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Physical Activity and Academic Growth

The Impact of Physical Activity on Academic Growth

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Abstract

The purpose of this action research project was to determine if there is a proven benefit to linking physical activity of the whole student learner and their overall academic growth of students in a kindergarten classroom. Implementation of a well-designed and planned physical activity curriculum was used with fidelity over a period of four months. Data was collected in both formats of quantitative and qualitative from students, teachers, parents and administration. Analysis of the data concludes that student academic growth was increased as a result of the increased physical activity of the students.

Keywords: physical activity, growth, academics

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The Impact of Physical Activity on Academic Growth

Providing a classroom environment where the whole person is involved is an idea that teachers and scientists have dissected and explored for years. Educational experts have the hopes of determining and relaying the numerous benefits that are offered to students in their journey to learn. “Neuroscience has found that projects, movement and hands-on learning strengthen students’ understanding of concepts because multiple senses receive information” (Zalaznick, 2015, p.34). Through the use of training the brain by involving all aspects of the senses in applying a task or skill a student can reconfigure the brain and build more brain connections. One of the ways that a student can build their learning is through movement. By actually trying a dance, an agile movement, jumping, skipping, or shooting basketball a student is actually wiring the brain to be able to do it again and better. Across curriculum the physical movements that a student makes in all areas of development such as: large and fine motoring, tracking reading, and other vestibular moves form a deeper brain wiring and ability to foster improved focus and critical thinking. Educators have been applying transitional breaks in their classrooms for years. Transitioning from one subject to another a teacher may have students’ hop, skip or walk to their next location. Music has been a part of the curriculum with its dancing as has Physical Education (PE), recess and the Arts with movement exploration. Historically in education teachers have applied this knowledge in an evident need for movement throughout the day by giving opportunities for a student to stretch, renew and re-energize their bodies and catch a breather to allow their brains to process academic information in preparation of the learning to come.

In an educational setting, it is common knowledge to conclude that activity from preschool aged through grade two students is part of a child’s normal craving during

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development through these stages of life. Teachers around the globe can attest to the ample natural as well as creative opportunities an educational environment can allow for a young child movement of their body. When a student applies action to their learning, the reciprocal connections are at work as the brain has its' basic wiring. However, "Movement provides oxygen to different parts of the brain making students more receptive to learning" (Zalaznik, 2015, p.36). Literature can conclude that instilling a curriculum where the educator places action with and between learning allows a student's brain to apply the thought, make adjustments and form the new necessary connections to learn. In this research study the educator wishes to prove that an environment rich with vestibular exercises in the classroom and in careful implementation of movement opportunities embedded throughout: instruction, transitions and during play and in addition the implementation of a multi-sensory approach to learning called S.M.A.R.T. (Stimulating, Maturity, Accelerated, Readiness and Training) the students will reach optimum learning potential and success in education.

Literature Review

According to the No Child Left Behind (NCLB) Act of 2001, Congress voted that every student would acquire Standardized testing and Title 1 services as needed. Each state would receive funding for implementation and achievement scores would require accountability for learning. More recently, Former President Obama in December, 2015 reauthorized NCLB and it is now The Every Student Succeeds Act (ESSA). Kindergarten teacher and a researcher at Aquin Elementary School in Cascade, Iowa uses the FAST test for fluency and the MAP test for reading readiness. These standardized tests are the tools used in her school as a result of ESSA. Adhering to this Act and other statewide guidelines, testing, movements and performance rankings places great instructional demands on her planning of instruction in order to allow for

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strong delivery of content knowledge for every student. Unfortunately, often time restraints, curriculum guidelines and schedules meeting benchmark dates force teachers to remove the less academic rigor that physical movement provides and replace the activity with a curriculum too stringent in instructional time at the cost of moving their bodies in order to remain stimulated and ready for acquiring new information. Balancing an act of a students' readiness for learning both physically and emotionally as research in the literature studies shows is essential in aligning a child for optimum growth in academics. In many states, educators are committed to a mandated 90 minutes of literacy activities throughout their daily instruction. Educators provide opportunities for Student growth in emergent reading skills including phonics, phonemic awareness, blending of sounds, vocabulary, and fluency in reading, comprehension skills and strategies and accuracy in applying their new skills across their curriculum. Through the implementation of this Action Research, researchers will explore whether or not these two domains can have an effect on overall academic success to a student's academic growth.

