Summer 2019

Movement and Action: Action-Based learning in the Classroom

Jordan Nguyen

Movement and Action: Action-Based learning in the Classroom

Jordan Nguyen

Northwestern College

A Literature Review Presented

in Partial Fulfillment of the Requirements

For the Degree of Master of Education

Table of Contents

Abstract

The purpose of this literature review is to explain what action-based learning is, how does action-based-learning fit within the classroom, and what are the effects it has on English Language learners and students who are placed in academic support programs in the classroom. The hope of this literature review is to gain more knowledge about what is action-based learning and to gain insight on how educators can effectively implement action-based learning within their classrooms. After analyzing the literature on this topic, the results of the analysis determined the effectiveness of action-based learning within the classroom on English Language Learners and students who are placed in academic support programs by increasing their on-task behavior, understanding abstract ideas, and improving English Language Learners acquisition to English.

Key Words: Action-based learning, brain-based learning, English Language Learners, ELL, movement, action, achievement, on-task behavior

Movement and Action: Brain-Based Learning and Action-Based Learning in the Classroom

There seems to be a drive for early education teachers to incorporate play into their curriculum due to the emotional, social, and academic development that goes on through play. As students get older and as they enter into higher grade levels each year, movement becomes less and less seen within the classroom (Hall, 2007). Students are asked to sit in their seats longer and longer. In some states, there are schools that have taken away or reduced the amount of physical education classes students get due to the high demands of standardized testing of core standards or due to the lack of funding and budget cuts throughout a district (Hall, 2007). Due to the lack of movement, students begin to lose focus, tend to become more disruptive in class, and have an increase of health problems that evolve such as obesity and the development of type II diabetes (Hall, 2007).

Research has been conducted that suggest that students need movement in order to learn programs (Chisholm & Spencer, 217; Hall, 20017). Research suggests that when educators add movement into their lessons, activities, transitions, and in their classroom in the form of brain-breaks, students are able to focus more and are able to show academic growth, especially those students who are English Language Learners (ELLs) and students who are in high needs academic support (Block et al., 2008; Chisholm, & Spencer, 2017; Hall, 2007; Hwang et al., 2014; Lombardi, 2008; Mahar et al., 2006). According to Chisholm and Spencer (2017), active learning can lead to improved and longer lasting learning outcomes as well as improved psychological outcomes of the students that are in a classroom with an educator who supports the movement and learning going on within the classroom. Understanding where this idea comes from can help educators better understand the need to incorporate brain-based learning and

action-based learning within their classrooms to better meet the academic needs of their academic support students and their English Language Learners.

Movement in the classroom comes from the idea of brain-based learning. Brain-based learning is the idea that we use our brains, movement, visual, and auditory senses when we are learning to connect new ideas with older ideas or content previously learned within the classroom (Kaufman et al., 2008; Lombardi, 2008). This then stems off to kinesthetic learning activities or in other words action-based learning, which involves adding movements in the day-to-day life of the classroom such as in lessons, activities, and transitions that students have learned to expect in a regular school day (Chisholm & Spencer, 2017; Lombardi, 2008). It is the way to promote new knowledge through movement of the body (Chisholm & Spencer, 2017). When educators are using a variety of kinesthetic, visual, and auditory strategies along with diverse teaching approaches, educators can tap into the best part of the brain that is compatible to learning and providing new ways of reaching the majority of their students and their learning within the classroom (Lombardi, 2008).

Movement is critical for students as they are learning new content. This works by students moving their bodies for either breaks between lessons, for example brain breaks, or students moving their bodies as a form of remembering a vocabulary word (running in place when learning the word *run*) (Block et al., 2008; Chisholm & Spencer, 2017; Hwang et al., 2014; Lombardi, 2008). Students will begin to develop new neurons that connect the different parts of the brain which help send messages throughout the brain and body. This literature review goes in depth about action-based learning in education and the positive effects it has on student learning. This review will describe how movement can increase students' on-task behavior; improve English Language Learners acquisition of a new language, and how the brain is a critical

component of action-based learning. This literature review will also look at how teachers can incorporate action-based learning within their classrooms to help increase students' academic achievement as well as students' focus and on on-task behavior.

Educators cannot afford to teach one way all the time but to teach to the differences of their students and the way they prefer to be taught, whether it is through visuals, movement, interactions with others, not just sitting down taking notes and absorbing what it is they need to learn (Lombardi, 2008; Muniandy & Shuib, 2016). Learning is action. Students are diverse and do not fit into a cookie-cutter mold. Their needs and the way they learn are also diverse and no one way fits all. Educators need to learn other ways to reach the diverse needs of students. Action-based learning will allow educators to reach the diverse needs of students within their classroom.

Review of the Literature

Learning Styles

Gardner's research explains that there are eight intelligences: linguistic, logical, spatial, musical, kinesthetic, interpersonal, intrapersonal, and naturalistic intelligence (Brown, 2005; Gardner & McConaghy, 2000). According to Gardner's theory of intelligence, students learn in different ways, not just one. Some students are more visual (spatial) learners, some are more logical, and some are more kinesthetic (movement or touch) learners. Some students can have more than one preference for learning. For example, spatial and kinesthetic or musical and logical. When educators incorporate learning with movement through brain-based learning and action-based learning they are having more students connect their learning. Teachers are reaching more students within their classrooms by using this type of learning style (Hall, 2007).

