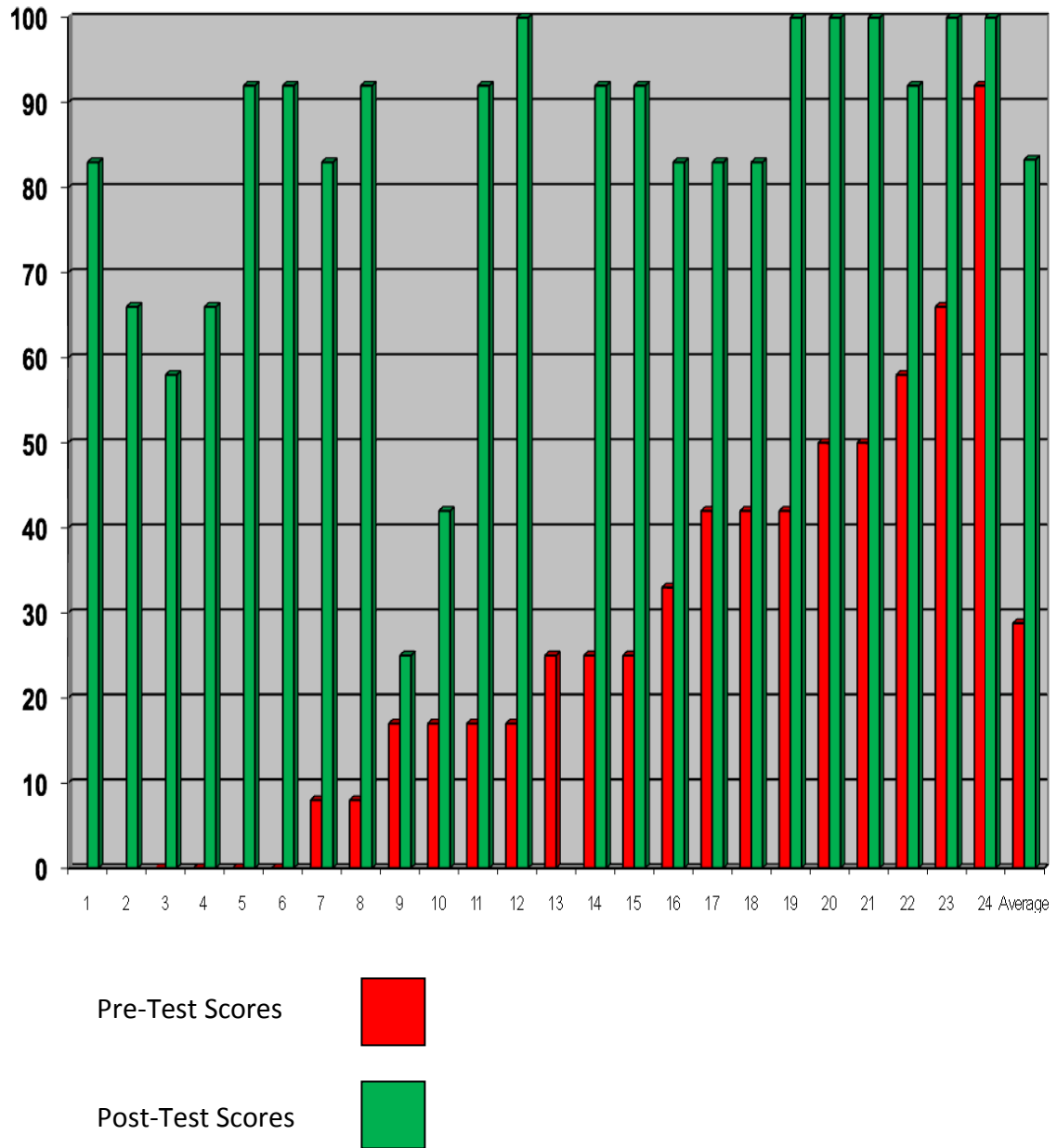


Figure 2. Control Group Participants' Individual Pre-Test and Post-Test Knowledge

Scores

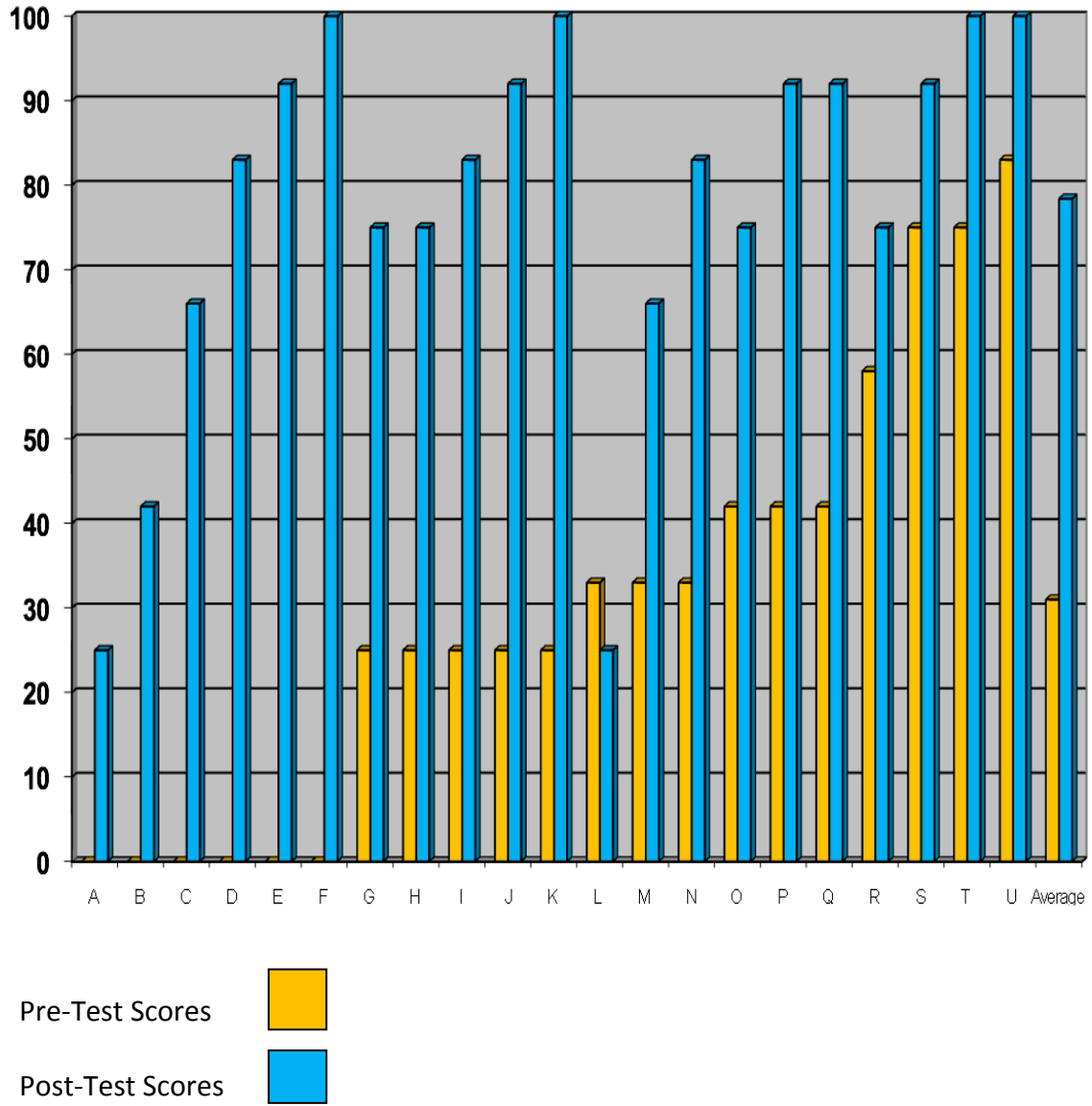


Table 2. Main and Interaction Effects for Knowledge

Variable	Mean	Standard Deviation
<u>Main Effect: Time</u>		
Pre	3.60	3.00
Post	9.74	2.55
<u>Main Effect: Group</u>		
Experimental	6.79	4.30
Control	6.57	4.04
<u>Interaction Effect</u>		
Experimental Pre	3.48	2.99
Experimental Post	10.10	2.43
Control Pre	3.73	3.07
Control Post	9.41	2.67

Figure 3. Interaction Effect for Knowledge

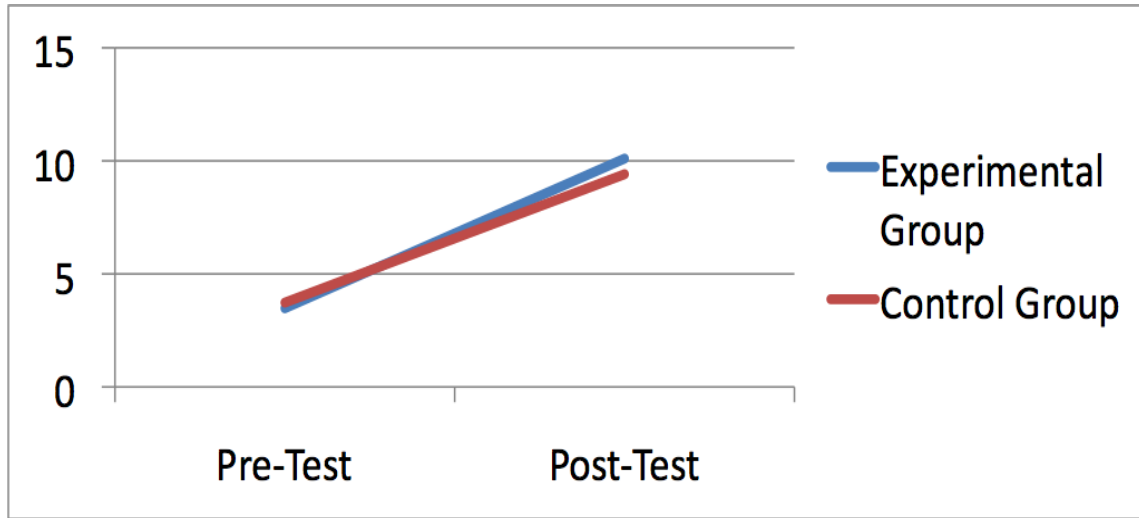


Table 3. 2 (Group) x 2 (Time) Repeated Measures ANOVA Summary Table for Knowledge

Source	Sum of Squares	DF	Var. Est.	F-Ratio	Probability
<u>Between Subjects:</u>	449.88	42			
Groups	1.02	1	1.02	.09	.7598
Error	448.87	41	10.95		
<u>Within Subjects:</u>	1011.00	43			
Treatment	810.42	1	810.42	169.65	0.0001*
Interaction	4.72	1	4.72	0.99	0.3479
Error	195.86	41	4.78		
TOTAL:	1460.88	85			

In response to research question number three, “Would the students have higher levels of enjoyment and satisfaction when the lessons integrated movement and creative dance?”, results are shown in Tables 4 through 7. Table 4 shows that the

satisfaction survey had good internal consistency. Table 5 shows t-test results of students' satisfaction with the creative dance integrated lessons on organ systems. There were no statistical differences between groups. Both groups were happy learning organ systems using their respective teaching methods. Tables 6 and 7 show students' responses to qualitative questions on the satisfaction survey. Common themes noted by students are presented from most to least frequently cited.

Table 4. Internal Consistency of Satisfaction Questionnaire

Question #	Overall Mean	Standard Deviation
1	4.31	.82
2	4.34	.71
3	4.13	.63
4	4.44	.81
Total	4.31	.75

N=45; Cronbach's Alpha=.6943.

Table 5. Student Satisfaction Post Treatment by Group

	Experimental Group (n = 23)	Control Group (n = 22)
Mean	17.22	17.23
Standard Deviation	1.78	2.41

$t(1) = -0.0157, p = .50$

Table 6. Common Themes from Experimental Group's Responses to Qualitative Questions on Satisfaction Survey (N=22)

Number of students:	Theme:
10	Their favorite part was learning about the digestive system and stretching out a string to see how long it was
6	Enjoyed making the model lung for the respiratory system the best because they could visualize how it inflates and deflates
6	Enjoyed the dances for the organ systems the best because they were fun and the students got to move
5	Enjoyed making the poster for the respiratory system because it helped them learn
4	Liked the PowerPoint presentations the best because they learned a lot
4	Liked the movements we did in the lessons because it helped them remember the functions and the parts
2	Liked the worksheets because they liked to read and answer the questions

Table 7. Common Themes from Control Group's Responses to Qualitative Questions on Satisfaction Survey (N=22)

Number of Students:	Theme:
16	Enjoyed making the model lung for the respiratory system the best because it helped them see how it inflates/deflates
7	Enjoyed seeing how long the digestive system was by stretching out a string
3	Enjoyed all the activities and lessons equally because it was all fun
2	Enjoyed making a poster for the respiratory system because they got to draw
2	Liked doing the worksheets best because they liked labeling the parts and they learned the most from them



Results for research question number four, “Would the use of creative dance and movement have an effect on the level of focus and participation for students with ADD/ADHD?” can be found in Tables 8 and 9. Table 8 shows that all ADD/ADHD children, regardless of group, had a significant improvement in their focus over the eight lessons. This increase occurred during lessons four through seven. There was no statistical difference found between groups. Table 9 shows Chi-square results of the observed level of focus for children with ADD/ADHD between groups and across the eight lessons. While not statistically significant, it appears that 5 out of 8 lessons favored the experimental lesson, 1 out of 8 favored the control group, and 2 out of 8 favored neither group. In lessons two and eight, there was a statistical trend identified ( $p < .10$ ).

