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High school physical education (PE) class offerings are on the decline, despite research that shows PE can contribute to overall academic success. Several factors contribute to academic success, particularly executive function, which is an umbrella term for the different cognitive and mental skills crucial for learning, and Social and Emotional Learning (SEL) which are skills people acquire and can use in school and later in life. The purpose of this study was to examine the perspectives of PE on SEL and the impact of executive function in high school students.

A mixed methods approach was used to collect executive function data and student interviews on a 9th grade PE class. An interpretive qualitative research approach guided the focus groups regarding SEL self-competencies in high school students for a unique student perspective of SEL. Executive function was assessed through the completion of a mobile flanker task that students took on school iPads at three time points in the school semester. A repeated measures ANOVA was used with SPSS statistical software to determine significance. Post hoc analysis with paired samples t-tests were done for significant values.

Findings revealed students were able to give specific examples of SEL competencies they were introduced to during PE class as described through the focus groups that they were unable to do before. Executive function results uncovered that congruent reaction time (RT) trials yielded significant results. An assumption can be made that those students did improve in their general cognitive processing of information but not inhibitory control. Study findings can potentially be used to help reduce the marginalization of high school PE by demonstrating that PE with an emphasis on SEL can provide a more equitable and inclusive learning environment (James, 2011).

THE INVESTIGATION OF THE IMPACT OF PHYSICAL EDUCATION ON SOCIAL AND
EMOTIONAL LEARNING AND EXECUTIVE FUNCTION IN HIGH SCHOOL STUDENTS

by

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Approved by

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DEDICATION

There are a few people I would like to dedicate this dissertation to. First, to my husband Matt, thank you for always pushing me to do my best, always being so encouraging, letting me have my meltdowns, and for making me feel like I was good enough to finish this journey. Next, to my parents Mike (Slick) and Rita. Thank you for all the sacrifices and everything you ever did for me growing up which made me the person I am today. I hope I have made you all proud. Thank you to my cousin Stephanie for letting me rant and for helping proofread my numerous papers. I would also especially like to dedicate this dissertation to my Nanny. I wish she could be here to witness this moment because I know she would be so proud of me.

APPROVAL PAGE

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CHAPTER I: PROJECT OVERVIEW

Physical Education is required in most high schools; however, academic success is prioritized over student well-being (Piekarz-Porter et al., 2020; *Shape of the Nation State Profile*, 2016). Even though most states require high school PE, the implementation at many schools is low-quality, and often students are forced to substitute PE for remedial academic course work (*Shape of the Nation State Profile*, 2016). Additionally, the data shows only six states have time requirements for high school PE (*Shape of the Nation State Profile*, 2016). Only 1 in 5 high school students meet the recommended daily Physical Activity Guidelines for Americans (*Lack of Physical Activity*, CDC, 2021). Virginia high schools do not have a minimum weekly time requirement for PE (*Shape of the Nation State Profile*, 2016). Consequently, it is not surprising to see that Virginia high school students report being 3-5% less active than the national average (“Physical Activity Among U.S. High School Students”, 2020).

In the state of Virginia, physical activity participation in PE varies greatly since high school students only need two credits of PE to graduate. Therefore, if students are enrolled in two PE courses their eighth-grade year, they have already met the PE requirements needed to graduate and are not required to take another PE course. Often, these students choose not to take other PE classes throughout their high school careers, and this can be detrimental if students only participate in physical activity during PE classes at school (*Shape of the Nation State Profile*, 2016). Therefore, educators are concerned that students are not meeting the Physical Activity Guidelines for Americans that recommend adolescents get 60 minutes of moderate to vigorous physical activity daily (*Physical Activity Guidelines for Americans 2nd Edition*, 2018). Physical activity participation in PE, however, has shown significant benefits in areas that contribute to

academic success like Social and Emotional Learning (SEL) and executive functioning (Dyson, Howley & Shen, 2021; Salas-Gomez et al., 2020).