Teachers need to keep in mind that traditional teaching of memorizing knowledge, teacher-dominated, textbooks, lectures, and assessments based on quantitative data for learning is not the way to go and that students learn in multitude of different ways (Al-Balhan, 2007, Brown, 2005; Caine & Caine, 1995) Teaching is actually a more complex action, in which there are a multitude of factors, and learning and teaching styles that affect one's learning (Al-Balhan, 2007; Hall, 2007). Understanding learning styles has helped researchers and educators has helped create brain-based learning because of how brain-breaks works in utilizing many of the different learning styles preferred by students, mostly visual, auditory, and kinesthetic learning styles (Al-Balhan, 2007). Students from low achieving to high achieving do not learn just one way but in many different styles (Al-Balhan, 2007; Brown, 2005; Rayneri, Gerber, & Wiley, 2006). Implementing something like action-based learning in the classroom touches on kinesthetic, visual, and auditory to help students learn by tapping into the different learning

styles seen in the classroom (Al-Balhan, 2007; Brown, 2005; Rayneri, Gerber, & Wiley, 2006). Tapping into students' potential through their learning styles is supported through by how they brain learns during the learning process (Rayneri, Gerber, & Wiley, 2006).

The Brian and Movement

In past history, educators and neuroscientists knew little about the brain and what functions that the brain can do (Lombardi, 2008). Even though neuroscientists still do not know much about what the brain is capable of even with all the current research that has been done in the past ten years, researchers still have learned more about the brain within the past few decades that has helped researchers and educators understand how the brain works when learning something new (Diamond, 1960; Lombardi, 2008). In recent history, somewhere in1960, there was the idea that the brain and intelligence was fixed and could not change (Lombardi, 2008). However, in 1996 brain researcher Diamond, in his own research, found that people can actually grow their brains. Diamond claims is that each time someone learns something new, their brain grows new dendrites, cells that help the brain communicate with itself and the rest of the body and its neural connections (Caine & Caine, 1995; Diamond, 1996). According to research done by Lombardi (2008), she states that the brain is learning all the time, whether people know it or not, and the brain learns through nonverbal communications, voice, and from the physical environment, and that learning engages all parts of the human physiology.

Understanding that human brains are not fixed in you can only learn so much and that is it but brains are something that can grow and learn more than what was expected before making them more complex than what researchers originally thought (Caine & Caine, 1995). This helps educators and researchers to understand a bit more about the learning process and to understand the ideas behind brain-based learning, action-based learning, and movement within the

classroom (Diamond, 1960, Kaufman et al., 2008). Before students can learn new information, the new information will need to be sent through the neural network system within the brain. Brain-based learning involves the learner to use auditory (sound), visual (pictures), and kinesthetic (movement) strategies when learning new information (Kaufman et al., 2008; Lombardi, 2008). In the 1990s, publication of the brain, and how people learn became the focus of studies and research, creating research in brain-based learning and finding its practical uses to enhance learning (Kaufman et al., 2008). Brain-based learning is also concerned with creating a powerful learning environment based on emotional connections with those in the classroom and with themselves (Kaufman, & et al., 2008). This will allow a safe and positive learning environment within the classroom where students can relax and learn without feeling scared or have negative thoughts (Gözüyeşil & Dikici, 2014; Kaufman et al., 2008). Brain-based learning stresses the importance of patterns while learning, which is the natural tendency for learning and why traditional teachers, learning content in isolation, is something that is resisted and is not beneficial for student learning (Caine & Caine, 1995). Thus, when students feel safe their learning will have a positive effect on student learning allowing them to grow their brains.

Hall (2007) supports the idea that people can grow their brains through brain-based learning and action-based learning by claiming that when people learn new information, they begin to engrave it into their neural connections and the best way to do this is through movement (Gözüyeşil & Dikici, 2014; Shore, 2012). Hall (2007) goes on further to suggest that the more muscles students are using and activating, students are learning new information and concreting this new information within their brains. Young children have more connections than adults do thus it is imperative to support student learning as much as possible to create stronger connections in the brain (Stevens-Smith, 2004). The stronger those connections in the brain are,

allows students to have a stronger connection to the new information presented to them (Stevens-Smith, 2004) . This happens because when students use more muscle movements during a physical activity as it is integrated in their learning, the stronger the connection to that learning is, and a stronger connection to remembering that learning for later use in the classroom or in day-to-day life. The movement part of the brain and the part of the brain for learning are both stimulated creating these stronger connections (Hall, 2007; Shore, 2012; Stevens-Smith, 2004). While students are moving and learning, the chemicals in their brain helps strengthen and grow neurons that are within the brain (Shore, 2012; Stevens-Smith, 2004). When students have stronger neurons and are growing new neurons, the movement then creates more circulation of chemicals to all the neurons within the brain to allow the students to retain new and old information easily into their day-to-day lives (Shore, 2012). With students being able to retain new and old information more easily, they are able to understand, comprehend, remember, and retrieve more information and to access it quicker when the need arises (Hall, 2007). As students move and learn, they are creating new and stronger neural connections that will allow them to increase their learning. Movement increases clearer thinking, improves grades, and increases alertness in students (Stevens-Smith, 2004).