Table 8. Student Focus Over Time Irrespective of Group

Lesson	Mean	Mean Rank
1	1.365	2.875
2	1.34	2.875
3	1.27	2.000
4	1.475	6.125
5	1.46	5.875
6	1.48	6.125
7	1.475	6.250
8	1.365	3.875

2=on task, 1=somewhat on task, 0=off task

$n=4; \chi^2 = 14.77, p < .05$

Table 9. Observed Level of Focus for Children with ADD/ADHD Between Groups and Across Lessons

Group Focus	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8
Experimental								
0	5	7	5	1	4	3	2	7
1	8	5	8	10	7	9	8	6
2	17	18	17	19	19	18	20	17
Control								
0	5	5	7	4	6	3	5	6
1	12	11	11	11	8	11	11	9
2	13	14	12	15	16	16	12	15
$\chi^2$ (2, N=30)	2.56	5.22	3.47	3.41	1.35	0.61	5.19	1.43
p	=.28	<b>=.07</b>	=.18	=.18	=.50	=.75	<b>=.07</b>	=.49
Trend favors	Exp.	Exp.	Exp.	Exp.	Neither	Control	Exp.	Neither

Although not in response to a specific research question for this study, students in the experimental group were assessed on their understanding of creative dance elements and body organ system concepts through creative dance choreographies and performances. Results can be found in Table 10.

Table 10. Experimental Group Students' Inclusion of Creative Dance Elements and Organ System Concepts in Group Performances

Criteria	Overall Mean
The respiratory system performance included aspects of creative dance: space, force, or time; and body	3.74
The performance helps show a main concept about the respiratory system	3.78
The circulatory system performance included aspects of creative dance: space, force, or time; and body	3.46
The performance helps show a main concept about the circulatory system	3.63
The nervous system performance included aspects of creative dance: space, force, or time; and body	3.92
The performance helps show a main concept about the nervous system	3.83
The digestive system performance included aspects of creative dance: space, force, or time; and body	3.91
The performance helps show a main concept about the digestive system	4.0

- 1 = did not participate
- 2 = attempted to include one creative dance element or attempted to illustrate a main concept of the body system
- 3 = attempted to include one creative dance element and attempted to illustrate a main concept of the body system
- 4 = used one of the creative dance elements and illustrated a main concept of the body system

## Discussion

In response to research question number 1, “How could creative dance and movement be integrated into the 4<sup>th</sup> grade lessons teaching about the organ systems”, the differences between the lessons can be found in table 1. From my observations as the teacher of both classes, I felt that the teaching of these two sets of lessons on organ systems was successful. Both the experimental and control groups seemed to enjoy learning about the organ systems, were excited during the lessons, and completed their worksheets and activities. When investigating and evaluating the experimental group’s integration of movement and creative dance, I was extremely happy with how the students responded, as seen in table 10. For each organ system’s function and parts, the students created a movement to help them remember the content. During the creative movement portion of the lessons, I had students brainstorm with their partner a movement that could represent the functions and parts of that particular organ system. The students loved it and it really helped with their learning. During each lesson, we would practice the function and part movements for the organ systems. I even observed several students doing the movements in their chairs as they completed the post-test. When I would announce that it was time for creative dance, many students would cry out “hurray” or “yes”! Their enjoyment of involving creative dance was not only enjoyable to most of these students, but I believe it helped with their learning. In order to present their mastering of the content in a new way (through movement) it shows how much they need to

understand it. As a future teacher, I feel that it is extremely valuable to incorporate movement and dance into the everyday classroom. The movements and creative dance portions were not difficult to integrate into the lesson plans. I believe any teacher could easily do this, even with minimal experience in creative movement and dance. Not only do many students enjoy it but also it can be a helpful teaching tool. For those kinesthetic learners, moving is a natural process that is often left out of traditional teaching methods. By integrating it into the classroom, those student's needs are being met.

Results for research question number two, "would the integration of creative dance and movement into the curriculum lessons be a beneficial teaching tool, helping increase student learning", showed that the test scores from the pre and post cognitive/knowledge tests for both the experimental and control groups, had many outcomes. First, there was no statistical significance between the experimental and control groups. Second, there was also no statistically significant difference in the involvement of movement and creative dance in the lessons. While the dance and movement did not necessarily help or hinder their learning, it was obvious in the satisfaction surveys/questionnaires that many students enjoyed this. There was statistical significance for the students' learning overall in both groups. Both groups were taught the same material on organ systems and no matter how this material was taught, both populations showed that they learned something. Figure 3 shows that perhaps with more statistical power (longer time frame, larger sample size, more vigorous inclusion of movement and dance) there is a potential trend that may be

worth exploring in future studies. Although there were no group differences ( $F [1,41]= 0.09, p= .76$ ), both groups improved over time ( $F [1,41]= 69.69, p= <.0001$ ). However, while there was an interaction in a descriptive sense, this interaction did not achieve statistical significance ( $F [1,41]= 0.99, p= .35$ ).

When examining research question number 3, “Would the students have higher levels of enjoyment and satisfaction when the lessons integrated movement and creative dance”, the quantitative scores for both the experimental and control groups for their satisfaction/enjoyment scores on a Likert scale showed that there were no statistical differences between the two groups. It appeared that both classes were happy either way; with or without movement and creative dance incorporated into the lessons. Upon evaluating the qualitative responses to the questions from the satisfaction/enjoyment questionnaire, there were many different responses and differing favorite activities or parts of lessons that students identified as their favorite. From these responses I determined multiple themes for each group (found in figures 2.3 and 2.4). The most common themes involved tactile, visual activities like making a model lung, stretching out a string to see how long the digestive system is, and doing movements and the creative dances (for the experimental group only). From those students who said the movement was their favorite portion of the activities, some quotes include: “the movement helped me the best because it helps get it stuck in my head” and “doing the function helped me remember the systems best”.

In response to research question number four, “Would the use of creative dance and movement have an effect on the level of focus and participation for

students with ADD/ADHD”, I noticed a few trends when examining the focus assessments. Both students’ (from the experimental group) focus and ability to stay on-task declined toward the end of the lessons. During the movement and creative dance portions of the lessons, the students were usually engaged but were unable to stay focused as other classmates shared their dance pieces. It is important to note that not every student necessarily enjoyed the movement and creative dance lessons, including those with ADD/ADHD. From their surveys on enjoyment and satisfaction, I found that one student (the one with ADHD) enjoyed the dances but felt he did not learn very much from the lessons. The other student from the sub-sample (the one with ADD) said she enjoyed the movements and the creative dances.

When evaluated, there was no statistical significance from lessons one to eight for the amount of focus between the two populations. As seen in table 9, it appears, while not statistically significant, that five of the eight lessons favor the experiment group, one of the eight lessons favors the control group, and two of the eight lessons were equal, meaning it did not favor either group. In both lessons two and seven, the probability was .07 so it reached a statistical trend (statistical trends are those with  $p < .10$ ) for the experimental group lessons. In lesson two, the experimental group had their first creative dance lesson on the nervous system, which I think may have contributed to the high scores of focus for the sub-sample, because it was something new and unfamiliar. In lesson seven, both the experimental and control group got to see how long the digestive system was as we stretched out a string. Similarly, in the satisfaction/enjoyment questionnaire, almost half (10 of the 22) of the students said

that stretching out the string was their favorite activity. The experimental group also got to make up the movements for the function and parts of the digestive system in lesson seven, which the students always seemed to enjoy.

Creative dance assessments:

When assessing the results for the scoring of the students creative dance performances, every student was able to include one of the elements within creative dance (body, force, time, or space) along with including one main concept learned about the certain organ system the lesson was on that day. Almost all of the students were excited to do these dances/movements and did a great job experimenting with this new concept and the elements that go with it.



## Limitations and Recommendations for Future Study

Limitations within this experimental study are numerous. First, not all of the measurements or evaluations were assessed for validity and reliability. Each of the measurement tests were created by the researcher and due to time and resources, there were not tested for validity, reliability, or both. The satisfaction/enjoyment questionnaire was the one test that was tested and it was found to be reliable on the Cronbach's Alpha scale (scoring 0.69). The cognitive/knowledge test also had the 'ceiling effect' meaning that some of the children may have learned more but because they scored 12 out of 12 on the post-test, not all of their knowledge was assessed. Another limitation was with the small sample size. The sample groups only consisted of two fourth grade classrooms, 47 students in all. The sub-group was an especially small sample with only two students in each class having been diagnosed with ADD/ADHD (total of four students in the sub-sample). It was hard to achieve any statistical significance with the small sample size. Teaching the unit of ten lessons on the body organ systems was too short of a treatment to fully see results of learning and difficult to attain statistical significance. With only eight 45-minute lessons, the length of treatment only lasted two weeks. Lastly, there were a few potential confounding variables within this experiment. First was the experimental group's familiarity with the researcher. I had been with this class since September and the experiment took place in March. This variable has the possibility of having an effect on those students' achievements, work habits, and learning. Approximately one-third of the students in

the control group were familiar with the researcher (through their daily math period), however, this left many students learning from a teacher they have never worked with before. Another potential confounding variable is that the researcher taught both sets of lessons to both populations, gave the assessments to each population, and observed the behaviors of those in the sub-sample. Because all of these things were done by the same person, there is potential for a possible bias (e.g. more enthusiasm for teaching the experimental group the creative dance content, not equal when observing the focus of those in the sub-sample).

If I was to do this research and experiment again or had additional time, there are several things that I would have done differently or added. First, I think it would have been beneficial to do a survey with each student in the experiment to identify their preferred learning style, profile, or favored Multiple Intelligence. I predict that there would have been a connection to those that are kinesthetically intelligent and their enjoyment/satisfaction with the movement and creative dance integration. If this topic is explored in future studies, I think it would be important to use a larger sample size, especially with the sub-sample of those students diagnosed with ADD/ADHD. In this research there was no distinction between students with ADD and ADHD. It may be beneficial to look at each of these disorders separately and/or make comparisons as to how movement integration affects their learning, satisfaction, and focus. I would also suggest using a longer duration of lessons/unit and a more intense integration of creative dance and movement. It would be important to have a clearer distinction between the treatments for each group. For example, in this study, the control group

did have a few more tactile-oriented activities such as drawing a poster, making a model lung, and stretching out the string to see how long the digestive system was, thus allowing them to experience the content in kinesthetic ways. Having one control group that receives no kinesthetic involvement at all may elicit different results.

## Conclusions

In review of the results, there was no statistical significance found between the groups but all students did learn no matter how the information was taught. With a larger sample size and longer time period, there could be a potential trend that may be worth exploring. Again, with no statistical significance between the groups and sub-groups for the satisfaction/enjoyment survey, students were happy either way and, based on my observations, many of the students in the experimental group seemed to really enjoy the movements from my observations. When observing the focus of those students diagnosed with ADD/ADHD, there were a few statistical trends identified in favor of the experimental lessons (those integrated with movement and creative dance), but again with a small sample size, it is hard to know the true potential this study may hold.

Regardless of the statistical significance found or not found within the results from the experimental portion of this thesis, I know that as a future teacher, I will be integrating movement and creative dance into my own elementary classroom. Through creative dance, children are able to discover a great amount about their bodies, minds, language, thoughts, imagination, and ideas. By having these experiences, children learn how to speak through their bodies and become aware of their growth and development. The experience of body movements during parts of the day has shown to benefit children's ability to concentrate more. Many children that are labeled as ADHD may be highly developed bodily-kinesthetic learners. By giving

opportunities for these expressive arts to be integrated into the classroom, these students are provided a ready-made channel for their undirected energy and thoughts to flow. I believe that creative dance and movement in the class would not only give these students a chance to learn and focus through physical involvement and have a constructive outlet for their energy and creativity, but I believe it is beneficial and enjoyable for all students.

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**Appendix A:  
Experimental Group Lesson Plans**

## Lesson Plan One: The Nervous System

### The Nervous System “Control Center”

#### 4<sup>th</sup> Grade Science and Health

Time: 35-40 minutes

#### Goal:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).

#### Objective:

- After the PowerPoint presentation on the nervous system and class hot/cold activity, on their own, students will be able to correctly describe at least one function of the nervous system on their exit ticket.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of nervous system
- Poster board for chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- 3 bowls: one filled with hot water, one with ice water, and one with room temperature water
- Towel
- 24 note cards for ‘exit tickets’
- Pictures of Lego’s and houses

#### Procedure:

##### A. Anticipatory Set (6-7 minutes):

- Show image one: one Lego, tell students “this Lego represents one cell; a cell is the smallest living part of your body. Your body has many different kinds of cells; all cells use food and oxygen for energy, grow and divide to form new cells, and help you grow”. Show image of multiple Lego's hooked together, and say, “a group of cells that work together is a tissue (not the kind you blow your nose with though); all your body parts are made up of tissues”. Now show a house made of Lego’s, “a group of tissues that work together is an organ. Your heart, lungs, and kidneys are all organs”. Show a picture of a multiple Lego houses (image four), “a

## Lesson Plan One: The Nervous System

### The Nervous System “Control Center”

#### 4<sup>th</sup> Grade Science and Health

Time: 35-40 minutes

#### Goal:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).

#### Objective:

- After the PowerPoint presentation on the nervous system and class hot/cold activity, on their own, students will be able to correctly describe at least one function of the nervous system on their exit ticket.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of nervous system
- Poster board for chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- 3 bowls: one filled with hot water, one with ice water, and one with room temperature water
- Towel
- 24 note cards for ‘exit tickets’
- Pictures of Lego’s and houses

#### Procedure:

##### A. Anticipatory Set (6-7 minutes):

- Show image one: one Lego, tell students “this Lego represents one cell; a cell is the smallest living part of your body. Your body has many different kinds of cells; all cells use food and oxygen for energy, grow and divide to form new cells, and help you grow”. Show image of multiple Lego's hooked together, and say, “a group of cells that work together is a tissue (not the kind you blow your nose with though); all your body parts are made up of tissues”. Now show a house made of Lego’s, “a group of tissues that work together is an organ. Your heart, lungs, and kidneys are all organs”. Show a picture of a multiple Lego houses (image four), “a

body system is a group of organs that work together, they make up your muscular system, your bones work together to make your skeletal system (which you learned about last year), and you have organs that work together to make up other body systems like your circulatory system, respiratory system, nervous system, and digestive system. This is what we will be learning about in the next two weeks.” Last when you put together multiple body systems it makes your whole body or a town (show Lego town, image five).