Social and Emotional Learning is defined as the skills individuals acquire and apply to manage emotions, build relationships, and make responsible decisions (CASEL, 2020). The Collaborative for Academic, Social and Emotional Learning (CASEL), CASEL, outlines five components that includes self-awareness, self-management, social awareness, relationships skills, and responsible decision-making skills. Physical education classes create an ideal atmosphere for SEL because students and teachers engage in lessons that are designed to foster interaction and teamwork (Dyson, Howley, Shen, 2021). These social interactions that take place in PE help students enhance personal development, citizenship, communication, and problem-solving skills, all of which align very closely to the SEL competencies (Akhter & Ahmed, 2021; CASEL, 2020). Developing SEL competencies are valuable for students to apply these skills in everyday life either in a school setting or further in their careers. Through experiences in PE, students can build relationships, make responsible decisions, and play cooperatively with their teammates (CASEL, 2020; Dyson, Howley, Shen, 2021).

Physical activity that can be achieved through participation in PE, has also resulted in increased executive function, which is a key component of cognition (Haverkamp et al., 2020). Executive function is an umbrella term for different cognitive and memory skills that take place. Executive functions are sets of important skills used throughout a person's life that include being able to remember instructions, control responses, and adapt to changes in situations (de Greeff et al., 2018; Diamond, 2013). Selective attention, self-regulation, flexible thinking, and working memory are also integral parts of executive function (de Greeff et al., 2018; Diamond, 2013; *Executive Function & Self-Regulation*, 2023). Participation in physical activity has shown almost

immediate and positive impacts on executive function, especially the ability to maintain attention (Active Living Research, 2015; Dishman et al., 2006).

Despite ample research that documents the positive impact physical activity has on executive function in older adults and elementary aged students, research is lacking for adolescents (Park & Etnier, 2019). Adolescence is a key time for emotional and cognitive development, which makes high school students an appropriate age group to investigate (Dahl et al., 2018; Patton et al., 2016; Wassenaar et al., 2021). Research on SEL has also focused on elementary aged children. In summary, research that demonstrates the benefits of physical activity achieved through participation in PE on executive function and SEL in high school students can contribute to reform and policy change in schools.

Background

Physical education is a subject that is delivered through a K-12 curriculum and is based upon national standards where students learn to become physically active and includes activities that are designed to meet those national standards (Ballard et al. 2005; *Physical Education, Physical Activity, Healthy Schools CDC*, 2020). SHAPE America (2023) emphasizes a curriculum centered around motor skills, sportsmanship, and knowledge of active living. The Virginia Department of Education (VDOE) outlines the objectives of PE in the following manner: “Physical Education provides students with the knowledge, processes and skills to become physically educated, physically fit, and responsible in their physical activity choices and behaviors for a lifetime” (VDOE, *Physical Education*, 2022). Numerous skills taught in PE support the tools needed to lead a healthy lifestyle including teamwork, problem solving, foundational movement skills, responsible behaviors, and knowledge of fitness and nutrition for

life (Says, 2018) in addition to benefits in executive function and SEL (Diamond 2012; Dyson, Howley, and Shen 2021).

Cognition and Executive Functioning Overview and Benefits

Cognition consists of numerous domains and is ranked from the lowest level dealing with perception and sensory to the highest level that deals with executive function and cognitive control (Harvey, 2019). The different cognitive domains aid in the development of mental capabilities as well as the attainment of individual knowledge (Sincero, 2011). Executive functions are a set of mental skills that are crucial to development during adolescence (Diamond, 2012).

Executive function includes many important domains and processes like inhibition, behavior, adapting to new situations, cognitive flexibility, planning, and working memory (Barenberg et al., 2011; de Greeff et al., 2018; Diamond, 2012, 2013, 2015; Guiney & Machado, 2012; Harvey, 2019). Cognitive inhibition requires the learner to inhibit attention to an environmental stimulus so attention can be focused on important subject matter. This makes cognitive inhibition necessary for selective attention, or the ability to attend to one detail over another. For example, in class, students need to attend to the teacher rather than whispering classmates. This skill requires some level of cognitive inhibition (Diamond, 2013). Working memory is a person's ability to retrieve information and use it for future tasks (Diamond, 2013). For instance, in learning, working memory is important for students to follow directions and then apply them to the task. Cognitive flexibility focuses on the ability to look at things from a different perspective and to adapt quickly to changes in events around them (Diamond, 2013). Physical inactivity can hinder executive functions and can be problematic to a person's social, emotional, and physical health (Diamond, 2013). However, physical activity has shown the

ability to positively impact executive functions (Dishman et al., 2006). For example, immediately following physical activity, students have reportedly shown an increase in their ability to maintain attention and stay on task during class (*Active Living Research*, 2015). A study by Sibley et al. (2006) showed that children who were active demonstrated better inhibition control than people who were less active.