With the strong research on the brain and how movement affects students' learning, the idea of brain-based learning and action-based learning has been mentioned more and more within the school community. When using brain-based learning, educators can affect a student's learning by improving students' attention, memory, sequential order, motor skills, higher order thinking, language, social thinking, and spatial ordering (Lombardi, 2008; Hall, 2007). Through action-based learning, students are participating in their learning through physical movement instead of sitting at a desk, absorbing information that is presented to them with just using their

eyes and ears (Chisholm & Spencer, 2017). With the idea of the brain-body connection, action-based learning is all about the acquiring of new knowledge through the use of movement. It allows students to have the opportunity to get away from behind their desk and to interact with their environment and with their peers. Action-based learning also makes the claim that active learning leads to enhanced and prolonged, long lasting learning outcomes and more developed psychological results. With the high demands for standardized testing, an increase of English Language Learners students in schools, and students struggling in schools, increasing scores on standardized tests through movement of action-based learning sounds like an admirable choice to choose when thinking about improving students' academic success (Chisholm & Spencer, 2017). Movement provides students with more oxygen to their brains, granting students the chance to have a break to help them absorb key concepts and new ideas during instructional times (Chisholm & Spencer, 2017).

Conflicts

Brain-based learning and action-based learning is not a one-fits all solution for all students and does not boast that it is something that will benefit all learners (Bird et al., 2005; Mundiandy & Shuib, 2016). Like all new trends within education not one new strategy will work on all students but may help the vast majority of students but, there are conflicts that may go against this new trend. One conflict that affects schools is the increase for student achievement. With a need to increase student achievement, with a heavy focus on the increase of standardized tests there are schools that are dwindling their specials classes (Hall, 2007). There are some districts that even cut physical education, music, and art classes due to budget cuts within districts (Long, 2017). Not only do students and teachers lose an experienced physical education teacher but then physical activity must then fall on the shoulders of the classroom teacher, who

do not have as much experience or knowledge as physical education teachers, to provide movement for their students (Long, 2017).With schools taking away or reducing the number of minutes in classes like physical education students are losing movement and physical activity. With reduced physical activity levels, an increase in sedentary lifestyle and seat work, students develop an increase of poor eating habits, there has been an increase of type II diabetes, obesity, heart disease, and other negative health issues that affect children's health (Hall, 2007).

With the increase of the demand of student achievement, educators have been focusing on how to meet the needs of students by increasing academic work (Hall, 2007; Long, 2017). By increasing student work, educators decrease the chance for students to participate in physical movement, whether it be in the classroom or it be in a physical education classroom, if the physical education classes are cut due to the academic demands or budget cuts (Long, 2017). The high demands of student academic achievement tend to weigh more than any other needs (Hall, 2007, Long, 2017).

Another conflict that has been drifting around is the idea that students can learn just as much from observing actions as they would actually participating in the physical movements. There have been a few studies that have indicated that when it comes to knowing how to perform actions that are a part of a specific goal, learners can learn through observation of actions of the teacher, not just by following along with their own actions (Osman, 2008). This form of learning is called observation-based learning. In a study conducted by Osman, observation-based learning shows a better understanding of rule-based knowledge (2008). Osman, in her study, explains that rule-based knowledge can lead to better control over performance and become more accurate at a task when it was compared to only instruction-based learning or in other words teacher-lead

lessons. With her study, Osman argues that there was no advantage over action-based learning when comparing to observation-based learning in performance (Osman, 2008).

In another study, Bird et al. (2005) claim that action-based learning may be best used for when a task is implicit, or when learning occurs without the learners conscious mind focused on what it is they are learning. Bird et al., claim that observational learning can also be part of the implicit learning as well as explicit learning, or learning that is done when a student is learning conscious or aware of their learning, whereas action-based learning is solely a form of implicit learning (2005). Within the study, Bird et al. (2005), found no evidence that showed a difference between observation-based learning and action-based learning, yet they could that action-based learning can occur without awareness while observational learning cannot. But, if learners where to study a model's, or teachers, actions through observation as a source of learning, when it came to learning a sequence, learners were able to learn implicitly as well (Bird et al., 2005). Their claim is that their experiments suggest that learners can encode these observations of actions as representations as if the learner had themselves completed the actions (Bird et al., 2005). The results highly suggests that when learning implicitly, actions are necessary, yet it can also be done or learning can be gained from observing the movements of the model, or the teacher (Bird et al., 2005). Overall, Bird and his team insist that their results revealed that learners can observe learning since there was no significant differences between observational-learning and action-based learning and when observing actions, this may engage the same learning process as if the learner was engaged in the physical action themselves (Bird et al., 2005).

The research that has been done on observation-based learning needs to be taken with a grain of salt because this research has been mostly focused on students in higher education, while not much has been conducted with students in the K-12 setting (Bird et al., 2005; Osman, 2008).

With knowing this, further study would need to be completed with students in the K-12 setting when moving further on with observational-learning and its affects and connections with action-based learning.

Impact on Students

Action within the classroom has impacted the classroom and the students within. The impact of action-based learning include the effects of on-task behavior of English Language Learners, students from low socioeconomic backgrounds, and students who struggle to stay on-task (Mahar et al., 2006). Action-based learning impacts student understanding of abstract ideas, and impact English Language Learners' ability to understand new content while learning a new language (Block et al., 2008).

Effects on On-Task Behavior Chances for students to be physically active are becoming limited due to the high pressure for academic performance and budget cuts, hence movement and physical activity within the classroom can become a positive route for not only increase students' physical activity but also academic performance (Mahar et al., 2006). Classroom teachers can conduct physical activities within their classrooms that can increase student on-task behavior during academic instructions. There is research that declares that students who participate in physical activity during recess or physical education classes tend to be more attentive within the classroom, behave more appropriately, and perform better academically after these activities as well as build up 21st century skills such as cooperating with others, problem solving by oneself or with others, positive communication with team mates or classmates when working together (Iowa Department of Education, 2017). As students enter the classroom, they are expected to sit still during extended periods of academic instructional time, often becoming more fidgety and experience decreased concentration during academic instructional time (Mahar et al., 2006). A

way to combat off-task behavior during academic instruction is to incorporate movement within these times.