- Tell class, “The first body system we are going to learn about is the nervous system.” Put up ‘Big Ideas’ chart for the nervous system, “tell me what you think you already know about the nervous system. As we learn more, we will see what we agree or disagree with”.
- Have students offer ideas and write in first column on chart “what we think we know or big ideas”.

**B. Teaching (7-8 minutes):**

- Show class the PowerPoint presentation involving the parts of the nervous system and the functions of the nervous system. Discuss as a class after each slide, answering questions.
- For the function- have pairs of students work together to create a movement that will help the class remember the function.
- For the parts of the nervous system, have students create a movement/pointing system that we can practice while saying the parts.
- Tell class; let’s learn more about how the brain sends messages to the rest of our body.

**C. Group Application (10-12 minutes):**

- Set up the two bowls of different temperature water (hot and cold); Ask students if they can tell by looking which bowl has the hot and which has the cold. (They cannot tell by looking). Ask students how they can tell the different temperatures of the water (feeling it).
- Have several students come up and feel both the hot and cold water to tell everyone which is which.
- Put the third bowl of water on table (warm water). Tell students that this water is between the hot and cold. Ask for a volunteer to place one hand in the hot water and one hand in the cold water for three minutes.
- After three minutes, have student put both hands into the lukewarm water. Have child share aloud if the water feels hot or cold.
- Explain that sometimes the brain gets mixed signals and can get confused. In this case, the extremes in cold and hot water made the nerves in the hands more sensitive to change to a moderate temperature.
- Ask students for examples of another time this may happen (after being in the cold, going inside burns)
- Have students practice multiple times the function and nervous system part movements.

**D. Independent Application (5-6 minutes):**

- Pass out exit tickets (note cards) and tell students they must write the function of the nervous system on it in order to go out to recess.
- Give students five minutes to fill out their card.
- If finished early, tell them to start thinking about what big ideas on our chart that we have addressed so far.

**E. Closing (3-5 minutes):**

- Go back to each big idea on the chart and see if from today's lesson they can agree or disagree with the idea; if so put it into the correct column.
- Have students give their exit ticket to you before leaving the room.

## Lesson Plan Two: The Nervous System

### The Nervous System: “Don’t Forget Your Helmet”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goals:

- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).
- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objectives:

- After the PowerPoint presentation review and class activity on the nervous system, students will be able to correctly draw and list the three parts of the nervous system (brain, spinal cord, and nerves).
- After the PowerPoint presentation review and class activity on the nervous system, students will list at least two ways to protect their nervous system on their nervous system drawings.
- At the end of the lesson, students will demonstrate one thing they learned about the nervous system through a creative dance.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- Last slides of nervous system PowerPoint
- 24 ‘my nervous system’ worksheets found in their ‘Body Systems: The Inside Story’ packets (see attachment)
- Coloring materials
- Music for creative dance

#### Procedure:

##### A. Anticipatory Set (3-5 minutes):

- Have everyone stand in a circle holding hands. Select one student to be the brain. Have the brain start by squeezing the hand of one person next to them and continue until the last person (on other side of brain) has their hand squeezed. Then that person will squeeze in the opposite direction until it reaches the brain again.



- Have students discuss how this represents what we learned the previous day, practice the movements for the function and parts of the nervous system.
- B. Teaching (8-10 minutes):**
- Put PowerPoint back on screen and quickly review what was discussed yesterday, ask questions to the class: “who can tell me what the three parts of the nervous system were? Come point to each part, who can tell me a function of the nervous system, give me an example”
  - Then show the last slides of the PowerPoint which explain how we keep our nervous systems healthy. First have students feel their spine, ask what part of the nervous system is inside of it, and why the spine surrounds it.
  - Discuss the ways we keep our brain and nervous system healthy from PowerPoint: wearing a seat belt in the car because it keeps you from being thrown on or being thrown into the windshield during a crash, reducing your risk for injury to your head or back. Getting plenty of sleep and rest helps restore energy to your nervous system. Wearing a helmet when you skate, ride a bike, skateboard, or scooter helps to protect your skull and brain in case you fall. Avoiding alcohol and drugs because they can affect your sense and you are at greater risk for injury when your senses are not sharp.
- C. Group Application (6-8 minutes):**
- Have pairs of students work together to each draw their own picture of the nervous system inside the body outline. Then have students switch papers with their partner and label the three parts (brain, spinal cord, and nerves).
- D. Independent Application (4-5 minutes):**
- On their own, have students write at least two ways to help keep their nervous system working properly. If students are finished early, they can draw a picture of their behavior.
- E. Closing (10-15 minutes): Creative Dance**
- Review the creative dance elements as students’ warm-up; start with a light stretch as the warm-up music is played.
  - Have students move around the room, matching the tempo of the music and practice using different sizes, force, and time.
  - Instruct all students to try experimenting with the movements we created for the function and the parts to match the different tempos of the music with different force
  - Have students gather in groups of two or three, give five minutes to create a dance representing any main concept taught about the nervous system (function, parts, or how to keep it safe). Play music while groups are working.
  - Have each group share their dances.

## Lesson Plan Three: The Circulatory System

### The Circulatory System: “Feel the beat”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02)
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation on the circulatory system and class activity, individually, students will be able to accurately describe one function of the Circulatory system by writing it on their picture
- After the PowerPoint presentation and activity, students will be able to label the three parts of the circulatory system picture with 100 percent accuracy

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- Poster board for chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- 24 worksheets on circulatory system found in the ‘Organ Systems: The Inside Story’ packets. (see attached)

#### Procedure:

##### A. Anticipatory Set (10-12 minutes):

- Have students locate their pulse in the wrist or neck, showing them how. Have students count the number of pulses they get in a ten-second period (teacher times). Have students multiply the number by 6 to get their pulse rate for one minute.
- Now have students jump up and down next to their desk for thirty seconds, sitting down and counting their pulse rate again when told.

- Ask class if there was a difference in their number; ask them why they think that. Ask students what their pulse is, why do they feel it in their neck or wrist if it is their heart beating? Discuss as a class

**B. Teaching (10-12 minutes):**

- Show class the PowerPoint presentation involving the parts of the circulatory system and the functions of the circulatory system. Discuss as a class after each slide, answering questions.
- Create a movement to help remember the function of the circulatory system. Have students work with partner for examples, then create one the whole class knows, combining the ideas.

**C. Group Application (5-7 minutes):**

- Have students, think, pair, and share at least one function of the heart and the three parts of the circulatory system.
- Have class take turns (just the boys tell me, the girls, this table group) showing the function of the circulatory system and for the three parts.

**D. Independent Application (7-9 minutes):**

- Hand out packets to each student and have them complete the circulatory system worksheet (front page only) individually. Walk around to answer questions.
- When finished, have students turn in packet and work on word search.

**E. Closing (3-5 minutes):**

- Have students review the functions and parts of the circulatory system with a partner

## Lesson Plan Four: The Circulatory System

### The Circulatory System: “Don’t Break my Heart”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objective:

- After the PowerPoint presentation and interactive read aloud about the circulatory system, students will include at least two ways to keep their circulatory system healthy on the back of their circulatory system worksheet.
- At the end of the lesson, students will create a creative dance with a group representing one of the main concepts learned about the circulatory system and incorporating the creative dance elements.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to understand how to actively listen to the story being read aloud while making connections, asking questions, and creating predictions.
- Students will need to have finished the first half of their circulatory system worksheet from the prior lesson.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- 24 worksheets on circulatory system, front completed the previous lesson
- Book, *Organs!: How they work, fall apart, and can be replaced (gasp!)* by N.W. Parker
- Music for creative dance lesson

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Have students gather together at back rug for an interactive read-aloud from the book “Organs! How they Work, fall apart, and can be preplaced (gasp!)”, pages 4-7 (on the circulatory system).

- Have students bring clipboards, paper and pencils, encourage students to ask questions during the story, relate the information to their prior knowledge, and look for ideas to agree/disagree with from our chart.
- Have students share their notes they took during the reading with a small group around them.
- Ask for volunteers to share their discoveries.
- Have students return to their desks to finish the Circulatory System PowerPoint.

**B. Teaching (6-7 minutes):**

- Show the class the last portion of the circulatory system PowerPoint presentation. These slides involve how to protect and keep the circulatory system healthy. Have students ask questions and offer ideas after each slide.

**C. Group Application (7-7 minutes):**

- With their table group, have students create a picture on the back of the circulatory worksheet illustrating at least two ways to keep their circulatory system healthy.
- Let students offer ideas to the group and create new ideas for how to keep the circulatory system healthy. Make sure each student create his/her own picture.

**D. Independent Application (6-7 minutes):**

- Once their pictures are complete, have each student on their own, write the explanation for each picture. Describing why these actions help keep the circulatory system healthy.
- Have student's hand in worksheet. For those that finish early, have them work on the organ system crossword or investigate the big ideas from the 'big ideas' charts.

**E. Closing (15-18 minutes): Creative Dance**

- Review the creative dance elements as students' warm-up; start with a light stretch as the warm-up music is played.
- Have students move around the room, matching the tempo of the music and practice using different sizes, force, and time.
- Instruct all students to try experimenting with the movements we created for the function and the parts to match the different tempos of the music with different sizes and levels.
- Have students gather in groups of two or three, give five minutes to create a dance representing any main concept taught about the circulatory system (function, parts, or how to keep it safe). Play music while groups are working.
- Have each group share their dances.

## Lesson Plan Five: The Respiratory System

### The Respiratory System: “Just Breathe”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-55 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation and activity related to the respiratory system, pairs of students will be able to correctly determine one function of the Respiratory systems by creating a ‘WANTED’ poster.
- After the PowerPoint presentation and activity, students will draw a picture of the respiratory system on their ‘WANTED’ posters, correctly representing at least four of the five parts.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to see examples of the respiratory system in order to draw their own picture.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of respiratory system
- Poster board for chart- split into three sections and labeled: big ideas-things we think we know, ideas we agree with, ideas we disagree with
- 12 ‘WANTED’ white poster-sized papers outlines
- “Organ Systems: The Inside Story” packets with WANTED poster instructions (see attached)
- 7 sets (one for each group) for lung model: one plastic water bottle with bottom cut off, one rubber balloon, one plastic sandwich bag, one rubber band, and tape.

#### Procedure:

##### A. Anticipatory Set (4-5 minutes):

- Put up the Respiratory system chart for the big ideas. Have students offer what they already know or think about the respiratory system.
- Students should have paper out and create the chart with the teacher.
- Record each idea on the chart as student's record on their own paper.

**B. Teaching (15-18 minutes):**

- Show the class the respiratory system PowerPoint. Have students ask questions and think, pair, share the questions in the PowerPoint.
- For the 'parts of the respiratory system' slide, the students will be creating a model of the lungs:
- Have students, with their table group, create a lung model as the teacher gives step-by-step directions. Place balloon inside of the water bottle and secure around opening. Place the plastic bag over cut-off bottom and secure with a rubber band, making sure to leave a handle to pull the plastic bag out and in.
- Have students pull the 'diaphragm' (plastic bag) and observe the 'lung' (balloon). Explain that: Each breath begins with a contraction of the diaphragm, a dome-shaped sheet of muscle that lies just below the lungs. When you inhale, your diaphragm contracts, or flattens downward. This contraction creates a lower pressure in your chest cavity. Normal outside air pressure forces air through the nose and mouth, down the trachea and into the lungs. When you exhale, your diaphragm relaxes, increasing pressure on the lungs and forcing air out of the body.
- Continue with the PowerPoint, have students work with a partner to create movements for the parts of the respiratory system and for the function; have class vote on their favorite and have everyone practice.

**C. Group Application (10-12 minutes):**

- Have students work with the person next to them to create their WANTED posters. These posters will be a 'WANTED' poster for a new respiratory system. Hand out a poster-sized paper outlines and instructions (found in their packets) to each pair of students.
- Have students work to complete the first two steps of their 'WANTED' posters: drawing and labeling a picture of the respiratory system and writing the function of the respiratory system.

**D. Independent Application (3-5 minutes):**

- Once students are finished with their posters (the first two steps), have them checked off by the teacher and work on their crosswords or investigate big ideas from the books.

**E. Closing (2-3 minutes):**

- Have all the students stand up and practice the movements for the parts and function of the respiratory system. If time allows, also have them practice the parts and functions for the other organ systems.

## Lesson Plan Six: The Respiratory System

### The Respiratory System: “Respiratory System: WANTED”

4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objectives:

- After the PowerPoint presentation and activity on the respiratory system, students will include at least two ways to keep respiratory system healthy on their ‘WANTED’ posters.
- After the lesson, students will create a creative dance with a partner or small group, representing one of the main concepts about the respiratory system and including at least one creative dance element.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to have completed the first two steps on the ‘WANTED’ poster from the previous lesson: draw the respiratory system and label parts, and write function of the respiratory system on poster.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint & PowerPoint of circulatory system
- Respiratory System Poster board chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- Book- *The Lungs* by Suzanne LeVert
- Clipboards for each student and paper
- ‘WANTED’ posters from previous lesson
- Music for the creative dance lesson

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Have students gather together at back rug for a read-aloud from the book “The Lungs” by Suzanne LeVert; pages 4-16 on the respiratory system.
- Have each student bring paper and a clipboard to take notes during the read aloud. Encourage students to write down questions during the story, relate the information to their prior knowledge, and look for ideas to



agree/disagree with from our chart. After each page, give students a chance to write something down and discuss what they wrote after each page.

- At the end of the reading, have students share their notes they took during the reading with a small group around them.
- Ask for volunteers to share their discoveries and discuss further as a class, ask what was different or the same about the information from the book and from what they learned during the previous lesson.
- Encourage students to start taking notes as any books are being read aloud, tell students it is important to make connections to our reading and ask questions.
- Have students return to their desks to finish the Respiratory System PowerPoint and tell students “now that we know all about the respiratory system, we need to know how we can protect it and how to keep it healthy”.