During adolescence, teens are developing their own identities, values, and beliefs, while their brain is still maturing. (*Adolescence and Executive Function*, 2020). Adolescence is a key period in life where many developmental changes start to occur neurocognitively along with different social and mental developments (Wassenaar et al., 2019). In this developmental time, executive functions develop at a high rate with several studies showing that physical activity improves these functions and serves as a crucial role for both success in school and later as adults (Haverkamp et al., 2020; Diamond 2012). During these cognitive roles and changes throughout different domains, physical activity in PE also allows for multiple neurophysiological benefits to occur.

Neurophysiological Benefits

Participation in physical activity during PE can have a positive impact on brain health, which the Centers for Disease Control (CDC) defines as the ability to perform the necessary processes like cognition, memory, judgment, and learning (CDC, *Healthy Aging*, 2009). Long-term neurological benefits of physical activity include cognitive improvement and being able to learn and retain new information (Di Liegro et al., 2019). Aerobic fitness especially enhances higher order brain functioning, specifically executive functions, that control cognition (Gomez-Pinilla & Hillman, 2013). Also, neuropsychologically, the prefrontal cortex plays a part in executive functions, specifically for goal-oriented behavior, like inhibition and planning.

Neurophysiological functions of the frontal cortex of the brain are impacted through physical activity in numerous ways including angiogenesis (the formation of new blood vessels), improved blood flow to the brain, increased neurotransmitter levels, and oxygen saturation, which results from participation in chronic (repeated) physical activity and may lead to a longer continuation of results (Álvarez-Bueno et al., 2017; Haverkamp et al., 2020). Since the frontal cortex is responsible for the higher order executive functions, these neurophysiological changes are thought to support executive function, specifically attention and working memory (Ludyga et al., 2018). Executive function tasks take place in different parts of the prefrontal cortex and certain neural circuits (Aguirre-Loaiza et al., 2019; Bialystok & Craik, 2006; Diamond, 2012; Nussbaum et al., 2009).

The positive impacts from physical activity on brain health have been shown in numerous studies and include improvement in attention, increased brain plasticity and cerebral blood flow as well as enhanced cognitive functions. A study conducted by Symons et al. (2009), showed that physical activity improved inter-neuronal connections that increased attentiveness (Kayani et al., 2018). Mandolesi et al. (2018) also adds numerous evidence that shows physical activity is a key component in the functioning of the brain by increasing brain plasticity, thereby aiding in cognitive function and well-being.

Another part of the brain responsible for executive function is the basal ganglia, located in the cerebrum, and is a subcortical brain structure that aids in cognitive performance, behaviors, and emotions (Chaddock et al., 2012). Higher fitness levels in children have been shown to be related to increased hippocampus (Chaddock et al., 2010; Wassenaar et al., 2019) and basal ganglia volume (Chaddock et al., 2012). Higher hippocampus volume may explain the association between fitness levels and memory since the hippocampus is known to aid in long

term memory consolidation. A study by Harveson et al. (2016) investigated cognitive performance through participation in moderate to vigorous physical activity and showed an increase in cerebral blood flow in the brain that resulted in enhanced cognitive performance. Chaddock et al. (2011) discovered that participation in aerobic fitness increased basal ganglia volumes related to cognitive performance, behaviors, and emotions; additionally moderate intensity physical activity can be effective in stimulating neural activity to enhance attention (Drollette et al., 2014).

Studies have suggested that physical activity may benefit executive function through different changes neurobiologically, especially at an adolescent age (Barenberg et al., 2011; Haverkamp et al., 2020). Within secondary school PE programs, research has shown that the inclusion of vigorous physical activity and aerobic exercise can produce positive reactions in the brain and improve cognitive functioning (Wassenaar et al., 2019). In addition to the benefits of participation in physical activity through PE with cognition, SEL skills are also able to be improved during time in PE.