Allowing students to stand and move during academic instruction can provide students the necessary opportunities to allow them to increase their on-task behavior. By increasing movement within the classroom, just ten minutes, can improve a students' on-task behavior (Mahar et al., 2006). In a research study conducted by Mahar et al. (2006), they wanted to see how a classroom-based physical activity program could affect students' on-task or off-task behavior during academic instructional time. Within their study they used a program called Energizers. Energizers is a program that are short physical activities, about ten minutes, that grant students the chance to stand up and move during academic instruction, it is integrated within the learning material, and usually involves no equipment, and little teacher preparation is needed (Mahar et al., 2006). Within their study, Mahar et al. (2006) trained teachers in the use of the program and activities, allowed teachers to choose their own activities from the program that fit their needs, and were told when their classrooms would be assessed or observed through the study.

Through their research and findings, Mahar et al., (2006), found strong evidence that shows a positive effect of the Energizers activities on on-task behavior in their classroom, showing an improvement of student on-task behavior during academic instruction time. Mahar, et al., declare that even among a small sample of students with intellectual disabilities, they can reduce their off-task behavior after participating in physical movement during academic instruction (2006). Mahar et al., highly recommend that administrators and educators should incorporate 10 minutes of physical activity within their classrooms to increase student on-task behaviors during academic instruction and with the increase of on-task behavior, students'

academic performance should in all likelihood will also increase as an additional benefit for teachers and students (2006).

Students who tend to be less on task during academic instruction tend to generate more disruptions than peers who are on-task. Students who are normally off-task during academic instruction and who then use movement during academic instruction are found to be the students with the most improvement of on-task behavior than the improvement of the class as a whole (Mahar et al., 2006). With students now being more on-task with the incorporation of movement, teachers have found a large improvement for not only on-task behavior but also extremely helpful for classroom control and performance (Mahar et al., 2006). Mahar's study is supported by Shoval's (2011) study on mindful movement and cooperative learning when teaching young students angles in math. In this study, Shoval (2011) found that there was a positive correlation between movement and improvement of student academic achievement of angles as well as retaining what they learned about angles for future use. Classroom teachers who want to increase physical activity within their classrooms for their students' physical activity levels and on-task behavior can use programs like Energizers to accomplish their goals (Mahar et al., 2006; Shoval, 2011).

Understanding Abstract Ideas Abstract ideas such as *peace* are harder to understand than concrete ideas (e.g., *father*) for students in the primary grades (Block et al., 2008). Through kinesthetic movements, students in the primary grades can create a more concrete understanding of abstract ideas as they are reading or being read to. A study conducted by Block et al. (2008), proposed that through the use of kinesthetic movements that could be designed to represent the different abstract ideas of reading comprehension of main idea, inferring, making predictions, and clarifying as an instructional strategy to increase student comprehension of a story being

read to them or a story read by them. In their study, Block et al. studied the effectiveness of the Comprehension Process Motions (CPMs) in primary-aged students in urban schools where the majority of the students were of low socioeconomic status backgrounds or who came from non-English-speaking families, or also known as English Language Learners (2008).

CPMs uses kinesthetic hand placements and movements that represent a physical and visual of an abstract idea that is an unseen reading comprehension process for instance main idea, clarifying, inferring, and predicting (Block et al., 2008). The way CMPs work is to help primary-age students build their metacognitive understanding of comprehension ideas through the mind-body connection of movement and learning. Creating more learning connections within their brains through movement and learning comprehension ideas. CMPs build stronger connections by creating an image to when, where, and how to use a specific comprehension tool as they are reading as well as communicating with the teacher what they have internalized as they are reading (Block et al., 2008). Based on their research, Block et al. (2008) express that their research is important for educators because the research provides pre-kindergarten all the way through third grade teachers with a way that they can increase the effectiveness of traditional learning through the use of movement (CMPs) that represents the unique mental process of comprehension. They claim that their research done on the CMPs lessons improve a student's understanding of how the comprehension process works, when and where to use a specific comprehension process, thus eventually allowing students to have the beneficial outcome of being able to initiate own comprehension processes on their own (Block et al., 2008).

In their findings, Block et al. (2008) reaffirm the idea that CPMs lessons help students who struggle to understand the meaning of what they read, help those who struggle with self-monitoring, not to mention as a way to support younger students as well as more active, hands-

on students. Block et al. (2008) also found that their study demonstrates primary-age students who participated in CPMs lessons, their comprehension and vocabulary scores significantly rose over those students who did not participate in CMPs lessons, furthering strengthening the idea that actions and movement when paired with learning have great positive effects on student achievement.

Movement and English Language Learners Research has been conducted that suggest brain-based learning and action-based learning have a positive effect on our English Language Learners. English Language Learners are students who come to the classroom either from another country or those students who have spoken another language or languages before entering the classroom. English is their second (or third, fourth…) language learned and they maybe the students who mostly speak English yet when they were younger they were in an environment that did not speak English or spoke little English. English Learners can benefit from brain-based learning and action-based learning as they have the added necessity of learning content objectives while also learning how to speak, read, write, and listen in English.

As mentioned before, movement allows the brain connect what the student is learning to the action they are creating with their bodies, thus creating connections from the neurons in the brain to speak to one another. When students use movement they are developing neural functions within the brain that can help play an important role in a student's attention, memory, language, spatial order, sequential ordering, motor system, higher level thinking, and social thinking within the classroom (Lombardi, 2008). The brain is social and wants to be in social situations and to pretend to others (Lombardi, 2008). By allowing English Language Learners to interact with classmates through movement like games or interactive lessons, they can develop social skills

and collaborate with peers, while learning the social cues and social language in English (Lombardi, 2008).