**B. Teaching (6-8 minutes):**

- Before students sit down, have them practice the movements for the parts and function for the respiratory system
- Show the class the last portion of the respiratory system PowerPoint presentation. These slides involve how to protect and keep the respiratory system healthy. Have students ask questions and offer ideas after each slide.

**C. Group Application (7-10 minutes):**

- Have students get with their partner for their ‘WANTED’ posters and fill in the two circles, describing two behaviors that help keep the respiratory system healthy. If students decided to work on their own, have them work individually again.

**D. Independent Application (2-3 minutes):**

- Once their posters are complete, have students hand them in and work on their crossword.
- Another option for early finishers is: going back to each completed ‘big ideas’ chart and finding original ideas that have not been agreed or disagreed with. Have them complete research from the books set up on the back table to find the answers.

**E. Closing (15-17 minutes): Creative Dance**

- Review the creative dance elements as students’ warm-up; start with a light stretch as the warm-up music is played.
- Have students move around the room, matching the tempo of the music and practice using different sizes, force, and time.
- Instruct all students to try experimenting with the movements we created for the function and the parts to match the different tempos of the music with different time.
- Have students gather in groups of two or three, give five minutes to create a dance representing any main concept taught about the respiratory system (function, parts, or how to keep it safe). Play music while groups are working.
- Have each group share their dances.

## Lesson Plan Seven: The Digestive System

### The Digestive System “On the Way Down”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation and activity on the digestive system, on their own, students will be able to correctly describe at least one function of the Digestive system on their worksheet.
- After the PowerPoint presentation and activity, students will be able to accurately label at least four of the five organs from the Digestive system picture.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of digestive system
- Poster board for chart- split into three sections and labeled: big ideas- things we think we know, ideas we agree with, ideas we disagree with
- 24 digestive system worksheets, found in packets (see attached)
- Piece of string that is eight yards long (seven yards of it is small intestine) taped to a piece of yarn that is two yards long (length of large intestine).
- Papers labeled with: mouth, esophagus, stomach, small intestine, and large intestine

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Tell class, “This is the last body system we are going to be learning about, let’s complete our chart for what we know about the digestive system or any big ideas we have”.

- Have students get out notepaper paper and copy down the chart; they will complete the chart as the big one is being filled out.
- Have students offer ideas and write in first column on chart “big ideas” about the digestive system.
- Have students think, pair, and share with a partner after teacher asks; “where does your food go? How much time does it take for your food to leave your body? How far do you think your food travels before leaving your body?”
- Give students a couple of minutes to talk with their partner. Call on students to share what they think.
- Start by holding up the mouth end of the string (tape the mouth label on) and have a student hold. Start unraveling the yarn, posting the esophagus, stomach, small intestine, and large intestine while having as many students as needed hold the yarn around the room. Explain that the yarn represents the distance your food travels. Show students the length of the small and large intestine. (Found inside a six-foot person, so it would be shorter for children and most women). Tell students the journey through this long path takes 15-48 hours.

**B. Teaching (10-12 minutes):**

- Show class the PowerPoint presentation involving the parts of the digestive system and the function of the digestive system. Discuss as a class after each slide, answering questions.
- Have students think, pair, and share during the PowerPoint and to create movements to help remember the function and parts of the digestive system.
- Have each pair of students share and have class vote for the winner-practice these parts and function multiple times

**C. Group Application (3-4 minutes):**

- Have students think, pair, and share with a partner the function and parts of the digestive system.
- Have groups of students (boys, girls, certain table groups) recite the function and parts of the digestive system.

**D. Independent Application (10-12 minutes):**

- Students will complete their digestive system worksheet, on their own. They will write the function of the digestive system and label the parts of the digestive system.
- Students that finish early can either complete their crossword or research question they have about organ systems in the book library.

**E. Closing (3-5 minutes):**

- Have students review the movements for the organ systems; nervous system, circulatory system, respiratory system, and digestive system.

## Lesson Plan Eight: The Digestive System

### The Digestive System: “Where does the Food Go?”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04). Goal Three

#### Objectives:

- After the PowerPoint presentation and interactive read aloud on the digestive system, students will work with their table group to draw and write at least three ways to keep their digestive system healthy on the back of their digestive system worksheet.
- After the lesson, students will create a creative dance with a partner or small group, representing one of the main concepts about the digestive system and including at least one creative dance element.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting as well as efficiently on their own.
- Students will need to have had completed the front half of their digestive system worksheet from the previous lesson, found in the organ system packets.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART board and document camera
- digestive system PowerPoint
- copy of “where does food go” food travelogue (see attached)
- 24 ‘my digestive system’ worksheets, found in packet (see attached)
- Coloring materials
- Music for creative dance lesson

#### Procedure:

##### A. Anticipatory Set (4-5 minutes):

- Display a picture of the digestive system on the overhead and read aloud the “where does food go”-food travelogue”
- Have students stand up and in their own space move how they think the food goes through the body and imagine how long the distance is (from previous lesson).

**B. Teaching (8-10 minutes):**

- Tell students that they will now learn how they can help keep their digestive systems healthy and working properly.
- Put PowerPoint back on screen and quickly review what was discussed yesterday, ask questions to the class: “who can tell and show me the parts of the digestive system? Come point to each part, who can tell and show me the function of the digestive system”
- Then show the last slides of the PowerPoint which explain how we keep our digestive systems healthy. Discuss as a class after each slide, answering questions and taking comments.

**C. Group Application (6-8 minutes):**

- Have groups of students work together to draw and write at least three ways to keep their digestive systems healthy. Make sure each student has a drawing on the back of their worksheet.

**D. Independent Application (4-5 minutes):**

- On their own, have students write beneath each picture why that particular behavior helps the digestive system.
- Those students that finish early can work on the crossword, word search, or investigate big ideas from the charts using the provided books.

**E. Closing (15-17 minutes): Creative Dance**

- Review the creative dance elements as students’ warm-up; start with a light stretch as the warm-up music is played.
- Have students move around the room, matching the tempo of the music and practice using different sizes, force, and time.
- Instruct all students to try experimenting with the movements we created for the function and the parts to match the different tempos of the music with different levels.
- Have students gather in groups of two or three, give five minutes to create a dance representing any main concept taught about the digestive system (function, parts, or how to keep it safe). Play music while groups are working.
- Have each group share their dances.

**Appendix B:  
Control Group Lesson Plans**

## Lesson Plan One: The Nervous System

### The Nervous System “Control Center”

#### 4<sup>th</sup> Grade Science and Health

Time: 35-40 minutes

#### Goal:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).

#### Objective:

- After the PowerPoint presentation on the nervous system and class hot/cold activity, on their own, students will be able to correctly describe at least one function of the nervous system on their exit ticket.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of nervous system
- Poster board for chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- 24 note cards for ‘exit tickets’
- Pictures of Lego’s and houses (see attached)

#### Procedure:

##### A. Anticipatory Set (6-7 minutes):

- Show image one: one Lego, tell students “this Lego represents one cell; a cell is the smallest living part of your body. Your body has many different kinds of cells; all cells use food and oxygen for energy, grow and divide to form new cells, and help you grow”. Show image of multiple Lego's hooked together, and say, “a group of cells that work together is a tissue (not the kind you blow your nose with though); all your body parts are made up of tissues”. Now show a house made of Lego’s, “a group of tissues that work together is an organ. Your heart, lungs, and kidneys are all organs”. Show a picture of a multiple Lego houses (image four), “a body system is a group of organs that work together, they make up your muscular system, your bones work together to make your skeletal system (which you learned about last year), and you have organs that work

together to make up other body systems like your circulatory system, respiratory system, nervous system, and digestive system. This is what we will be learning about in the next two weeks.” Last when you put together multiple body systems it makes your whole body or a town (show Lego town, image five).

- Tell class, “The first body system we are going to learn about is the nervous system.” Put up ‘Big Ideas’ chart for the nervous system, “tell me what you think you already know about the nervous system. As we learn more, we will see what we agree or disagree with”.
- Have students offer ideas and write in first column on chart “what we think we know or big ideas”.

**B. Teaching (7-8 minutes):**

- Show class the PowerPoint presentation involving the parts of the nervous system and the functions of the nervous system. Discuss as a class after each slide, answering questions.

**C. Group Application (10-12 minutes):**

- Have groups of students; by tables, create one question from the PowerPoint to ask to the class. The table group that answers the most questions correctly will be the winners.

**D. Independent Application (5-6 minutes):**

- Pass out exit tickets (note cards) and tell students they must write the function of the nervous system on it in order to go out to recess.
- Give students five minutes to fill out their card.
- If finished early, tell them to start thinking about what big ideas on our chart that we have addressed so far.

**E. Closing (3-5 minutes):**

- Go back to each big idea on the chart and see if from today’s lesson they can agree or disagree with the idea; if so put it into the correct column.
- Have students give their exit ticket to you before leaving the room.



## Lesson Plan Two: The Nervous System

### The Nervous System: “Don’t Forget Your Helmet”

#### 4<sup>th</sup> Grade Science and Health

Time: 35-40 minutes

#### Goals:

- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).
- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objectives:

- After the PowerPoint presentation review and class activity on the nervous system, students will be able to correctly draw and list the three parts of the nervous system (brain, spinal cord, and nerves).
- After the PowerPoint presentation review and class activity on the nervous system, students will list at least two ways to protect their nervous system on their nervous system drawings.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- Last slides of nervous system PowerPoint
- 24 ‘my nervous system’ worksheets found in their ‘Body Systems: The Inside Story’ packets (see attachment)
- Coloring materials

#### Procedure:

##### A. Anticipatory Set (3-5 minutes):

- Have students discuss how this represents what we learned the previous day, have them recite the function.

##### B. Teaching (10-12 minutes):

- Put PowerPoint back on screen and quickly review what was discussed yesterday, ask questions to the class: “who can tell me what the three parts of the nervous system were? Come point to each part, who can tell me a function of the nervous system, give me an example”

- Then show the last slides of the PowerPoint which explain how we keep our nervous systems healthy. First have students feel their spine, ask what part of the nervous system is inside of it, and why the spine surrounds it.
  - Discuss the ways we keep our brain and nervous system healthy from PowerPoint: wearing a seat belt in the car because it keeps you from being thrown on or being thrown into the windshield during a crash, reducing your risk for injury to your head or back. Getting plenty of sleep and rest helps restore energy to your nervous system. Wearing a helmet when you skate, ride a bike, skateboard, or scooter helps to protect your skull and brain in case you fall. Avoiding alcohol and drugs because they can affect your sense and you are at greater risk for injury when your senses are not sharp.
- C. Group Application (8-10 minutes):**
- Have pairs of students work together to each draw their own picture of the nervous system inside the body outline. Then have students switch papers with their partner and label the three parts (brain, spinal cord, and nerves).
- D. Independent Application (6-8 minutes):**
- On their own, have students write at least two ways to help keep their nervous system working properly. If students are finished early, they can draw a picture of their behavior.
- E. Closing (5-7 minutes):**
- Have students turn in their drawings and draw their attention to the nervous system big ideas chart.
  - Go through the remaining ideas and decide if they agree or disagree. If there are ideas not answered, let students that finish early investigate to find an answer.

## Lesson Plan Three: The Circulatory System

### The Circulatory System: “Feel the beat”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02)
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation on the circulatory system and class activity, individually, students will be able to accurately describe one function of the Circulatory system by writing it on their picture
- After the PowerPoint presentation and activity, students will be able to label the three parts of the circulatory system picture with 100 percent accuracy

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- Poster board for chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- 24 worksheets on circulatory system found in the ‘Organ Systems: The Inside Story’ packets. (see attached)

#### Procedure:

##### A. Anticipatory Set (10-12 minutes):

- Bring out the circulatory system chart split into three columns for the circulatory system.
- Have students get out a piece of paper and create the chart. They will fill in together so each student has their own copy.
- Have students offer ideas and write in first column on chart “what we think we know or big ideas” while students are filling out their own chart.

##### B. Teaching (10-12 minutes):

- Show class the PowerPoint presentation involving the parts of the circulatory system and the functions of the circulatory system. Discuss as a class after each slide, answering questions.
  - Have students create at least one question in their group to ask their classmates, the table group that answers the most questions correctly wins!
- C. Group Application (5-7 minutes):**
- Have students, think, pair, and share at least one function of the heart and the three parts of the circulatory system.
  - Have class take turns (just the boys tell me, the girls, this table group) practice saying the function of the circulatory system and the three parts.
- D. Independent Application (7-9 minutes):**
- Hand out packets to each student and have them complete the circulatory system worksheet (front page only) individually. Walk around to answer questions.
  - When finished, have students turn in packet and work on word search.
- E. Closing (3-5 minutes):**
- Have students review the functions and parts of the circulatory system with a partner
  - Go back to the KWL chart and see if they can fill in any of the sections

## Lesson Plan Four: The Circulatory System

### The Circulatory System: “Don’t Break my Heart”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objective:

- After the PowerPoint presentation and interactive read aloud about the circulatory system, students will include at least two ways to keep their circulatory system healthy on the back of their circulatory system worksheet.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to understand how to actively listen to the story being read aloud while making connections, asking questions, and creating predictions.
- Students will need to have finished the first half of their circulatory system worksheet from the prior lesson.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- 24 worksheets on circulatory system, front completed the previous lesson
- Book, *Organs!: How they work, fall apart, and can be replaced (gasp!)* by N.W. Parker

#### Procedure:

##### A. Anticipatory Set (8-10 minutes):

- Have students gather together at back rug for an interactive read-aloud from the book “Organs! How they Work, fall apart, and can be replaced (gasp!)”, pages 4-7 (on the circulatory system).
- Have students bring clipboards, paper and pencils, encourage students to ask questions during the story, relate the information to their prior knowledge, and look for ideas to agree/disagree with from our chart.
- Have students share their notes they took during the reading with a small group around them.
- Ask for volunteers to share their discoveries.