Impact of Physical Activity on Social and Emotional Learning

According to CASEL, there are five competencies of SEL including self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, 2020). Through SEL, students learn to control emotions, create positive relationships, and generate problem solving skills which aid in academic and career success (Ciotto & Gagnon, 2018; Dyson, Howley, & Wright, 2021; Harvey, 2019). In SEL implementation, school climate is enhanced through the building of healthy relationships as well as academic achievement (Dyson, Howley, & Shen, 2021). The skills learned from SEL can help students succeed in

school, attain valuable relationships, and execute these skills to function in a normal workplace setting in the future (Dyson, Howley, & Shen, 2021).

Social and Emotional Learning has proved to be beneficial for both the short and long term, but the importance of SEL has really shown in the educational setting. Social and emotional learning provides people the required skills for positive introspection as they interact with peers across all grade levels, thereby mentally, physically, and emotionally developing in a general education setting (Dyson, Howley, & Wright, 2021). Goh et al. (2022) conveys the importance of SEL integrated into education because of the long-term benefits students receive by enabling them to work together and achieve goals. According to Wright et al. (2021), face-to-face interactions is where teachers assist students to interact with each other socially in groups; PE allows for those types of interactions to take place daily through numerous physical activity opportunities. Participation in physical activity, specifically sports programs, allow the students to interact with each other on a social level and practice teamwork and positive relationship building (Ekeland et al., 2005; Fraser-Thomas et al., 2007; Lubans et al., 2012).

Through PE, students are given opportunities to manage emotions, work on relationships, set goals for themselves, work on decision making and problem-solving skills while also working on physical activity (Ciotto & Gagnon, 2018; Dyson, Howley, & Shen, 2021). Physical education is reported to be a site for SEL development because it allows students and teachers to engage in lessons that are built around experiences that occur naturally through cooperative games and physical activity where students must engage in teamwork (Dyson et al., 2021; Dyson, Howley, & Wright, 2021; Opstoel et al., 2020; Teraoka et al., 2020;). When teachers can purposely integrate SEL into their PE classes, students are able to work on communication skills, apply learning cues, and practice teamwork (Wright & Richards, 2022). Sibley et al. (2006)

stated that with increased physical activity, children are given the opportunity to learn how to behave with their peers and learn how to control their actions. Students in both elementary and high school show benefits from social skills like developing relationships, respect, leadership, brainstorming, and communication skills (Opstoel et al., 2020). Students can learn valuable skills like working through conflicts to perform the same tasks later in life by learning how to listen and how to be a team player (Dyson, Howley, & Shen, 2021; Opstoel et al., 2020).

Despite ample research that documents the positive impact of participation in physical activity on executive function in older adults and elementary aged students, research is lacking for adolescents or high school aged students (Park & Etnier, 2019). Due to the lack of research at the high school level, it is an appropriate age group to investigate since adolescence is a key time for social, emotional, and cognitive development. (Dahl et al., 2018; Patton et al., 2016; Wassenaar et al., 2021). In addition, implementing SEL into PE classes has had positive results, and research is still limited in adolescence with most of the research focusing on elementary aged children (Ross & Tolan, 2018).

In summary, research that demonstrates the benefits of physical activity achieved through participation in PE on executive function and SEL in high school students can contribute to reform and policy change for more requirements for PE in high schools.

Purpose Statement

The purpose of this study was to investigate the impact of physical education on social and emotional learning and executive function in high school students.

Research Question 1: What are the perspectives of high school students regarding Social and Emotional Learning in physical education classes?

Research Question 2: How does participation in a physical education program over one school semester impact executive function in high school students?

Methods

A mixed methods approach was used for the study (Cresswell, 2014). An interpretive qualitative research approach guided the focus groups that included questions about SEL self-competencies. The key element for interpretive research is how the researcher explains or clarifies conversations and writings. Rowlands (2005), states interpretive research looks at different phenomena, not hypotheses or variables, and looks at what influences or is influenced by what is happening around them. Interpretive research displays the importance of how the participants explain their experiences in addition to researcher observations (Ennis, 2021).

Executive function was measured at three time points throughout the semester. Students completed a mobile flanker task on school iPads to measure executive function. A repeated measures ANOVA was used with SPSS statistical software to determine significance. Post hoc analysis with paired samples t-tests were done for significant values.