A child in this age range is building awareness and confidence quickly and seldom is limited in their opportunity for large motor movements. As the student grows, gathers knowledge, independence, confidence and agility they are also beginning school and in many situations are required to limit such movement and their day is replaced with a more passive learning at a table or desk with a more on task rigor and curriculum. The greater academic demands on these youngsters and their required time to achieve academic growth, unfortunately, limits a student's abounding needs for movement. Research Scientists have uncovered substantial evidence through showing the positive results physical fitness has on a student's cognitive development and brain performance. This Action Research will conclude an answer to this question: "Can the use of Brain Breaks and physical movement prior to skill learning or

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application improve a student's focus and score on the F.A.S.T. test for fluency and the M.A.P. test for reading readiness”?

Methodology

Participants

This action research project was conducted using students in a Kindergarten classroom in a school with approximately 250 student's grade PK-K to grade eight. The classroom has ample space for large motoring movements and for well-designed play. The classroom has eight boys and seven girls in a general education setting. The students taking place in this study will have permission slips signed and returned to school in order to show consent from parents that each child may participate.

Data Collection

During the fall, winter and spring each of the students take the F.A.S.T. assessment measuring fluency, phoneme awareness, sound blending and segmenting levels. The computer software program that accompanies F.A.S.T. has a link for progress monitoring students. This tool is the tool used for assessing fluency changes throughout this study.

Of the 15 students, all but one attends the general education classroom. The one student holding the exception is a student in special education receiving his instruction in a resource room once pulled from the classroom. The student demographics in this classroom are predominately white and have a middle class socio-economic status. Data reports conclude that this group of students received a score of 86.9% of High-Performing students on the 2015 Iowa School Report Card (Iowa Department of Education, 2015). This data reflects the anticipated capabilities for these students to achieve growth in a well-balanced school environment.

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The primary focus of this action research project was to determine whether a student's growth in academics alone could be affected by implementing planned physical fitness curriculum. To effectively evaluate the progress a variety of data collection methods were used to help answer and determine additional planned movement breaks and the timing of such curriculum.

Both the use of formal and informal surveys were conducted with the students allowing their input as to the effectiveness in regards to each of their own learning and feelings about their growth academically. The students had an opportunity for completing surveys every two weeks. These surveys allowed for observations, input, and questioning providing a solid use of qualitative data samples. In this action research project the researcher had already maintained some bias thoughts regarding the use of physical fitness sparking further growth for student achievement. For this primary reason, the researcher felt it necessary to obtain sampling of both quantitative and qualitative data. The purpose of this study was to determine growth in regards to movement and exercise. Qualitative insights from the student surveys allowed for the necessary flexibility and input while curriculum was planned and unfolded throughout the study period in order to measure growth in performance at the second test date. Quantitative data was collected at both the beginning of this research and the final date of this research project. The quantitative insights provided an answer as to whether or not growth was met.

Data collection for this research project took place from test dates September 8, 2016 to January 27, 2017. At this study's conception students in this Kindergarten classroom participated in a physical education class for 30 minutes two days a week. This class and the addition of two twenty minute outdoor recess sessions were the only periods of the day where the students could participate in large motor activity; however, this time was unstructured time and

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could not guarantee movement for each child. Students were craving more movement as their busy bodies were still developing necessary brain stem growth to allow for stem knowledge in academics and behavior to take root. Planning for further rigor and relevance in the classroom was near a halt until further growth was made for each student to achieve base stem knowledge and routines and expand learning at the cortex level of the brain.