- Have students return to their desks to finish the Circulatory System PowerPoint.
- B. Teaching (6-8 minutes):**
- Show the class the last portion of the circulatory system PowerPoint presentation. These slides involve how to protect and keep the circulatory system healthy. Have students ask questions and offer ideas after each slide.
- C. Group Application (8-10 minutes):**
- After the PowerPoint, have each table group create two questions about the circulatory system to ask to the class, keep track of class points.
  - With their table group, have students create a picture on the back of the circulatory worksheet illustrating at least two ways to keep their circulatory system healthy.
  - Let students offer ideas to the group and create new ideas for how to keep the circulatory system healthy. Make sure each student create his/her own picture.
- D. Independent Application (6-8 minutes):**
- Once their pictures are complete, have each student on their own, write the explanation for each picture. Describing why these actions help keep the circulatory system healthy.
  - Have student's hand in worksheet. For those that finish early, have them work on the organ system crossword or investigate the big ideas from the 'big ideas' charts.
- E. Closing (6-8 minutes):**
- Go back to the KWL chart and fill in what we learned about the circulatory system
  - Have students fill out their chart as the large one is being completed.
  - Review the parts, functions, and how to keep the nervous and circulatory system healthy.

## Lesson Plan Five: The Respiratory System

### The Respiratory System: “Just Breathe”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-55 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation and activity related to the respiratory system, pairs of students will be able to correctly determine one function of the Respiratory systems by creating a ‘WANTED’ poster.
- After the PowerPoint presentation and activity, students will draw a picture of the respiratory system on their ‘WANTED’ posters, correctly representing at least four of the five parts.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to see examples of the respiratory system in order to draw their own picture.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of respiratory system
- Poster board for chart- split into three sections and labeled: big ideas-things we think we know, ideas we agree with, ideas we disagree with
- 12 ‘WANTED’ white poster-sized papers outlines
- “Organ Systems: The Inside Story” packets with WANTED poster instructions (see attached)
- 7 sets (one for each group) for lung model: one plastic water bottle with bottom cut off, one rubber balloon, one plastic sandwich bag, one rubber band, and tape.

#### Procedure:

##### A. Anticipatory Set (4-5 minutes):

- Put up the Respiratory system chart for the big ideas. Have students offer what they already know or think about the respiratory system.
- Students should have paper out and create the chart with the teacher.
- Record each idea on the chart as student's record on their own paper.

**B. Teaching (15-18 minutes):**

- Show the class the respiratory system PowerPoint. Have students ask questions and think, pair, share the questions in the PowerPoint.
- For the 'parts of the respiratory system' slide, the students will be creating a model of the lungs:
- Have students, with their table group, create a lung model as the teacher gives step-by-step directions. Place balloon inside of the water bottle and secure around opening. Place the plastic bag over cut-off bottom and secure with a rubber band, making sure to leave a handle to pull the plastic bag out and in.
- Have students pull the 'diaphragm' (plastic bag) and observe the 'lung' (balloon). Explain that: Each breath begins with a contraction of the diaphragm, a dome-shaped sheet of muscle that lies just below the lungs. When you inhale, your diaphragm contracts, or flattens downward. This contraction creates a lower pressure in your chest cavity. Normal outside air pressure forces air through the nose and mouth, down the trachea and into the lungs. When you exhale, your diaphragm relaxes, increasing pressure on the lungs and forcing air out of the body.

**C. Group Application (10-12 minutes):**

- Have students work with the person next to them to create their WANTED posters. These posters will be a 'WANTED' poster for a new respiratory system. Hand out a poster-sized paper outlines and instructions (found in their packets) to each pair of students.
- Have students work to complete the first two steps of their 'WANTED' posters: drawing and labeling a picture of the respiratory system and writing the function of the respiratory system.

**D. Independent Application (3-5 minutes):**

- Once students are finished with their posters (the first two steps), have them checked off by the teacher and work on their crosswords or investigate big ideas from the books.

**E. Closing (2-3 minutes):**

- Have students look at the KWL chart, have them add anything they learned; have students fill out their chart as the big one is being filled out.



## Lesson Plan Six: The Respiratory System

### The Respiratory System: “Respiratory System: WANTED”

4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objective:

- After the PowerPoint presentation and activity on the respiratory system, students will include at least two ways to keep respiratory system healthy on their ‘WANTED’ posters.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to have completed the first two steps on the ‘WANTED’ poster from the previous lesson: draw the respiratory system and label parts, and write function of the respiratory system on poster.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- Respiratory System Poster board chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- Book- *The Lungs* by Suzanne LeVert
- Clipboards for each student and paper
- ‘WANTED’ posters from previous lesson

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Have students gather together at back rug for a read-aloud from the book “The Lungs” by Suzanne LeVert; pages 4-16 on the respiratory system.
- Have each student bring paper and a clipboard to take notes during the read aloud. Encourage students to write down questions during the story, relate the information to their prior knowledge, and look for ideas to agree/disagree with from our chart. After each page, give students a chance to write something down and discuss what they wrote after each page.

- At the end of the reading, have students share their notes they took during the reading with a small group around them.
- Ask for volunteers to share their discoveries and discuss further as a class, ask what was different or the same about the information from the book and from what they learned during the previous lesson.
- Encourage students to start taking notes as any books are being read aloud, tell students it is important to make connections to our reading and ask questions.
- Have students return to their desks to finish the Respiratory System PowerPoint and tell students “now that we know all about the respiratory system, we need to know how we can protect it and how to keep it healthy”.

**B. Teaching (8-10 minutes):**

- Show the class the last portion of the respiratory system PowerPoint presentation. These slides involve how to protect and keep the respiratory system healthy. Have students ask questions and offer ideas after each slide.

**C. Group Application (7-10 minutes):**

- After the PowerPoint, have each table group create two questions about the circulatory system to ask to the class, keep track of class points.
- Have students get with their partner for their ‘WANTED’ posters and fill in the two circles, describing two behaviors that help keep the respiratory system healthy. If students decided to work on their own, have them work individually again.

**D. Independent Application (7-8 minutes):**

- Once their posters are complete, have students hand them in and work on their crossword.
- Another option for early finishers is: going back to each completed ‘big ideas’ chart and finding original ideas that have not been agreed or disagreed with. Have them complete research from the books set up on the back table to find the answers.

**E. Closing (8-10 minutes):**

- Have students share their posters with the class
- Fill in the ‘what we learned’ for the KWL chart
- Practice saying the parts and functions for the three organ systems taught so far

## Lesson Plan Seven: The Digestive System

### The Digestive System “On the Way Down”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation and activity on the digestive system, on their own, students will be able to correctly describe at least one function of the Digestive system on their worksheet.
- After the PowerPoint presentation and activity, students will be able to accurately label at least four of the five organs from the Digestive system picture.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of digestive system
- Poster board for chart- split into three sections and labeled: big ideas- things we think we know, ideas we agree with, ideas we disagree with
- 24 digestive system worksheets, found in packets (see attached)
- Piece of string that is eight yards long (seven yards of it is small intestine) taped to a piece of yarn that is two yards long (length of large intestine).
- Papers labeled with: mouth, esophagus, stomach, small intestine, and large intestine

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Tell class, “This is the last body system we are going to be learning about, let’s complete our chart for what we know about the digestive system or any big ideas we have”.

- Have students get out notepaper paper and copy down the chart; they will complete the chart as the big one is being filled out.
- Have students offer ideas and write in first column on chart “big ideas” about the digestive system.
- Have students think, pair, and share with a partner after teacher asks; “where does your food go? How much time does it take for your food to leave your body? How far do you think your food travels before leaving your body?”
- Give students a couple of minutes to talk with their partner. Call on students to share what they think.
- Start by holding up the mouth end of the string (tape the mouth label on) and have a student hold. Start unraveling the yarn, posting the esophagus, stomach, small intestine, and large intestine while having as many students as needed hold the yarn around the room. Explain that the yarn represents the distance your food travels. Show students the length of the small and large intestine. (Found inside a six-foot person, so it would be shorter for children and most women). Tell students the journey through this long path takes 15-48 hours.

**B. Teaching (10-12 minutes):**

- Show class the PowerPoint presentation involving the parts of the digestive system and the function of the digestive system. Discuss as a class after each slide, answering questions.

**C. Group Application (3-4 minutes):**

- Have students think, pair, and share with a partner the function and parts of the digestive system.
- Have groups of students (boys, girls, certain table groups) recite the function and parts of the digestive system.

**D. Independent Application (10-12 minutes):**

- Students will complete their digestive system worksheet, on their own. They will write the function of the digestive system and label the parts of the digestive system.
- Students that finish early can either complete their crossword or research question they have about organ systems in the book library.

**E. Closing (3-5 minutes):**

- Review the KWL chart and add anything the students learned about the digestive system

## Lesson Plan Eight: The Digestive System

### The Digestive System: “Where does the Food Go?”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04). Goal Three

#### Objective:

- After the PowerPoint presentation and interactive read aloud on the digestive system, students will work with their table group to draw and write at least three ways to keep their digestive system healthy on the back of their digestive system worksheet.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting as well as efficiently on their own.
- Students will need to have completed the front half of their digestive system worksheet from the previous lesson, found in the organ system packets.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART board and document camera
- digestive system PowerPoint
- copy of “where does food go” food travelogue (see attached)
- 24 ‘my digestive system’ worksheets, found in packet (see attached)
- Coloring materials

#### Procedure:

##### A. Anticipatory Set (5-7 minutes):

- Display a picture of the digestive system on the overhead and read aloud the “where does food go”-food travelogue”
- Have students mentally picture the journey the food goes through and how long the distance is (from previous lesson).

##### B. Teaching (10-13 minutes):

- Tell students that they will now learn how they can help keep their digestive systems healthy and working properly.
- Put PowerPoint back on screen and quickly review what was discussed yesterday, ask questions to the class: “who can tell me the parts

of the digestive system? Come point to each part, who can tell me the function of the digestive system”

- Then show the last slides of the PowerPoint which explain how we keep our digestive systems healthy. Discuss as a class after each slide, answering questions and taking comments.

**C. Group Application (8-10 minutes):**

- Have groups of students work together to draw and write at least three ways to keep their digestive systems healthy. Make sure each student has a drawing on the back of their worksheet.

**D. Independent Application (6-8 minutes):**

- On their own, have students write beneath each picture why that particular behavior helps the digestive system.
- Those students that finish early can work on the crossword, word search, or investigate big ideas from the charts using the provided books.

**E. Closing (5-6 minutes):**

- Have students turn in their drawings and worksheets.
- Complete the KWL chart for the digestive system and practice saying all the parts, functions, and how to keep each organ system healthy before giving the post-assessments.

**Appendix C:  
Assessment Samples**

## Cognitive/Knowledge Pre and Post Assessment: Experimental and Control Group

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. **The nervous system's function is to:**
  - a. Breathe in oxygen, let out carbon dioxide
  - b. Circulate blood throughout the body
  - c. Changes the food we eat into nutrient we use
  - d. Sends messages from the brain to the body and the body to the brain
  
2. **The nervous system contains the**
  - a. Heart, nerves, and neck
  - b. Fingers, brain, and eyes
  - c. Nose, nerves, and heart
  - d. Brain, spinal cord, and nerves
  
3. **When caring for your *nervous system* it is especially important to do all of following except:**
  - a. Wearing a seat belt when riding in a car
  - b. Wearing a helmet when riding a bike or skating
  - c. Avoiding drugs and alcohol
  - d. Getting at least 30 minutes of exercise each day
  - e. Get plenty of sleep each night
  
4. **The circulatory system includes:**
  - a. Heart, arms, and legs
  - b. Heart, valves, and lungs
  - c. Heart, blood, and vessels
  - d. Heart, lungs, and blood
  
5. **The circulatory system's function is to:**
  - a. Breathe in oxygen, let out carbon dioxide
  - b. Circulate blood throughout the body
  - c. Changes the food we eat into nutrient we use
  - d. Sends messages from the brain to the body and the body to the brain
  
6. **When caring for your *circulatory system* it is especially important to do all of following except:**
  - a. Get plenty of physical activity
  - b. Limit fatty foods



- c. Get plenty of sleep every night
  - d. Have a plan to manage stress
- 7. The respiratory system includes:**
- a. Throat, heart, nose, lungs
  - b. Nose, lungs, brain, trachea
  - c. Lungs, diaphragm, brain, vessels
  - d. Trachea, lungs, diaphragm, nose
- 8. The respiratory system's function is to:**
- a. Breathe in oxygen, let out carbon dioxide
  - b. Circulate blood throughout the body
  - c. Changes the food we eat into nutrient we use
  - d. Sends messages from the brain to the body and the body to the brain
- 9. When caring for your *respiratory system* it is especially important to do all of following except:**
- a. Get plenty of physical activity
  - b. Avoid eating fatty foods
  - c. Avoid smoking or being around it
  - d. Avoid breathing dangerous fumes
- 10. The digestive system contains the**
- a. Mouth, stomach, brain, and intestines
  - b. Brain, lungs, heart, and esophagus
  - c. Heart, esophagus, intestines, and nose
  - d. Mouth, stomach, intestines, and esophagus
- 11. The digestive system's function is to:**
- a. Breathe in oxygen, let out carbon dioxide
  - b. Circulate blood throughout the body
  - c. Changes the food we eat into nutrient we use
  - d. Sends messages from the brain to the body and the body to the brain
- 12. When caring for your *digestive system* it is especially important to do all of following except:**
- a. Chew you food well
  - b. Eat a healthy diet rich in fiber
  - c. Exercise at least 4-5 times a week
  - d. Get plenty of water each day

**Satisfaction/Enjoyment Questionnaire:  
Experimental and Control groups**

**1. I had fun learning about the human body systems:**

1	2	3	4	5
Do not agree	somewhat	no opinion	I liked it	I really liked it!