English Language Learners have a preferred learning style, or a preferred way of collecting new information and knowledge, just like any other student that walks through the door and into the classroom (Muniandy & Shuib, 2016). According to a study conducted by researchers Muniandy and Shuib (2016), they found that students who studied English as a Second Language preferred to use their preferred learning style. Action-based learning is preferred by most students to use in the classroom because students preferred kinesthetic learning compared to auditory and visual learning styles in their native language (Muniandy & Shuib, 2016). Knowledge of vocabulary and the complexity of sentence structures in English can be difficult, however when paired with action-based learning, students were able to increase their understanding of English and increase their test scores. If students are allowed to follow a teacher-centered approach, an approach where the teacher teaches and students sit in their desks taking notes, then they are more likely to become passive learners who will rely on their teachers completely during the learning process (Muniandy & Shuib, 2016). When students are able to be a part of a positive learning environment that allows them to move around and take action within a lesson, students become more engaged. When English Language Learners are able to role play, a form of brain-based learning and action-based learning, they are able to remember the vocabulary and language structure more easily through social interaction and through the motions of actions that come with role playing (Muniandy & Shuib, 2016). For many English Language Learners, kinesthetic learning is mostly preferred and with the research, educators can see that movement can help students increase their language skills. Students though don’t just

need their bodies when they learn, but they can also use technology and movement as a way to increase their learning.

With the increase of technology in the world, English proficiency also grows. Technology is being more and more integrated within the classrooms with the uses of iPads, laptops, Chromebooks, interactive whiteboards, and some schools going 1:1 or Bring Your Own Device (BYOD), teachers are using more and more technology each year. Teachers of English Language Learners can use movement and technology and have a positive effect on student learning and motivation. With the use of Microsoft Kinect technology, English Language Learners can increase their retention of vocabulary and grammar for a longer period of time than if a student were to learn in a setting without movement or technology (Hwang et al., 2014). The program allows students to work in pairs and applying their knowledge to the interactive component of the Kinect by using vocabulary, grammar and gestures. Not only can this improve students' retention on what they are learning in class, at the same time movement and technology can increase students' motivation within the classroom. Physical movement of one's body can enhance the learning process because when students are involved with interactions with others using gestures, they create a positive learning environment that increases student motivation for learning (Hwang, et al., 2014).

Synthesis

As much of the literature suggests, action-based learning has many benefits for student learning when incorporated in their day-to-day lives in and outside the classroom. With the research that has been conducted there is still much more that educators and researchers can learn from action-based learning in the K-12 setting. Much of the research that has been conducted has been done from more than ten years ago, in recent years more research has been done on students in higher education, i.e. students in universities, or studies done on the classroom as a whole and taking specific scores from different group sets like ELLs or low socioeconomic status groups from these whole group studies.

The research done by Bird and his team (2005) and the research done by Osman (2008) on observational-based learning and comparing it to action-based learning was done mostly with students in higher education, as mentioned previously, would to have further study to determine the relevance for students in the K-12 setting. Future researchers though, can use Bird and his team and Osman's research to begin their work on observational-based learning and action-based learning within the k-12 classroom. Future researchers may need to look at how these two different theories impact students academically, behaviorally, and how students interact with each other. There are two studies that, when focus on the class as a whole and then look at specific groups of children, for example those students who are English Language Learners and those of low socioeconomic status in passing. The two researches were done by Mahar and his team and Block and her team of researchers. The research that was conducted by these two teams did not look at individual student progress, academically or behaviorally, but looked at the classes in the study as a whole or groups of students (e.g., ELL students, low socioeconomic students, or disruptive students) within the classrooms that were part of the study.

The research conducted by Mahar et al. (2006) not only looked at students as a whole group but they also suggests that there is more need for data to show students' academic performance over time. As reported by Mahar and his team (2006) in their study there is much more work to be done. They report more research can be done to evaluate the effectiveness of classroom-based physical activity programs, or action-based learning, for an on-task behavior in combination with academic performance of students (Mahar et al., 2006). They make this claim due to the fact that their study is more focused on movement on on-task behavior immediately after a specific observed instructional time not taking into consideration of students' academic performance through benchmarks, standardized tests, or other measurable academic performances (Mahar et al., 2006). Yet, it would be difficult to measure on-task behavior through benchmarks or some other standardized test, but using Mahar et al. method of research and to further their studies by adding another portion that would measure academic performance may either support action-based learning in the classroom as a way of increasing student academic and on-task performance do correlate with each other or do not.

Block et al. (2008) declare their study to be among the first of its kind to examine the ways of transactional strategy instruction or Comprehension Process Motions (CMPs) can be used to reinforce students' ability to build their metacognition. Due to the fact that this is the first of its kind, more research needs to be conducted on how effective this form of action-based learning is within the classroom. Even though that this is specific study is the first of its kind, it does strongly suggest that CMPs does not only substantially increase primary age students' comprehension abilities but it also suggests that there is the possibility that when providing concrete images through hand movement, a key part of action-based learning, primary students will heighten their understanding of learning other abstract ideas within the academic setting

(Block et al., 2008). The research for CMPs was focused on and developed for primary age students, thus, it would be interesting to think about how the CMPs concept would affect students in upper grades like fourth through twelfth grade. It is fascinating to muse about the idea of how this may affect these students and to also think about how this form of action-based learning can affect students with special needs as well.