To foster a daily routine of increased physical movement and exercise, researchers found a well-designed curriculum of movement through a company called A Chance to Grow (actg.org) This Company provided daily fitness exercises to stimulate growth and brain development. Implementation began with a twenty minute block of time each morning to work students and achieve optimum exhaustion of various muscle groups as well as visual exercises. Each student learned each exercise with slow, intentional instruction in order to allow for maximum benefits. Step by step instruction was given to both the lead teacher with instructing the students and to the supervising paraprofessional to assure that each student was participating in a careful, correct manner. Throughout the data collecting period changes were made due to the qualitative data gathered each week and the anecdotal notes observed in each student's learning both physically and academically. Informal questions were asked both at the time of instruction and summative later in the day to students about whether they enjoyed the movements, felt more relaxed in their work, had an extra amount of energy or even if they understood something or not. The questioning was valuable data to help in the overall research to indicate student growth.

During the nearly four months of this study the teacher was able to distribute six surveys to each student determining whether or not data along the way could predict the need for such

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planned physical movement and exercises in reaching optimum student growth as a whole child.

All surveys were administered with each individual student through verbal interviews with the paraprofessional and lead teacher.

The first survey was administered with the intent that it would obtain a baseline for linking movement to academic growth. Would each student have a prior base knowledge of the need daily for movement when learning? The first survey, also, would help the researcher to identify what one child may feel is work and exercising as compared to another child or the instructors view of exercise. This first survey was titled Will Exercise Help me to Grow? This survey held seven key questions. Students could answer strongly agree, Agree, Disagree, Strongly disagree. Statements asked during this first survey included:

- Learning is fun.
- Using my whole body can help me to learn better.
- I want to work hard at school.
- Physical exercise can help me to learn better.
- Increasing my heart rate is a good idea to help me learn during the day.
- Playing games and using large muscles can help my brain.
- Learning in Kindergarten can be fun and creative.

Other surveys along the next several months included similar questions regarding student thoughts on the exercises, their understanding of the parts of their bodies they were working, their confidence in their learning of academic content, their abilities of tasks such as reading, writing, focusing, peer interactions and much more. The qualitative data was a valuable tool to this researcher and proved to provide measurable growth even prior to the test data to come at the conclusion of this research period. Using the mixed methodology allowed for multiple

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samples of valuable data to be compared and collected. Throughout this study a vast array of opportunity for physical movement allowed for growth of the whole child, a will for child participation and further revealed a need for movement to coincide with instruction and application of learning in the classroom. FAST assessment scores were obtained and compared at both a benchmark date (September, 2016) and a winter date of late January (January, 2017).

Data Analysis

For the purpose of data analysis in this research, the first benchmark score of the FAST assessment in early September, 2016 was compared with the Winter FAST assessment score at the end of January, 2017. In determining the results of this particular research project the researcher notes that there were ample bias opinions, beliefs and even research reported indicating that physical fitness and movement were key factors in the success of student learning in the classroom environment. The researcher gathered the support of building administration, teachers, and families to implement the movement curriculum daily and the continued ambition that the researcher held to fine tune and forge involvement and good faith in the daily usage would play a significant role in the planning and carrying out of such curriculum.

Careful fidelity and observations along the way of the research team allowed for the direction of research, evaluation, hypothesizing and certain measures to remove bias or preconceived notions and rather to formulate that this need for academic growth would only come from instructing the whole child in a daily routine and prove solidarity in the benefits of these essential curricula.

Quantitative data. The quantitative data collected through the research months provided insights about students' prior understanding of how they learn best, their understanding of movement, and their idea of working their bodies. Student survey results revealed that 98% of

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the students believed that learning in Kindergarten can be fun and creative. This number reveals that student excitement and motivation to learn or be eager to learn is high. Using this knowledge an educator is at the given advantage of embarking on willing student learning and an open attitude towards change (see Appendix A).