**2. I think I learned a lot about the human body systems:**

1	2	3	4	5
Very much agree	disagree	no opinion	agree	very much disagree

**3. I was able to stay focused and was interested during the lessons:**

1	2	3	4	5
Not at all	not very often	occasionally	most of the time	all of the time

**4. I wanted to participate in all parts of the lessons:**

1	2	3	4	5
Not at all	not very often	occasionally	most of the time	all of the time

**5. Which part of "The Body System" lessons did you enjoy the most? Why?**

**6. Which lesson activities did you enjoy the most? Why?**

**7. Which lesson activities helped you learn the most? Why?**

**Focus Assessment/Observation: Experimental and Control Group: Sub-Sample  
(Students with ADD/ADHD)**

<b>TIME</b>	<b>Lesson One</b>	<b>Lesson Two</b>	<b>Lesson Three</b>	<b>Lesson Four</b>	<b>Lesson Five</b>	<b>Lesson Six</b>	<b>Lesson Seven</b>	<b>Lesson Eight</b>
3	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
6	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
9	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
12	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
15	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
18	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
21	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
24	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
27	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
30	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
33	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
36	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
39	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
41	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
45	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
	<b>Ave.</b>	<b>Ave.</b>	<b>Ave.</b>	<b>Ave.</b>	<b>Ave.</b>	<b>Ave.</b>	<b>Ave.</b>	<b>Ave.</b>

Students were observed every three minutes and assessed on their behavior at that exact moment: on task, focused, listening to teacher, participating in the activity, or working on their worksheet.

0= not listening, participating

1=listening somewhat- slightly distracted

2= focused, paying attention, looking at teacher

**Creative Dance Performance Scoring Guide: Experimental Group One**

<b>Students</b>	The performance included aspects of creative dance: space, force, or time; and body	The performance helps show a main concept about the skeletal-muscular system	The performance helps show a main concept about the respiratory system	The performance helps show a main concept about the circulatory system	The performance helps show a main concept about the nervous system	The performance helps show a main concept about the digestive system
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
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15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						

Students will be assigned a score on a scale point system from 1-4. Their effort, concept illustration, and use of a creative dance element will be taken into consideration for assigning points.

**1:** student does not participate

**2:** student attempts to include one creative dance element **or** attempts to illustrate a main concept of the body system

**3:** student attempts to include one creative dance element **and** attempts to illustrate a main concept of the body system

**4:** student uses one of the creative dance elements **and** illustrates a main concept of the body system

body system is a group of organs that work together, they make up your muscular system, your bones work together to make your skeletal system (which you learned about last year), and you have organs that work together to make up other body systems like your circulatory system, respiratory system, nervous system, and digestive system. This is what we will be learning about in the next two weeks.” Last when you put together multiple body systems it makes your whole body or a town (show Lego town, image five).

- Tell class, “The first body system we are going to learn about is the nervous system.” Put up ‘Big Ideas’ chart for the nervous system, “tell me what you think you already know about the nervous system. As we learn more, we will see what we agree or disagree with”.
- Have students offer ideas and write in first column on chart “what we think we know or big ideas”.

**B. Teaching (7-8 minutes):**

- Show class the PowerPoint presentation involving the parts of the nervous system and the functions of the nervous system. Discuss as a class after each slide, answering questions.
- For the function- have pairs of students work together to create a movement that will help the class remember the function.
- For the parts of the nervous system, have students create a movement/pointing system that we can practice while saying the parts.
- Tell class; let’s learn more about how the brain sends messages to the rest of our body.

**C. Group Application (10-12 minutes):**

- Set up the two bowls of different temperature water (hot and cold); Ask students if they can tell by looking which bowl has the hot and which has the cold. (They cannot tell by looking). Ask students how they can tell the different temperatures of the water (feeling it).
- Have several students come up and feel both the hot and cold water to tell everyone which is which.
- Put the third bowl of water on table (warm water). Tell students that this water is between the hot and cold. Ask for a volunteer to place one hand in the hot water and one hand in the cold water for three minutes.
- After three minutes, have student put both hands into the lukewarm water. Have child share aloud if the water feels hot or cold.
- Explain that sometimes the brain gets mixed signals and can get confused. In this case, the extremes in cold and hot water made the nerves in the hands more sensitive to change to a moderate temperature.
- Ask students for examples of another time this may happen (after being in the cold, going inside burns)
- Have students practice multiple times the function and nervous system part movements.

**D. Independent Application (5-6 minutes):**

- Pass out exit tickets (note cards) and tell students they must write the function of the nervous system on it in order to go out to recess.
- Give students five minutes to fill out their card.
- If finished early, tell them to start thinking about what big ideas on our chart that we have addressed so far.

**E. Closing (3-5 minutes):**

- Go back to each big idea on the chart and see if from today's lesson they can agree or disagree with the idea; if so put it into the correct column.
- Have students give their exit ticket to you before leaving the room.

## Lesson Plan Two: The Nervous System

### The Nervous System: “Don’t Forget Your Helmet”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goals:

- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).
- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objectives:

- After the PowerPoint presentation review and class activity on the nervous system, students will be able to correctly draw and list the three parts of the nervous system (brain, spinal cord, and nerves).
- After the PowerPoint presentation review and class activity on the nervous system, students will list at least two ways to protect their nervous system on their nervous system drawings.
- At the end of the lesson, students will demonstrate one thing they learned about the nervous system through a creative dance.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- Last slides of nervous system PowerPoint
- 24 ‘my nervous system’ worksheets found in their ‘Body Systems: The Inside Story’ packets (see attachment)
- Coloring materials
- Music for creative dance

#### Procedure:

##### A. Anticipatory Set (3-5 minutes):

- Have everyone stand in a circle holding hands. Select one student to be the brain. Have the brain start by squeezing the hand of one person next to them and continue until the last person (on other side of brain) has their hand squeezed. Then that person will squeeze in the opposite direction until it reaches the brain again.



- Have students discuss how this represents what we learned the previous day, practice the movements for the function and parts of the nervous system.
- B. Teaching (8-10 minutes):**
- Put PowerPoint back on screen and quickly review what was discussed yesterday, ask questions to the class: “who can tell me what the three parts of the nervous system were? Come point to each part, who can tell me a function of the nervous system, give me an example”
  - Then show the last slides of the PowerPoint which explain how we keep our nervous systems healthy. First have students feel their spine, ask what part of the nervous system is inside of it, and why the spine surrounds it.
  - Discuss the ways we keep our brain and nervous system healthy from PowerPoint: wearing a seat belt in the car because it keeps you from being thrown on or being thrown into the windshield during a crash, reducing your risk for injury to your head or back. Getting plenty of sleep and rest helps restore energy to your nervous system. Wearing a helmet when you skate, ride a bike, skateboard, or scooter helps to protect your skull and brain in case you fall. Avoiding alcohol and drugs because they can affect your sense and you are at greater risk for injury when your senses are not sharp.
- C. Group Application (6-8 minutes):**
- Have pairs of students work together to each draw their own picture of the nervous system inside the body outline. Then have students switch papers with their partner and label the three parts (brain, spinal cord, and nerves).
- D. Independent Application (4-5 minutes):**
- On their own, have students write at least two ways to help keep their nervous system working properly. If students are finished early, they can draw a picture of their behavior.
- E. Closing (10-15 minutes): Creative Dance**
- Review the creative dance elements as students’ warm-up; start with a light stretch as the warm-up music is played.
  - Have students move around the room, matching the tempo of the music and practice using different sizes, force, and time.
  - Instruct all students to try experimenting with the movements we created for the function and the parts to match the different tempos of the music with different force
  - Have students gather in groups of two or three, give five minutes to create a dance representing any main concept taught about the nervous system (function, parts, or how to keep it safe). Play music while groups are working.
  - Have each group share their dances.

## Lesson Plan Three: The Circulatory System

### The Circulatory System: “Feel the beat”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02)
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation on the circulatory system and class activity, individually, students will be able to accurately describe one function of the Circulatory system by writing it on their picture
- After the PowerPoint presentation and activity, students will be able to label the three parts of the circulatory system picture with 100 percent accuracy

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- Poster board for chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- 24 worksheets on circulatory system found in the ‘Organ Systems: The Inside Story’ packets. (see attached)

#### Procedure:

##### A. Anticipatory Set (10-12 minutes):

- Have students locate their pulse in the wrist or neck, showing them how. Have students count the number of pulses they get in a ten-second period (teacher times). Have students multiply the number by 6 to get their pulse rate for one minute.
- Now have students jump up and down next to their desk for thirty seconds, sitting down and counting their pulse rate again when told.

- Ask class if there was a difference in their number; ask them why they think that. Ask students what their pulse is, why do they feel it in their neck or wrist if it is their heart beating? Discuss as a class

**B. Teaching (10-12 minutes):**

- Show class the PowerPoint presentation involving the parts of the circulatory system and the functions of the circulatory system. Discuss as a class after each slide, answering questions.
- Create a movement to help remember the function of the circulatory system. Have students work with partner for examples, then create one the whole class knows, combining the ideas.

**C. Group Application (5-7 minutes):**

- Have students, think, pair, and share at least one function of the heart and the three parts of the circulatory system.
- Have class take turns (just the boys tell me, the girls, this table group) showing the function of the circulatory system and for the three parts.

**D. Independent Application (7-9 minutes):**

- Hand out packets to each student and have them complete the circulatory system worksheet (front page only) individually. Walk around to answer questions.
- When finished, have students turn in packet and work on word search.

**E. Closing (3-5 minutes):**

- Have students review the functions and parts of the circulatory system with a partner

## Lesson Plan Four: The Circulatory System

### The Circulatory System: “Don’t Break my Heart”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objective:

- After the PowerPoint presentation and interactive read aloud about the circulatory system, students will include at least two ways to keep their circulatory system healthy on the back of their circulatory system worksheet.
- At the end of the lesson, students will create a creative dance with a group representing one of the main concepts learned about the circulatory system and incorporating the creative dance elements.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to understand how to actively listen to the story being read aloud while making connections, asking questions, and creating predictions.
- Students will need to have finished the first half of their circulatory system worksheet from the prior lesson.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- 24 worksheets on circulatory system, front completed the previous lesson
- Book, *Organs!: How they work, fall apart, and can be replaced (gasp!)* by N.W. Parker
- Music for creative dance lesson

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Have students gather together at back rug for an interactive read-aloud from the book “Organs! How they Work, fall apart, and can be preplaced (gasp!)”, pages 4-7 (on the circulatory system).

- Have students bring clipboards, paper and pencils, encourage students to ask questions during the story, relate the information to their prior knowledge, and look for ideas to agree/disagree with from our chart.
- Have students share their notes they took during the reading with a small group around them.
- Ask for volunteers to share their discoveries.
- Have students return to their desks to finish the Circulatory System PowerPoint.

**B. Teaching (6-7 minutes):**

- Show the class the last portion of the circulatory system PowerPoint presentation. These slides involve how to protect and keep the circulatory system healthy. Have students ask questions and offer ideas after each slide.

**C. Group Application (7-7 minutes):**

- With their table group, have students create a picture on the back of the circulatory worksheet illustrating at least two ways to keep their circulatory system healthy.
- Let students offer ideas to the group and create new ideas for how to keep the circulatory system healthy. Make sure each student create his/her own picture.

**D. Independent Application (6-7 minutes):**

- Once their pictures are complete, have each student on their own, write the explanation for each picture. Describing why these actions help keep the circulatory system healthy.
- Have student's hand in worksheet. For those that finish early, have them work on the organ system crossword or investigate the big ideas from the 'big ideas' charts.

**E. Closing (15-18 minutes): Creative Dance**

- Review the creative dance elements as students' warm-up; start with a light stretch as the warm-up music is played.
- Have students move around the room, matching the tempo of the music and practice using different sizes, force, and time.
- Instruct all students to try experimenting with the movements we created for the function and the parts to match the different tempos of the music with different sizes and levels.
- Have students gather in groups of two or three, give five minutes to create a dance representing any main concept taught about the circulatory system (function, parts, or how to keep it safe). Play music while groups are working.
- Have each group share their dances.

## Lesson Plan Five: The Respiratory System

### The Respiratory System: “Just Breathe”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-55 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation and activity related to the respiratory system, pairs of students will be able to correctly determine one function of the Respiratory systems by creating a ‘WANTED’ poster.
- After the PowerPoint presentation and activity, students will draw a picture of the respiratory system on their ‘WANTED’ posters, correctly representing at least four of the five parts.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to see examples of the respiratory system in order to draw their own picture.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of respiratory system
- Poster board for chart- split into three sections and labeled: big ideas-things we think we know, ideas we agree with, ideas we disagree with
- 12 ‘WANTED’ white poster-sized papers outlines
- “Organ Systems: The Inside Story” packets with WANTED poster instructions (see attached)
- 7 sets (one for each group) for lung model: one plastic water bottle with bottom cut off, one rubber balloon, one plastic sandwich bag, one rubber band, and tape.

#### Procedure:

##### A. Anticipatory Set (4-5 minutes):

- Put up the Respiratory system chart for the big ideas. Have students offer what they already know or think about the respiratory system.
- Students should have paper out and create the chart with the teacher.
- Record each idea on the chart as student's record on their own paper.

**B. Teaching (15-18 minutes):**

- Show the class the respiratory system PowerPoint. Have students ask questions and think, pair, share the questions in the PowerPoint.
- For the 'parts of the respiratory system' slide, the students will be creating a model of the lungs:
- Have students, with their table group, create a lung model as the teacher gives step-by-step directions. Place balloon inside of the water bottle and secure around opening. Place the plastic bag over cut-off bottom and secure with a rubber band, making sure to leave a handle to pull the plastic bag out and in.
- Have students pull the 'diaphragm' (plastic bag) and observe the 'lung' (balloon). Explain that: Each breath begins with a contraction of the diaphragm, a dome-shaped sheet of muscle that lies just below the lungs. When you inhale, your diaphragm contracts, or flattens downward. This contraction creates a lower pressure in your chest cavity. Normal outside air pressure forces air through the nose and mouth, down the trachea and into the lungs. When you exhale, your diaphragm relaxes, increasing pressure on the lungs and forcing air out of the body.
- Continue with the PowerPoint, have students work with a partner to create movements for the parts of the respiratory system and for the function; have class vote on their favorite and have everyone practice.