As the exploration was being conducted for this literature review, the findings strongly suggest that action-based learning is in fact beneficial for English Language Learners and students of low-socioeconomic, which was the purpose for this literature review (Block et al., 2008; Lombardi, 2008; Mahar et al., 2006; Muniandy & Shuib, 2016). Yet, as the investigation on action-based learning was being conducted, more inquirers came up regarding students and action-based learning. The findings did not discussed how average to advanced students progressed in their learning, if at all, during a time when movement was incorporated within academic instructional time or as brain breaks. It's curious to think about the effects action-based learning has had on these students as it has affected English Learners and students of low-socioeconomic status. Not only does the research not touch much on students of average or advanced, or non-English Language Learners, on action-based learning, but in an article written from the Iowa Department of Education briefly discussed how movement affects students of special needs, or more specifically students on the autism spectrum. The article mentions that it is evidence-based that physical movement and physical activity does increase students on the spectrums' ability to be more focused and decreases challenging behaviors that may arise during academic instruction time (Iowa Department of Education, 2018).

Throughout the literature review, not one research article mentioned students in the spectrum or any other students with special needs within their studies. Not only with the increase

of English Language Learners in the classroom, it is also important to see how effective action-based learning is towards students with special needs. This should be noted because the effects of action-based learning for students with special needs are also being included within the classrooms depending on their IEPs and their personalized goals. Not only that, there are students who are English Learners who are also students with special needs or who may have learning disabilities. As this research was set out to see the impact or effects of action-based learning in English Language Learners, research should be conducted to examine the effects of action-based learning, or movement, on students of both non-English background and special needs or learning disabilities as they too, can be found within the classroom.

Even though there is still more work to be done in the area of research in the effects of action-based learning, the research already conducted strongly implies that movement within the classroom academic times is an important step in creating a space where students can build their connections with students as well as developing their mind-body connections for learning. With the mind-body connection, students are able to use movement as a way to develop their brains to retain more knowledge through this connection, the basic framework for action-based learning, along with developing a visual representation of ideas, objectives, and concepts, the basic framework for brain-based learning, and perhaps in some cases oral and audible representation of ideas, objectives, and concepts.

Application of the Literature

The research on action-based learning can improve and create long lasting learning outcomes for students as well as creating positive psychological outcomes for students within the classroom to support student academic goals and achievements (Chisholm & Spencer, 2017). With such a positive development for student learning, student achievement, and on-task behavior, it is no wonder that educators have found ways to add movement in their classrooms as well as the wide variety of resources for action-based learning ideas that the Iowa Department of Education has in its archives.

McGlynn and Kozlowski (2017) have come up with a few strategies for adding movement that educators can use in a middle school science classroom. Even though these strategies are for the middle school science classroom, many of the strategies can be changed to implement in elementary schools, high schools, and in a wide variety of different content classes. Games are a great fun way for educators to add to any lesson or review of objectives. Educators can use Kahoot! as a way to review objectives and materials for an upcoming assessment or as an exit ticket before leaving the room or moving on to the next activity. Kahoot! (McGlynn &Kozlowski, 2017) is an active way for students to interact with each other while using technology to respond to questions about the content students are learning (McGlynn & Kozlowski, 2017). Educators can also use games like Twister to boost students' engagement and progress in their learning. Some ideas on how educators can use Twister for learning, but not limited to, are short vowel Twister, long vowel Twister, and parts of speech Twister to help students identify and analyze phonic rules (Bezet, n.d.). These form of action-based learning can be adaptive to add pictures, words, concepts, or objectives that are being learned at any level. Educators can also create a sight word hopscotch where student jump on squares of sight words,

calling out the word as they jump on each word, instead of numbers (Bezet, n.d.). Not only are the games a great way to add movement into a lesson of review, but they also build on the mind-body connection as well, concreting ideas and learning for students learning process. Games are sloe not the only way to get students moving within the classroom, but just having students moving to you as a response to a question as well (McGlynn & Kozlowski, 2017).

When action is used as a way to respond, educators can build student engagement within a lesson. One simple way to do this is by having students do a specific moment when responding to a question or comment by the teacher (McGlynn & Kozlowski, 2017). An example of this would be for a teacher to say, “Stand up if you have eye color as your parents” as a way to open up a unit on genetics to show students visually and to think about hereditary genes and to get moving (McGlynn & Kozlowski, 2017). Educators can simple split their classrooms in half where one side is true and one side is false and when asked a true/false question, students walk to the specific spot for their answer. A great way to gage student understanding of material and a great way to get they up and out of their seats. This kind of activity can be changed in different ways for sequencing and comparing and contrasting as well.

Movement breaks, or brain breaks, are tremendous ways of giving students a small break and move, giving educators a chance to regroup and gain more student attention and on-task behavior (K., n.d.). Brain breaks can be as simple as having students turn a page in their textbook, stand up, turn around, sit down again or walking up to turn in a paper, and stand or sit to as a response to a question (K., n.d.). Brain breaks are something that does not take much time, not more than three minutes, yet gives students the chance to move and refocus on the takes at hand (Chisholm & Spencer, 2017). GoNoodle is a popular website for educators to incorporate brain breaks in their classroom with short, action packed videos for students to

follow along with. GoNoodle boosts improvement on focus and behavior or also known as on-task behavior, increase academic performance build getting the blood moving towards the brain and throughout the body, as well as strengthening classroom cohesion and collaboration (GoNoodle, Inc., 2019; Hall 2007). Educators can not only use brain breaks and other kinesthetic activities in their classrooms, but they can also become a part of research as well.