Other remarkable data collected shows that students have a good understanding of how their body learns and the necessary element that movement provides for student growth. The researcher and educators wishing to provide optimum growth and participation along with student high achievement can conclude that adding physical activity in a planned regular daily lesson will promote fun; willingness and academic growth (see Appendix B).

Finally, using the standardized FAST assessment and comparing the data from fall to winter test periods data showed positive growth for 100% of the fifteen Kindergarten students involved in this study (see Appendix G).

Qualitative data. Qualitative data was observed, noted and shared nearly daily throughout the intervention period. Formal and informal open discussions were shared among teachers and students, administration, parents, colleagues and support staff. Students were observed in and around the school prior, during and following interventions to note any positive growth and or changes in academics, behavior and overall performance of each student.

The most evidential observations were the positive response and excitement that students held toward the daily routine. Students showed change in their strength, their agility, their focus, willingness to try new content and skills. Students asked for new exercises, they became creative in suggesting exercise and modifications to exercise, the students discussed feeling stronger, feeling more confident in their know how across the day at school and in their home lives.

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Informal interviews with parents and staff amongst students and their counterparts consisted of conversations short and concise of mostly questions such as: “what did you like about your SMART morning exercises today?” Or “Why do you think you are focusing better during the afternoon?” These informal interviews were essential in gaining and planning for activities that would allow for continued student growth motivation and willingness to participate positively.

Through this action research the necessary components of both qualitative and quantitative data, and their analysis, the researcher wishes to provide proof of measureable growth and changes in the student’s abilities to learn with implementation of movement and planned physical activities throughout the day. This data in this Action Research Report reveals the necessity of implementing a curriculum strong with physical movement and exercise in order to gain positive growth academically and within the confines of a school setting.

Points to Consider

The researcher wishes to share that all efforts to ensure that this study held validity and reliability. A concerted effort was ensured by collecting various methods of data collection. Although justification of validity and reliability can be obtained, it must still be noted that other factors for positive student response should be taken into consideration. Through careful daily observation of the students participating in the activities educators and researchers concurred that the use of physical activities created for a fun learning environment and; therefore, increased student morale with regards to being able to participate in this study rather than remain in their desks for learning.

The formal and informal questions that were given in surveys to the students throughout the study were open-ended simple questions could easily be answered with an overall

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understanding that by communicating a willingness and happy feeling of participating in this physical curriculum, students will gain outside class time and avoid the so called rigor of in class, in seat instruction. Researchers still feel that the evidence in the data reflected is strong and consistent data if used over time to prove positive growth and effectiveness to student learning in a kindergarten classroom.

Conclusion

The findings of this research project conclude that careful, intentional planning of a curriculum rich with physical movement and exercise will have a lasting, positive impact on student growth in academic success. This researcher suggests that educators build an environment rich with a balance of fine motor and large motor vestibular exercises. Careful planning, design and implementation of such curriculum will help students to obtain balance in their day and foster overall wellness and development to enhance their content learning across the curriculum.

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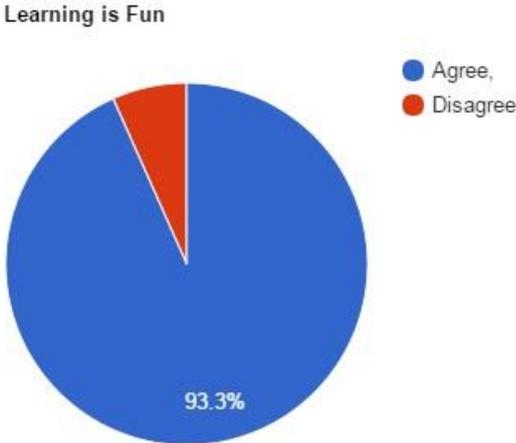
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Appendix A

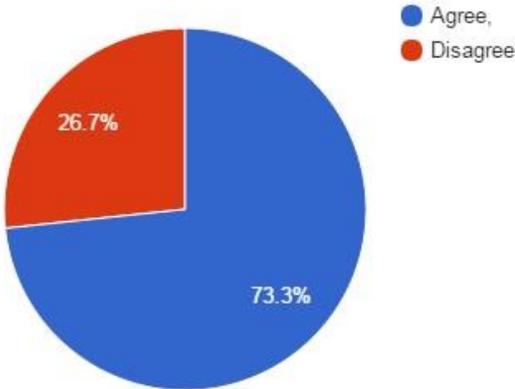
Is Learning Fun?