**C. Group Application (10-12 minutes):**

- Have students work with the person next to them to create their WANTED posters. These posters will be a 'WANTED' poster for a new respiratory system. Hand out a poster-sized paper outlines and instructions (found in their packets) to each pair of students.
- Have students work to complete the first two steps of their 'WANTED' posters: drawing and labeling a picture of the respiratory system and writing the function of the respiratory system.

**D. Independent Application (3-5 minutes):**

- Once students are finished with their posters (the first two steps), have them checked off by the teacher and work on their crosswords or investigate big ideas from the books.

**E. Closing (2-3 minutes):**

- Have all the students stand up and practice the movements for the parts and function of the respiratory system. If time allows, also have them practice the parts and functions for the other organ systems.

## Lesson Plan Six: The Respiratory System

### The Respiratory System: “Respiratory System: WANTED”

4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objectives:

- After the PowerPoint presentation and activity on the respiratory system, students will include at least two ways to keep respiratory system healthy on their ‘WANTED’ posters.
- After the lesson, students will create a creative dance with a partner or small group, representing one of the main concepts about the respiratory system and including at least one creative dance element.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to have completed the first two steps on the ‘WANTED’ poster from the previous lesson: draw the respiratory system and label parts, and write function of the respiratory system on poster.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint & PowerPoint of circulatory system
- Respiratory System Poster board chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- Book- *The Lungs* by Suzanne LeVert
- Clipboards for each student and paper
- ‘WANTED’ posters from previous lesson
- Music for the creative dance lesson

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Have students gather together at back rug for a read-aloud from the book “The Lungs” by Suzanne LeVert; pages 4-16 on the respiratory system.
- Have each student bring paper and a clipboard to take notes during the read aloud. Encourage students to write down questions during the story, relate the information to their prior knowledge, and look for ideas to



agree/disagree with from our chart. After each page, give students a chance to write something down and discuss what they wrote after each page.

- At the end of the reading, have students share their notes they took during the reading with a small group around them.
- Ask for volunteers to share their discoveries and discuss further as a class, ask what was different or the same about the information from the book and from what they learned during the previous lesson.
- Encourage students to start taking notes as any books are being read aloud, tell students it is important to make connections to our reading and ask questions.
- Have students return to their desks to finish the Respiratory System PowerPoint and tell students “now that we know all about the respiratory system, we need to know how we can protect it and how to keep it healthy”.

**B. Teaching (6-8 minutes):**

- Before students sit down, have them practice the movements for the parts and function for the respiratory system
- Show the class the last portion of the respiratory system PowerPoint presentation. These slides involve how to protect and keep the respiratory system healthy. Have students ask questions and offer ideas after each slide.

**C. Group Application (7-10 minutes):**

- Have students get with their partner for their ‘WANTED’ posters and fill in the two circles, describing two behaviors that help keep the respiratory system healthy. If students decided to work on their own, have them work individually again.

**D. Independent Application (2-3 minutes):**

- Once their posters are complete, have students hand them in and work on their crossword.
- Another option for early finishers is: going back to each completed ‘big ideas’ chart and finding original ideas that have not been agreed or disagreed with. Have them complete research from the books set up on the back table to find the answers.

**E. Closing (15-17 minutes): Creative Dance**

- Review the creative dance elements as students’ warm-up; start with a light stretch as the warm-up music is played.
- Have students move around the room, matching the tempo of the music and practice using different sizes, force, and time.
- Instruct all students to try experimenting with the movements we created for the function and the parts to match the different tempos of the music with different time.
- Have students gather in groups of two or three, give five minutes to create a dance representing any main concept taught about the respiratory system (function, parts, or how to keep it safe). Play music while groups are working.
- Have each group share their dances.

## Lesson Plan Seven: The Digestive System

### The Digestive System “On the Way Down”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation and activity on the digestive system, on their own, students will be able to correctly describe at least one function of the Digestive system on their worksheet.
- After the PowerPoint presentation and activity, students will be able to accurately label at least four of the five organs from the Digestive system picture.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of digestive system
- Poster board for chart- split into three sections and labeled: big ideas- things we think we know, ideas we agree with, ideas we disagree with
- 24 digestive system worksheets, found in packets (see attached)
- Piece of string that is eight yards long (seven yards of it is small intestine) taped to a piece of yarn that is two yards long (length of large intestine).
- Papers labeled with: mouth, esophagus, stomach, small intestine, and large intestine

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Tell class, “This is the last body system we are going to be learning about, let’s complete our chart for what we know about the digestive system or any big ideas we have”.

- Have students get out notepaper paper and copy down the chart; they will complete the chart as the big one is being filled out.
- Have students offer ideas and write in first column on chart “big ideas” about the digestive system.
- Have students think, pair, and share with a partner after teacher asks; “where does your food go? How much time does it take for your food to leave your body? How far do you think your food travels before leaving your body?”
- Give students a couple of minutes to talk with their partner. Call on students to share what they think.
- Start by holding up the mouth end of the string (tape the mouth label on) and have a student hold. Start unraveling the yarn, posting the esophagus, stomach, small intestine, and large intestine while having as many students as needed hold the yarn around the room. Explain that the yarn represents the distance your food travels. Show students the length of the small and large intestine. (Found inside a six-foot person, so it would be shorter for children and most women). Tell students the journey through this long path takes 15-48 hours.

**B. Teaching (10-12 minutes):**

- Show class the PowerPoint presentation involving the parts of the digestive system and the function of the digestive system. Discuss as a class after each slide, answering questions.
- Have students think, pair, and share during the PowerPoint and to create movements to help remember the function and parts of the digestive system.
- Have each pair of students share and have class vote for the winner-practice these parts and function multiple times

**C. Group Application (3-4 minutes):**

- Have students think, pair, and share with a partner the function and parts of the digestive system.
- Have groups of students (boys, girls, certain table groups) recite the function and parts of the digestive system.

**D. Independent Application (10-12 minutes):**

- Students will complete their digestive system worksheet, on their own. They will write the function of the digestive system and label the parts of the digestive system.
- Students that finish early can either complete their crossword or research question they have about organ systems in the book library.

**E. Closing (3-5 minutes):**

- Have students review the movements for the organ systems; nervous system, circulatory system, respiratory system, and digestive system.

## Lesson Plan Eight: The Digestive System

### The Digestive System: "Where does the Food Go?"

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04). Goal Three

#### Objectives:

- After the PowerPoint presentation and interactive read aloud on the digestive system, students will work with their table group to draw and write at least three ways to keep their digestive system healthy on the back of their digestive system worksheet.
- After the lesson, students will create a creative dance with a partner or small group, representing one of the main concepts about the digestive system and including at least one creative dance element.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting as well as efficiently on their own.
- Students will need to have had completed the front half of their digestive system worksheet from the previous lesson, found in the organ system packets.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART board and document camera
- digestive system PowerPoint
- copy of "where does food go" food travelogue (see attached)
- 24 'my digestive system' worksheets, found in packet (see attached)
- Coloring materials
- Music for creative dance lesson

#### Procedure:

##### A. Anticipatory Set (4-5 minutes):

- Display a picture of the digestive system on the overhead and read aloud the "where does food go" -food travelogue"
- Have students stand up and in their own space move how they think the food goes through the body and imagine how long the distance is (from previous lesson).

**B. Teaching (8-10 minutes):**

- Tell students that they will now learn how they can help keep their digestive systems healthy and working properly.
- Put PowerPoint back on screen and quickly review what was discussed yesterday, ask questions to the class: “who can tell and show me the parts of the digestive system? Come point to each part, who can tell and show me the function of the digestive system”
- Then show the last slides of the PowerPoint which explain how we keep our digestive systems healthy. Discuss as a class after each slide, answering questions and taking comments.

**C. Group Application (6-8 minutes):**

- Have groups of students work together to draw and write at least three ways to keep their digestive systems healthy. Make sure each student has a drawing on the back of their worksheet.

**D. Independent Application (4-5 minutes):**

- On their own, have students write beneath each picture why that particular behavior helps the digestive system.
- Those students that finish early can work on the crossword, word search, or investigate big ideas from the charts using the provided books.

**E. Closing (15-17 minutes): Creative Dance**

- Review the creative dance elements as students’ warm-up; start with a light stretch as the warm-up music is played.
- Have students move around the room, matching the tempo of the music and practice using different sizes, force, and time.
- Instruct all students to try experimenting with the movements we created for the function and the parts to match the different tempos of the music with different levels.
- Have students gather in groups of two or three, give five minutes to create a dance representing any main concept taught about the digestive system (function, parts, or how to keep it safe). Play music while groups are working.
- Have each group share their dances.

## Lesson Plan One: The Nervous System

### The Nervous System “Control Center”

#### 4<sup>th</sup> Grade Science and Health

Time: 35-40 minutes

#### Goal:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).

#### Objective:

- After the PowerPoint presentation on the nervous system and class hot/cold activity, on their own, students will be able to correctly describe at least one function of the nervous system on their exit ticket.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of nervous system
- Poster board for chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- 24 note cards for ‘exit tickets’
- Pictures of Lego’s and houses (see attached)

#### Procedure:

##### A. Anticipatory Set (6-7 minutes):

- Show image one: one Lego, tell students “this Lego represents one cell; a cell is the smallest living part of your body. Your body has many different kinds of cells; all cells use food and oxygen for energy, grow and divide to form new cells, and help you grow”. Show image of multiple Lego's hooked together, and say, “a group of cells that work together is a tissue (not the kind you blow your nose with though); all your body parts are made up of tissues”. Now show a house made of Lego’s, “a group of tissues that work together is an organ. Your heart, lungs, and kidneys are all organs”. Show a picture of a multiple Lego houses (image four), “a body system is a group of organs that work together, they make up your muscular system, your bones work together to make your skeletal system (which you learned about last year), and you have organs that work

together to make up other body systems like your circulatory system, respiratory system, nervous system, and digestive system. This is what we will be learning about in the next two weeks.” Last when you put together multiple body systems it makes your whole body or a town (show Lego town, image five).

- Tell class, “The first body system we are going to learn about is the nervous system.” Put up ‘Big Ideas’ chart for the nervous system, “tell me what you think you already know about the nervous system. As we learn more, we will see what we agree or disagree with”.
- Have students offer ideas and write in first column on chart “what we think we know or big ideas”.

**B. Teaching (7-8 minutes):**

- Show class the PowerPoint presentation involving the parts of the nervous system and the functions of the nervous system. Discuss as a class after each slide, answering questions.

**C. Group Application (10-12 minutes):**

- Have groups of students; by tables, create one question from the PowerPoint to ask to the class. The table group that answers the most questions correctly will be the winners.

**D. Independent Application (5-6 minutes):**

- Pass out exit tickets (note cards) and tell students they must write the function of the nervous system on it in order to go out to recess.
- Give students five minutes to fill out their card.
- If finished early, tell them to start thinking about what big ideas on our chart that we have addressed so far.

**E. Closing (3-5 minutes):**

- Go back to each big idea on the chart and see if from today’s lesson they can agree or disagree with the idea; if so put it into the correct column.
- Have students give their exit ticket to you before leaving the room.

## Lesson Plan Two: The Nervous System

### The Nervous System: “Don’t Forget Your Helmet”

#### 4<sup>th</sup> Grade Science and Health

Time: 35-40 minutes

#### Goals:

- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).
- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objectives:

- After the PowerPoint presentation review and class activity on the nervous system, students will be able to correctly draw and list the three parts of the nervous system (brain, spinal cord, and nerves).
- After the PowerPoint presentation review and class activity on the nervous system, students will list at least two ways to protect their nervous system on their nervous system drawings.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- Last slides of nervous system PowerPoint
- 24 ‘my nervous system’ worksheets found in their ‘Body Systems: The Inside Story’ packets (see attachment)
- Coloring materials

#### Procedure:

##### A. Anticipatory Set (3-5 minutes):

- Have students discuss how this represents what we learned the previous day, have them recite the function.

##### B. Teaching (10-12 minutes):

- Put PowerPoint back on screen and quickly review what was discussed yesterday, ask questions to the class: “who can tell me what the three parts of the nervous system were? Come point to each part, who can tell me a function of the nervous system, give me an example”



- Then show the last slides of the PowerPoint which explain how we keep our nervous systems healthy. First have students feel their spine, ask what part of the nervous system is inside of it, and why the spine surrounds it.
  - Discuss the ways we keep our brain and nervous system healthy from PowerPoint: wearing a seat belt in the car because it keeps you from being thrown on or being thrown into the windshield during a crash, reducing your risk for injury to your head or back. Getting plenty of sleep and rest helps restore energy to your nervous system. Wearing a helmet when you skate, ride a bike, skateboard, or scooter helps to protect your skull and brain in case you fall. Avoiding alcohol and drugs because they can affect your sense and you are at greater risk for injury when your senses are not sharp.
- C. Group Application (8-10 minutes):**
- Have pairs of students work together to each draw their own picture of the nervous system inside the body outline. Then have students switch papers with their partner and label the three parts (brain, spinal cord, and nerves).
- D. Independent Application (6-8 minutes):**
- On their own, have students write at least two ways to help keep their nervous system working properly. If students are finished early, they can draw a picture of their behavior.
- E. Closing (5-7 minutes):**
- Have students turn in their drawings and draw their attention to the nervous system big ideas chart.
  - Go through the remaining ideas and decide if they agree or disagree. If there are ideas not answered, let students that finish early investigate to find an answer.

## Lesson Plan Three: The Circulatory System

### The Circulatory System: “Feel the beat”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02)
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation on the circulatory system and class activity, individually, students will be able to accurately describe one function of the Circulatory system by writing it on their picture
- After the PowerPoint presentation and activity, students will be able to label the three parts of the circulatory system picture with 100 percent accuracy

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- Poster board for chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- 24 worksheets on circulatory system found in the ‘Organ Systems: The Inside Story’ packets. (see attached)

#### Procedure:

##### A. Anticipatory Set (10-12 minutes):

- Bring out the circulatory system chart split into three columns for the circulatory system.
- Have students get out a piece of paper and create the chart. They will fill in together so each student has their own copy.
- Have students offer ideas and write in first column on chart “what we think we know or big ideas” while students are filling out their own chart.