Program

The 9th grade PE class at a high school in rural Virginia was used for this research program. Students had the opportunity to receive an hour and a half of PE three days a week over a period of 17 weeks. In addition, the students received two Health lessons a week for an hour and a half each week over a period of nine weeks. The PE class consisted of a curriculum that aligns with the Virginia SOL standards for Health and PE for 9th grade students (VDOE: *Physical Education*, 2022). Physical Education lessons consisted of small-sided games, rules, and game play, and small and large group discussions at the end of class where the students talked about what they liked or did not like about the lesson, what could have gone better, etc.

Health lessons consisted of small group work, interactive learning strategies, and group discussions. In addition, lessons for Health and PE included SEL standards in each lesson over the 17-week period.

Participants

Institutional Review Board (IRB), Superintendent and principal, approval along with parental, consent and student assent were obtained prior to the project beginning. Parents and students were informed through a flyer at the high school Open House before the first day of school in August. Amanda Collins served as the teacher liaison. The teacher liaison collected parental consent and student assent. The researcher was not made aware of who had agreed to participate until after final grades were posted to reduce coercion or bias. The teacher liaison conducted the pre and post focus groups with students who participated in the study. The participants in this study were a convenience sample and included 9th grade male and female high school students enrolled in my PE class. There were 21 students enrolled in PE 9, and 19 of them assented and returned the parent consent forms. The 19 participants consisted of 14 males and 5 females with a mean age of 14.47 ± 0.69 . 9th grade students were chosen because this is the grade level that all students receive PE, and since adolescence is a key time for emotional and cognitive development, this age group is appropriate to investigate (Dahl et al., 2018; Patton et al., 2016; Wassenaar et al., 2021).

Research Question 1: Procedures and Data Collection

Focus groups were used to assess the perspectives of high school students regarding SEL in their PE classes. Students were given pseudonyms to protect identities. Focus group participants were selected from the students who had completed student assent and received parental consent. Pre and post focus groups took place towards the end of August through the

first of September. Amanda Collins, the teacher liaison, and a trained qualitative interviewer conducted the pre and post focus groups. The focus groups took place in the health room and lasted between 20-30 minutes. Triangulation was enhanced by pre and post focus groups, PTRA, demographic surveys and the flanker task.

An interpretive qualitative research approach (Rowlands, 2005) guided the interviews grounded in the literature and the five CASEL (2020) elements of SEL: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Rowlands (2005) suggests that interpretive research looks at different phenomena and looks at what influences participants by what is happening around them. The teacher liaison used a semi-structured interview style with open ended questions. With this approach, a semi-structured interview process had been pilot tested to improve the SEL questions explored with the 9th grade students (Jamshed, 2014). Refinement of questions through the pilot interviews allowed for the researcher and teacher liaison to ensure relevant and unbiased questions were asked. The focus groups were recorded with an audio recorder for transcription purposes only. Students were asked the same questions at the beginning of the year and at the end of the year to gain perspectives on SEL from the students. Various questions were asked during these focus groups including the following: “Why is it important to accept differences amongst your classmates”, “Describe why you would need to use teamwork”, etc. The list of focus group questions appears in Appendix D. I completed a journal entry once a week using the Post-Teaching Reflective Analysis (PTRA). The PTRA is made up of several questions to provide an opportunity for a teacher to critically reflect their teaching (Dyson, 2014). The PTRA can be found in Appendix G.

Pilot Studies

A pilot study was conducted to examine the perspectives of elementary and high school PE teachers' perspectives on SEL during a qualitative research class at the University of North Carolina at Greensboro (UNCG). I was trained to carry out focus groups as well as individual interviews. The pilot study was completed in a semester time span which reflected the same time allocated to complete this project. In addition, the teacher liaison and I practiced our interview techniques with other students at the high school. I was able to interview four groups of four students, and Amanda was able to interview two groups of four students. The pilot questions took around 20 minutes for students to answer, which was a realistic time frame for focus groups. This enabled us not only to practice but to discuss the relevance of interview questions for appropriateness for high school students and to determine if any questions needed to be revised or omitted. This pilot work helped the researcher and teacher liaison to fine-tune the focus group questions before data was collected at the high school.