Appendix B

Can Exercise Help me to Learn?

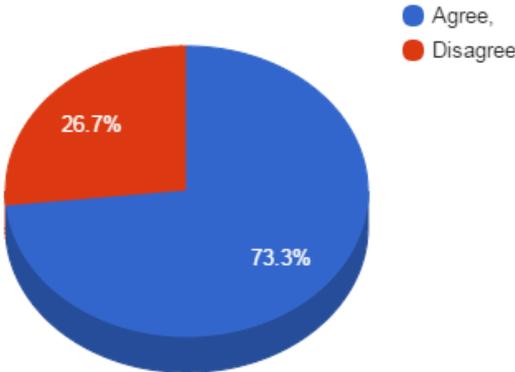
Increasing my heart rate is a great idea to help me learn



Appendix C

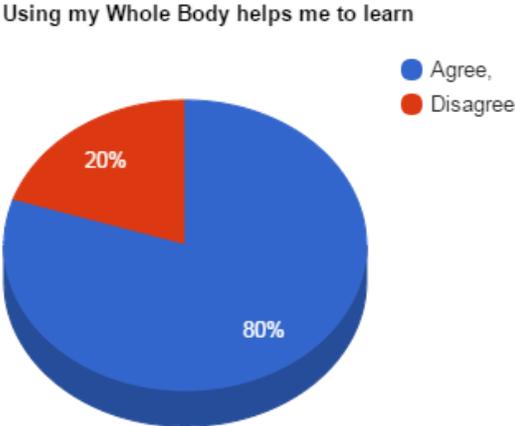
Can Games Build my Brain?

Playing games using my large muscles can help my brain



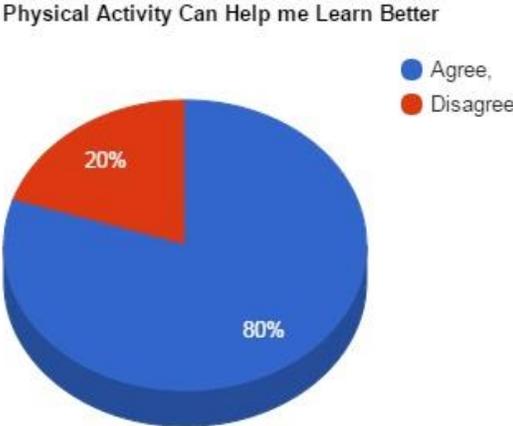
Appendix D

Can Moving my Whole Body Help me Learn?



Appendix E

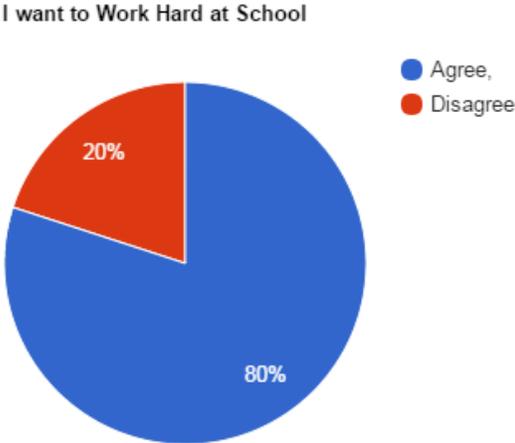
Can Physical Activity Help me in Learning?



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Appendix F

Do I Like to Work Hard in School?



Appendix G

Assessment Scores