##### B. Teaching (10-12 minutes):

- Show class the PowerPoint presentation involving the parts of the circulatory system and the functions of the circulatory system. Discuss as a class after each slide, answering questions.
  - Have students create at least one question in their group to ask their classmates, the table group that answers the most questions correctly wins!
- C. Group Application (5-7 minutes):**
- Have students, think, pair, and share at least one function of the heart and the three parts of the circulatory system.
  - Have class take turns (just the boys tell me, the girls, this table group) practice saying the function of the circulatory system and the three parts.
- D. Independent Application (7-9 minutes):**
- Hand out packets to each student and have them complete the circulatory system worksheet (front page only) individually. Walk around to answer questions.
  - When finished, have students turn in packet and work on word search.
- E. Closing (3-5 minutes):**
- Have students review the functions and parts of the circulatory system with a partner
  - Go back to the KWL chart and see if they can fill in any of the sections

## Lesson Plan Four: The Circulatory System

### The Circulatory System: “Don’t Break my Heart”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objective:

- After the PowerPoint presentation and interactive read aloud about the circulatory system, students will include at least two ways to keep their circulatory system healthy on the back of their circulatory system worksheet.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to understand how to actively listen to the story being read aloud while making connections, asking questions, and creating predictions.
- Students will need to have finished the first half of their circulatory system worksheet from the prior lesson.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- 24 worksheets on circulatory system, front completed the previous lesson
- Book, *Organs!: How they work, fall apart, and can be replaced (gasp!)* by N.W. Parker

#### Procedure:

##### A. Anticipatory Set (8-10 minutes):

- Have students gather together at back rug for an interactive read-aloud from the book “Organs! How they Work, fall apart, and can be replaced (gasp!)”, pages 4-7 (on the circulatory system).
- Have students bring clipboards, paper and pencils, encourage students to ask questions during the story, relate the information to their prior knowledge, and look for ideas to agree/disagree with from our chart.
- Have students share their notes they took during the reading with a small group around them.
- Ask for volunteers to share their discoveries.

- Have students return to their desks to finish the Circulatory System PowerPoint.
- B. Teaching (6-8 minutes):**
- Show the class the last portion of the circulatory system PowerPoint presentation. These slides involve how to protect and keep the circulatory system healthy. Have students ask questions and offer ideas after each slide.
- C. Group Application (8-10 minutes):**
- After the PowerPoint, have each table group create two questions about the circulatory system to ask to the class, keep track of class points.
  - With their table group, have students create a picture on the back of the circulatory worksheet illustrating at least two ways to keep their circulatory system healthy.
  - Let students offer ideas to the group and create new ideas for how to keep the circulatory system healthy. Make sure each student create his/her own picture.
- D. Independent Application (6-8 minutes):**
- Once their pictures are complete, have each student on their own, write the explanation for each picture. Describing why these actions help keep the circulatory system healthy.
  - Have student's hand in worksheet. For those that finish early, have them work on the organ system crossword or investigate the big ideas from the 'big ideas' charts.
- E. Closing (6-8 minutes):**
- Go back to the KWL chart and fill in what we learned about the circulatory system
  - Have students fill out their chart as the large one is being completed.
  - Review the parts, functions, and how to keep the nervous and circulatory system healthy.

## Lesson Plan Five: The Respiratory System

### The Respiratory System: “Just Breathe”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-55 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation and activity related to the respiratory system, pairs of students will be able to correctly determine one function of the Respiratory systems by creating a ‘WANTED’ poster.
- After the PowerPoint presentation and activity, students will draw a picture of the respiratory system on their ‘WANTED’ posters, correctly representing at least four of the five parts.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to see examples of the respiratory system in order to draw their own picture.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of respiratory system
- Poster board for chart- split into three sections and labeled: big ideas-things we think we know, ideas we agree with, ideas we disagree with
- 12 ‘WANTED’ white poster-sized papers outlines
- “Organ Systems: The Inside Story” packets with WANTED poster instructions (see attached)
- 7 sets (one for each group) for lung model: one plastic water bottle with bottom cut off, one rubber balloon, one plastic sandwich bag, one rubber band, and tape.

#### Procedure:

##### A. Anticipatory Set (4-5 minutes):

- Put up the Respiratory system chart for the big ideas. Have students offer what they already know or think about the respiratory system.
- Students should have paper out and create the chart with the teacher.
- Record each idea on the chart as student's record on their own paper.

**B. Teaching (15-18 minutes):**

- Show the class the respiratory system PowerPoint. Have students ask questions and think, pair, share the questions in the PowerPoint.
- For the 'parts of the respiratory system' slide, the students will be creating a model of the lungs:
- Have students, with their table group, create a lung model as the teacher gives step-by-step directions. Place balloon inside of the water bottle and secure around opening. Place the plastic bag over cut-off bottom and secure with a rubber band, making sure to leave a handle to pull the plastic bag out and in.
- Have students pull the 'diaphragm' (plastic bag) and observe the 'lung' (balloon). Explain that: Each breath begins with a contraction of the diaphragm, a dome-shaped sheet of muscle that lies just below the lungs. When you inhale, your diaphragm contracts, or flattens downward. This contraction creates a lower pressure in your chest cavity. Normal outside air pressure forces air through the nose and mouth, down the trachea and into the lungs. When you exhale, your diaphragm relaxes, increasing pressure on the lungs and forcing air out of the body.

**C. Group Application (10-12 minutes):**

- Have students work with the person next to them to create their WANTED posters. These posters will be a 'WANTED' poster for a new respiratory system. Hand out a poster-sized paper outlines and instructions (found in their packets) to each pair of students.
- Have students work to complete the first two steps of their 'WANTED' posters: drawing and labeling a picture of the respiratory system and writing the function of the respiratory system.

**D. Independent Application (3-5 minutes):**

- Once students are finished with their posters (the first two steps), have them checked off by the teacher and work on their crosswords or investigate big ideas from the books.

**E. Closing (2-3 minutes):**

- Have students look at the KWL chart, have them add anything they learned; have students fill out their chart as the big one is being filled out.

## Lesson Plan Six: The Respiratory System

### The Respiratory System: “Respiratory System: WANTED”

4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04).

#### Objective:

- After the PowerPoint presentation and activity on the respiratory system, students will include at least two ways to keep respiratory system healthy on their ‘WANTED’ posters.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.
- Students will need to have completed the first two steps on the ‘WANTED’ poster from the previous lesson: draw the respiratory system and label parts, and write function of the respiratory system on poster.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of circulatory system
- Respiratory System Poster board chart- split into three sections and labeled: things we think we know, ideas we agree with, ideas we disagree with
- Book- *The Lungs* by Suzanne LeVert
- Clipboards for each student and paper
- ‘WANTED’ posters from previous lesson

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Have students gather together at back rug for a read-aloud from the book “The Lungs” by Suzanne LeVert; pages 4-16 on the respiratory system.
- Have each student bring paper and a clipboard to take notes during the read aloud. Encourage students to write down questions during the story, relate the information to their prior knowledge, and look for ideas to agree/disagree with from our chart. After each page, give students a chance to write something down and discuss what they wrote after each page.



- At the end of the reading, have students share their notes they took during the reading with a small group around them.
- Ask for volunteers to share their discoveries and discuss further as a class, ask what was different or the same about the information from the book and from what they learned during the previous lesson.
- Encourage students to start taking notes as any books are being read aloud, tell students it is important to make connections to our reading and ask questions.
- Have students return to their desks to finish the Respiratory System PowerPoint and tell students “now that we know all about the respiratory system, we need to know how we can protect it and how to keep it healthy”.

**B. Teaching (8-10 minutes):**

- Show the class the last portion of the respiratory system PowerPoint presentation. These slides involve how to protect and keep the respiratory system healthy. Have students ask questions and offer ideas after each slide.

**C. Group Application (7-10 minutes):**

- After the PowerPoint, have each table group create two questions about the circulatory system to ask to the class, keep track of class points.
- Have students get with their partner for their ‘WANTED’ posters and fill in the two circles, describing two behaviors that help keep the respiratory system healthy. If students decided to work on their own, have them work individually again.

**D. Independent Application (7-8 minutes):**

- Once their posters are complete, have students hand them in and work on their crossword.
- Another option for early finishers is: going back to each completed ‘big ideas’ chart and finding original ideas that have not been agreed or disagreed with. Have them complete research from the books set up on the back table to find the answers.

**E. Closing (8-10 minutes):**

- Have students share their posters with the class
- Fill in the ‘what we learned’ for the KWL chart
- Practice saying the parts and functions for the three organ systems taught so far

## Lesson Plan Seven: The Digestive System

### The Digestive System “On the Way Down”

#### 4<sup>th</sup> Grade Science and Health

Time: 45-50 minutes

#### Goals:

- Describe the function of organ systems. (Oregon State Science Standard SC.05.LS.02).
- Classify organs by the system to which they belong (Oregon State Science Standard SC.05.LS.02.01).

#### Objectives:

- After the PowerPoint presentation and activity on the digestive system, on their own, students will be able to correctly describe at least one function of the Digestive system on their worksheet.
- After the PowerPoint presentation and activity, students will be able to accurately label at least four of the five organs from the Digestive system picture.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting, as well as efficiently on their own.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART Board for PowerPoint
- PowerPoint of digestive system
- Poster board for chart- split into three sections and labeled: big ideas- things we think we know, ideas we agree with, ideas we disagree with
- 24 digestive system worksheets, found in packets (see attached)
- Piece of string that is eight yards long (seven yards of it is small intestine) taped to a piece of yarn that is two yards long (length of large intestine).
- Papers labeled with: mouth, esophagus, stomach, small intestine, and large intestine

#### Procedure:

##### A. Anticipatory Set (7-8 minutes):

- Tell class, “This is the last body system we are going to be learning about, let’s complete our chart for what we know about the digestive system or any big ideas we have”.

- Have students get out notepaper paper and copy down the chart; they will complete the chart as the big one is being filled out.
- Have students offer ideas and write in first column on chart “big ideas” about the digestive system.
- Have students think, pair, and share with a partner after teacher asks; “where does your food go? How much time does it take for your food to leave your body? How far do you think your food travels before leaving your body?”
- Give students a couple of minutes to talk with their partner. Call on students to share what they think.
- Start by holding up the mouth end of the string (tape the mouth label on) and have a student hold. Start unraveling the yarn, posting the esophagus, stomach, small intestine, and large intestine while having as many students as needed hold the yarn around the room. Explain that the yarn represents the distance your food travels. Show students the length of the small and large intestine. (Found inside a six-foot person, so it would be shorter for children and most women). Tell students the journey through this long path takes 15-48 hours.

**B. Teaching (10-12 minutes):**

- Show class the PowerPoint presentation involving the parts of the digestive system and the function of the digestive system. Discuss as a class after each slide, answering questions.

**C. Group Application (3-4 minutes):**

- Have students think, pair, and share with a partner the function and parts of the digestive system.
- Have groups of students (boys, girls, certain table groups) recite the function and parts of the digestive system.

**D. Independent Application (10-12 minutes):**

- Students will complete their digestive system worksheet, on their own. They will write the function of the digestive system and label the parts of the digestive system.
- Students that finish early can either complete their crossword or research question they have about organ systems in the book library.

**E. Closing (3-5 minutes):**

- Review the KWL chart and add anything the students learned about the digestive system

## Lesson Plan Eight: The Digestive System

### The Digestive System: “Where does the Food Go?”

#### 4<sup>th</sup> Grade Science and Health

Time: 40-45 minutes

#### Goal:

- Use communication skills to help self and others avoid unsafe situations and promote healthy behaviors (Oregon State Health Standard HE.05.HS.04). Goal Three

#### Objective:

- After the PowerPoint presentation and interactive read aloud on the digestive system, students will work with their table group to draw and write at least three ways to keep their digestive system healthy on the back of their digestive system worksheet.

#### Prerequisite Knowledge/Skills:

- Students will need to be able to read, see, and understand the information presented to them through PowerPoint and text.
- Students will need to know how to work cooperatively in a group setting as well as efficiently on their own.
- Students will need to have completed the front half of their digestive system worksheet from the previous lesson, found in the organ system packets.

#### Materials/Equipment/Supplies/Technology/Prep:

- SMART board and document camera
- digestive system PowerPoint
- copy of “where does food go” food travelogue (see attached)
- 24 ‘my digestive system’ worksheets, found in packet (see attached)
- Coloring materials

#### Procedure:

##### A. Anticipatory Set (5-7 minutes):

- Display a picture of the digestive system on the overhead and read aloud the “where does food go”-food travelogue”
- Have students mentally picture the journey the food goes through and how long the distance is (from previous lesson).

##### B. Teaching (10-13 minutes):

- Tell students that they will now learn how they can help keep their digestive systems healthy and working properly.
- Put PowerPoint back on screen and quickly review what was discussed yesterday, ask questions to the class: “who can tell me the parts

of the digestive system? Come point to each part, who can tell me the function of the digestive system”

- Then show the last slides of the PowerPoint which explain how we keep our digestive systems healthy. Discuss as a class after each slide, answering questions and taking comments.

**C. Group Application (8-10 minutes):**

- Have groups of students work together to draw and write at least three ways to keep their digestive systems healthy. Make sure each student has a drawing on the back of their worksheet.

**D. Independent Application (6-8 minutes):**

- On their own, have students write beneath each picture why that particular behavior helps the digestive system.
- Those students that finish early can work on the crossword, word search, or investigate big ideas from the charts using the provided books.

**E. Closing (5-6 minutes):**

- Have students turn in their drawings and worksheets.
- Complete the KWL chart for the digestive system and practice saying all the parts, functions, and how to keep each organ system healthy before giving the post-assessments.