Data Analysis

Thematic analysis was used to identify, code, and categorize patterns found in the focus group answers that reoccurred (Dyson, Howley, & Shen, 2021; Miles et al. 2014; Patton, 2015). Focus group answers were transcribed using rev.com (<https://www.rev.com>). Focus group answers were read several times and each transcription was checked against the original audio recording to ensure accuracy. Answers were entered into Google Sheets for initial analysis to mark codes for open and axial coding. I used open coding by breaking the student's answers into smaller pieces of text and created codes to determine common themes that were present throughout their responses (Allen, 2017; Emerson et al., 2011). I then used axial coding to find how the open codes were connected and how they could be grouped together (Allen, 2017). The

themes from the open coding and connections made through axial coding were identified and reported. The identities of the participants were anonymous and were used for thematic analysis only.

To enhance trustworthiness the researcher used various techniques like prolonged engagement that aided in the establishment of credibility and was helpful in this research (Cohen & Crabtree, 2006). Since the high school consists of grades 8-12, the teacher liaison and the researcher had already established a rapport with the students since we have taught them previously when they were in the 8th grade. We continued to build our teacher-student relationships throughout the fall semester. To increase dependability, peer debriefing was used that included colleagues, the teacher liaison, and the chair of my committee (Cohen & Crabtree, 2006).

Research Question 2: Procedures and Data Collection

All students enrolled in 9th grade PE for the fall semester had their executive function evaluated using a flanker task as part of the PE curriculum. Students completed a demographic survey that can be found in Appendix A to determine if students participated in other activities throughout the semester other than just PE. Students completed the flanker task at three different time points: before PE (1st day of PE classes), mid-term PE (2 months after beginning PE), and post PE (4 months after beginning PE). Students who were enrolled in 9th grade PE downloaded the free app called “Presentation Mobile” on school iPads through the Apple Store to take the flanker task, which measures executive function. The cognitive task was designed by Dr. Drollette at UNCG. The flanker task presents stimuli that look very similar to the tester; the tester is to focus on the central stimulus and ignore irrelevant distractor stimuli that are presented, thereby assessing cognitive control and inhibition (Davelaar, 2013; Drollette et al.,

2014; Eriksen B.A. & Eriksen, C.W., 1974; Eriksen C.W. & Hoffman, 1972; 1973; *Flanker Task*, 2021).

The flanker task was completed by all participants at the beginning of PE class in the health room at all three time points. Students were given the mobile app instructions which can be found in Appendix E. It was explained to students that this was to measure attention and completion of a mental task. Random ID numbers were given to the students to use as their login. Once logged in on school iPads, students viewed a short demonstration of the task through the app. The app presented goldfish that appeared on a blue background. Students were instructed to attend to the center target that had four other flanking stimuli that were either congruent or incongruent. Congruent trials are where all stimuli point the same way, even the target and incongruent trials are where the target image points in a different way from the flanking images (*Flanker Task*, 2021). Stimuli were presented focally on the iPad and students were to respond as quickly and accurately as possible by pushing on the side of the screen in the direction of the target. The stimuli were presented with a duration of 200 ms and an interstimulus value of variable 1100, ms, 1300 ms, and 1500 ms. Screen shot examples from the app can be found in Appendix I. The task took approximately 15 minutes for each student to complete. A study conducted by Sanders et al. (2018) concluded that the flanker task was feasible for school use and reliability was ≥ 0.73 . A full description of data storage and app description can be found in Appendix F.

Statistical Analysis.

A repeated measures ANOVA was used since there were three time periods using the same group of students to determine change (ZACH, 2018). SPSS statistical software was used to determine significance of the flanker task using the data from the beginning of the semester,

middle of the semester, and end of the semester in students who participated in PE. *Post hoc* analysis with paired samples t-tests were done for significant values.

Results

The following sections present the results of the focus groups of SEL. Findings are organized based on four main themes and categories that developed. During the pre-focus groups, students gave a few comments but not well thought out responses about SEL. Students could not give a uniform description before their participation in PE class. However, with the findings from the post focus groups, students were able to give specific examples of SEL competencies they were introduced to during PE class. Post Teaching Reflective Analysis (PTRA) observations were included with the themes that were connected between student answers. Details for the PTRA can be found in Appendix G.