As more educators add kinesthetic activities in their learning and in their classroom's need to more research can be done. Educators can take part in their own research in the field of kinesthetic learning or they can volunteer and be a part of the Iowa Department of Education and with the Iowa Department of Public Health as they partner up in creating and updating their resource, “Get Movin’ Classroom Activity Break”, for implementing physical activity in the classroom (2018). For educators who want to share and help improve student academic achievement and student on-task behavior, being a part of sharing your own ideas for kinesthetic learning in the classroom is a wonderful way to share these ideas. “Get Movin’” allows educators to gain new insights and ideas on how they can incorporate physical movement within their lessons and activities in a free to use resources provided by the state of Iowa.

Not only do McGlynn and Kozlowski (2017) give educators an idea of the different kinds of physical activity in the classroom but they also proved a way for educators on how to implement kinesthetic activities in the classroom. Like most strategies and trends in the educational world, it is necessary for educators to plan these activities with purpose. When planning kinesthetic activities, McGlynn and Kozlowski (2017) give educators five strategies to follow. First, educators must plan where and how students will move within the classroom, making sure that students are able to move safely during the activity (McGlynn & Kozlowski, 2017). Second, educators should think about the possibility of the different challenges that may

occur (McGlynn & Kozlowski, 2017). For example, educators can think about how they are meeting the needs of all students and how can they make accommodations when necessary. And if so, how can the activity be changed to meet the needs of all of the students in the classroom. Third, educators should create a classroom space that will allow for the movement of the activities to help it occur naturally (McGlynn & Kozlowski, 2017). Educators may need to move desks, rearrange the classroom, have materials ready on hand and in place, and again making sure that the area is safe for students' movements. Fourth, plan for a way to get students attention before, during, and after the activity as well as reminding them of your expectations during the physical activity being done (McGlynn & Kozlowski, 2017). When students are participating in anything involving action, they tend to get excited. Thus, during organized chaos that can arise, having a way to get students' attention and teaching it them beforehand will be beneficial for time management for when it is time to talk, time to stop and listen, and when to clean up. Finally, have a backup plan for when it does not go well or as expected (McGlynn & Kozlowski, 2017).

Conclusion

As educators and students begin to merge into the world of technology, computers are starting to become more and more popular in the classroom with one-one technology or Bring Your Own Device, students become more and more sedentary as they progress through school, or so it seems (Hwang, et al., 2014). With educators and students using more technology in the classroom, one goal for educators and schools that remains the same is the academic success of the students that are being taught. Educators still need to keep up with the high demands of standardized testing that happens throughout the year, while at the same time making sure students are learning and not being taught to the test (Hall, 2007). Student achievement and success can be enhanced with the help of action-based learning or kinesthetic learning, steaming from brain-based learning (Chisholm & Spencer, 2017; Hall, 2007; Lombardi, 2008; Stevens-Smith, 2004).

Through action-based learning, educators can enhance student achievement by using this form based off of research supporting the mind-body connection that happens during learning. Through the movements students create as they are learning, they are building stronger neurons in their brains, causing them to be able to make faster connections to previous learning and to learning in the future and for faster memory recall (Diamond, 1996; Shoval, 2011; Stevens-Smith, 2004). The idea that educators be a part of the process of growing the brains of our students' learning is incredible, but being able to grow their brains and have the power to make them become faster to recall information and retain what they learn is awe-inspiring (Diamond, 1996). Students who have the chance to move as they are learning to get an added benefit of moving away from their desks and the chance to interact with their surroundings and with each other in a safe and positive environment.

Action-based learning can give students the chance to create images and motions for abstract concepts. Creating images through motions, just like comprehension process motions (CPMs) give students a concrete image of an abstract concept, helping solidifying their understanding of the abstract concept that is being learned or being used in learning (Block et al, 2008). When used correctly, CMPs allow students a better understanding of learning comprehension skills that are necessary for reading as well as gaining an understanding of what they know about their own reading process and awareness of when to use reading comprehension skills as they are reading (Block et al., 2008). The more students use CMPs, the more they come to recognize when and where to use specific comprehension skills (Block, et al., 2008). As an added bonus, teachers can also assess quickly what their students know or don't know about the different comprehension strategies through the motions their students are doing as they are reading (Block, et al., 2008).

As students can use movement to solidify abstract ideas, educators can use movement as a way to increase student on-task behavior, especially those students who tend to become distractors the longer they sit still (Mahar et al., 2006; Shoval, 2011). As students advance to the next school year, the demand to sit still in one stop for a long period of time gets bigger and bigger, give space for students to become more off-task. With the framework of action-based learning, educators can increase student on-task behavior by allowing brain-breaks or movement throughout their lessons and activities (Mahar et. al., 2006; Shoval, 2011). Movements and actions give students a chance to take a break from their learning as well as giving them space to make connections through movement and the content of objective that is being presented to them (Mahar et. al., 2006; Shoval, 2011). Educators can apply the framework of action based learning in their classrooms quite easily, granting them the chance to increase on-task behaviors

seamlessly. Educators can incorporate action-based learning in their classroom through five easy steps: planning where and how to move, thinking about potential challenges, organization of the classroom for natural movement, finding ways to get student attention during and after the activity, and having a backup plan increase it does not work out as planned (McGlynn, & Kozlowski, 2017). Movement and action in the classroom has many benefits like adding physical movement during the day to increase blood flow to the brain, to creating faster retrieval of information due to the growth of neurons in the brain, to increase on-task behavior, and to an increase in student achievement. Educators who have English Language Learners and students who are placed in an academic support program will get all these benefits when educators implement the action-based learning framework, increase student achievement and success within the classroom and outside the classroom.