Talking to each other

One of the five core SEL competencies outlined by CASEL is relationship skills, which focuses on people to establish relationships, communicate effectively, and work together with others (CASEL, 2021). Many students in the focus groups reported how communication was important while answering several different questions. They explained the importance of communicating with their teammates to come up with strategies, resolve conflicts, or when demonstrating leadership skills. Hugh was able to give a specific example from an activity that was completed in class while dealing with a conflict and worked to resolve it: “Through communication and trying to negotiate a little bit. Like we were playing dodgeball, and if we said the ball hit me and it didn't, then we had mixed opinions, and we would replay it and take it from there”. The PTRA from weeks 11 and 12 had classroom observations that talked about how students would talk to each other to come up with a solution if there was some sort of conflict or

disagreement. Lucas responded about the need to use teamwork stating, “If you don’t, you are usually going to lose a game or else you are not going to be able to communicate with your team...The whole point of social learning with this activity is to socialize.” Ben also noted the following: “If we are doing team sports you have to communicate...When we played volleyball, we had to talk to our teammates.”

Students also talked about leadership skills they used in class while coming up with strategies and communicating them with their team. Derek described an experience in PE as follows: “Like when we played capture the flag and I told people where we need to go to try to get the flag”. Week 15 PTRAs explained how students would group together to find a strategy to try to capture the flag from their opponents. Andrew explained when he used leadership it involved: “Whenever [they needed] an idea for an advance in the game we were playing, I stepped in and gave them that idea.”

During the interviews, the students were asked about the use of communication skills in PE. Derek said, “When we talk in our small groups and when we do teamwork in general making sure everyone understands the game plan and working on relationship skills with your teammates.” Corey also added “When we were playing a game that requires more than one person, you have to communicate.” In the interviews, students were asked how they have had to come up with a strategy and how they got to that outcome. Most students revealed that they communicated with their teammates about what they needed to do. Several students also mentioned that every sport they played in PE involved them coming up with a strategy. Kurt recalled a specific game from PE: “Like when we played Capture the Flag, we talked about a plan” Groups of students continued to come up with plans for Capture the Flag during week 15 as described in the PTRAs. Chris had a similar anecdote: “Every sport we have had to use

communication skills with our team.” Students were specifically asked about their perspective of what SEL looks like to them, and Jackson, in the post focus group, defined it as follows:

PE in general is very socializing experience and a social opportunity because you interact with people that you don't normally interact with on a day-to-day basis, or you build relationship skills with people that you don't ever normally socialize with...socializing is a great opportunity for people to learn how to interact with all sorts of different people.

Students were also asked about the role SEL had in their experiences in PE. Amelia said she was able to communicate with other students more effectively due to the way PE activities were designed: “Most of the time, the teams are randomized, so you are forced to talk to people that you haven't talked to before.” During the interviews students described examples of their SEL experiences, and they often gave examples from their PE class: Jackson revealed “I feel like we socialize a lot more, and it makes us feel better knowing that you might give someone a better opportunity that they might not normally have.” Corey had a similar recollection about his time in PE: “Communicating with other people inside the majority of the games we have played.”

Helping Others

Another component of relationship skills incorporates seeking and offering help to others when needed (CASEL, 2021). In their focus groups, students talked about how they helped others during PE class. During the focus groups, leadership skills in PE were discussed, and students mentioned specific examples. Melissa talked about how she had to help inexperienced players on her team: “When we were playing volleyball, I have people on my team who don't know how to play...and I have to help them.” David talked about similar experiences with other sports and how he had to help his classmates: “With leadership like to win the game like when we played basketball, we helped people get more involved with the game and helped them understand.” Students also talked about helping others when asked about communication skills

and the importance of accepting differences amongst their classmates. Jackson stated, “I have to communicate with them to help them understand what to do and how to do it”. Bryce also talked about helping others who may not be as skilled at certain areas: “Others may not be able to do what you can, which is okay, you just have to help them the best you can.” In addition, Bentley discussed his opportunity to assist classmates: “When we played volleyball...if they hit the ball as far as they can you should help them do it the right way...when we played flag football, I helped them get touchdowns”. The PTRAs from week four talked about the observations of how students worked together and helped their team come up with strategies to win the games they were playing. Morgan made the following observation: “Because no one is going to be good at everything, so you just have to help people with it.”