References

Al-Balhan, E. M. (2007) Learning styles in relation to academic performance in middle school mathematics. *Domes, 16*(1), 42-57.

Bezet, C. (n.d.). Active student learning games. Retrieved July 1, 2019, from www.nea.org/tools/tips/active-learning-games.html

Bird, G., Osman, M., Seggerson, A., & Heyes, C. (2005). Sequence learning by action, observation and action observation. *The British Psychological, 96*, 371-388. doi:10.1348/000712605X47440

Block, C., Parris, S., & Whiteley, C. (2008). Cpms: A kinesthetic comprehension strategy. *The Reading Teacher, 61(6),* 460-470. doi: 10.1598/RT.61.6.3

Brown, N. (2005). Meeteth thy match: Sensory activities to support brain-based learning. *School Library Media Activities Monthly, 21*(8), 17-19.

Caine, R. N., & Caine, G. (1995). Reinventing schools through brain-based learning. *Educational Leadership,* 43-47.

Chisholm, A., & Spencer, B. (2017). Let's get moving!: Eight ways to teach information literacy using kinesthetic activities. *Pennsylvania Libraries, 5*(1), 26-34. doi: 10.5195/palrap.2017.141

Diamond, M.C. (1996). The brain . . . use it or lose it. *Midnight Connection* 1 (1): 1. Retrieved from http://archive.education.jhu.edu/PD/newhorizons/Neurosciences/articles/The%20Brain...Use%20it%20or%20Lose%20It/index.html

Gardner, H., & McConaghy, T. (2000). Intelligence reframed: Multiple intelligences for the 21st century]. *ATA Magazine, 80*(3), 6. Retrieved from

GoNoodle, Inc. (2019). Movement and Mindfulness for Kids. Retrieved from https://www.gonoodle.com/

Gözüyeşil, E., & Dikici, A. (2012). The effect of brain-based learning on academic achievement: A meta-analytical study. *Educational Sciences: Theory & Practice, 14*(2), doi: 10:12738/estp.2014.2.2103. 642-648.

Hall, E. M. (2007). Integration: Helping to get our kids moving and learning. *Physical Educator, 64*(3), social science premium collection, 123-128.

Hwang, W.-Y , Shih, T. K., Yeh, S.-C., Chou, K.-C., Ma, Z.-H., & Sommool, W. (2014). Recognition-based physical response to facilitate EFL learning. *Journal of Educational Technology & Society, 17*(4), 432-445.

Iowa Department of Education. (2017, April 12). It's not just a pe class, but a classroom full of possibilities. Retrieved July 18, 2019, from https://educateiowa.gov/article/2017/04/17/it-s-not-just-pe-class-classroom-full-possibilities

Iowa Department of Education. (2018, March 27). Exercising the mind (and body). Retrieved July 15, 2019, from https://educateiowa.gov/article/2018/03/28/exercising-mind-and-body

Iowa Department of Education. (2018, December 17). Physical activity: Calling for classroom ideas! Retrieved July 27, 2019, from https://educateiowa.gov/article/2018/12/27/physical-activity-calling-classroom-ideas

K., K. (n.d.). Movement break Momentum. Retrieved July 1, 2019, from http://www.nea.org/tools/tips/movement-break-momentum.html

Kaufman, E. K., Robinson, J. S., Bellah, K. A., Akers, C., Haase-Wittler, P., & Martindale, L. (2008). Engaging students with brain-based learning. *Techniques, 83*(6), 50-55.

Lombardi, J. (2008). Beyond learning styles: Brain-based research and English language learners. *The Clearing House, 81*(5), 219-222.

Long, C. (2017, March 28). When physical education is cut, who picks up the slack. NeaToday. Retrieved July 5, 2019, from http://neatoday.org/2017/03/28/cuts-to-physical-education/?_ga=2.215165975.1203170654.1564168252-943311226.1563477338

Mahar, M. T., Murphy, S. K., Rowe, D. A., Golden, J., Shields, A. T., & Raedeke, T. D. (2006). Effects of a classroom-based program on physical activity and on-task behavior. *Medicine & Science in Sports & Exercise, 38* (12), 2086-94, doi:10.1249/01.mss.0000235359.16685.a3

Muniandy, J., & Shuib, M. (2016). Learning styles, language learning strategies and fields of study among ESL learners. *Malaysian Journal of ELT Research, 12*(1), 1-19.

McGlynn, K., & Kozlowski, J. (2017). Kinesthetic learning in science. *Science Scope*, 24-27.

Osman, M. (2008). Seeing is as good as doing. *Journal of Problem Solving, 2*(1), 29-40. doi: 10.7771/1932-6246.1029

Rayneri, L. J., Gerber, B. L., &Wiley, L. P. (2006). The relationship between classroom environment and the learning styles performances of gifted middle school students and the impact on levels of performance. *Gifted Child Quarterly, 50*(2), 104-118.

Shore, R. A. (2012). “Profound levels of learning” through brain-based teaching: A tribute to roland barth. *The Educational Forum*, *76*(1), 129-136.

Shoval, E. (2011). Using mindful movement in cooperative learning while learning about angles. *Instructional Science*, *39*(4), 453-466.

Stevens-Smith, D. (2004). Movement and learning: A valuable connection. *Strategies, 18*(1), 10-11.