Students were specifically asked about their perspectives of SEL based on their experiences in PE class. In response, students explained how they helped someone during PE in terms of where to stand or how to play a game. Morgan said, “When you help everyone out...because not everyone knows exactly what to do ...so you have to like talk and help everyone out.” Students also talked about helping others in their responses to how those experiences made them act or feel. Allie recalled her experience in PE with the closing comments: “We always talk about it at the end of class like what we learned what we liked or disliked...if I see someone going through some stuff, I try to help them because I try to think about how they may feel.”

New Bonds

Additionally, the relationship skill SEL competency includes being able to establish relationships (CASEL, 2021). In their responses, students described how they were able to make new friends or form bonds from their experiences in PE. Eric described how teamwork allowed

for bonds between his classmates: “Teamwork helps you make bonds with people you don’t talk to.” Effective communication is also an integral part of SEL. Students recalled how they used communication through their experiences in PE by being on teams with classmates they normally did not talk to while they participated in class activities David mentioned communication skills in PE and being on a team with new people: “I could potentially get new bonds and potentially be friends with them later on”. He also talked about bonds during SEL experiences in PE and recalled the following: “Like when we are playing a game we have to talk to people on our team and form bonds with people on our team.” A few students thought back on how they interacted with their classmates through the way games were set up and how end of class discussions was incorporated into daily lessons. Lucas mentioned his relationships: “We have bonded because you are going to have to play with people that you don’t like because teams are set up as they are.” While describing experiences of SEL in their classes, Allie specifically mentioned our end of class discussions: “We talk about what we like and what we don’t like that really helps us form bonds.”

Numerous students stated that they were able to make new friends through their experiences in PE. Lucas described his relationships as: “When we have been doing health or PE...it’s usually two people bonding over winning a game or bonding that they did something good.” Students conveyed the importance of how they strengthened relationships with their current friends and developed bonds with new classmates they played with in PE through socialization in group activities. Eric expressed the following: “It helps you get closely involved with your friends and helps you make more friends.” Bryce also talked about “When we socialize with other people and make new friends.” David recalled “You can potentially make new friends.” Some students talked about how they noticed a positive change with their class and

how they have created stronger bonds with their classmates through their experiences in PE. At the end of the focus group if there were any comments they would like to make, Allie also explained the impact participation in PE had on the class: “Helped them come together...to make stronger bonds with each other”. Jackson also commented

I think this PE class has helped us as a grade like as a group as a whole to learn and change and think about others before we think about ourselves... and you may talk to different people that you have not normally talked to, and we have built up relationships.

Come up with a team strategy

Achieving goals, teamwork, and problem solving are all descriptions found in various SEL competencies including self-management, relationship skills, and responsible decision-making (CASEL, 2021). These competencies were found throughout several answers of how students had to use teamwork to accomplish the goal of winning games they played in PE through coming up with strategies. During the interviews, several students declared the importance of why it is better to have multiple people to help achieve goals or win the game. Hugh’s statement expresses this significance:

One person is not as good as multiple people. Like basketball it’s better to have five people rather than just one. If you wanna accomplish goals with your teammates it’s important to work together so that you can have people working toward a goal.

Allie reiterated this statement: “Two is better than one...two people can make a huge difference so if you have a whole team helping you can achieve more.” Students voiced how communicating a strategy with their teammates was a crucial part of how they tried to win games they played in PE. During the interviews, students were asked specifically about communication skills in PE, to which Lucas replied, “If you are on a team game and it’s kind of even and you have to communicate with tactics to figure out how to win the game or get the edge.” Bentley also mentioned during SEL experiences in their classes that they socialized to try to win games.

Andrew commented on the importance of strategizing with others: “When I have had to help my team and lead them to victory.”

Many students gave examples about times in PE class when they had to come up with specific strategies. Students mentioned times they had to problem solve with their teammates in game play during PE when they had to work together and come to a consensus on a strategy. Hugh recalled, “You are going to work with people and there will be problems and you need to have good teamwork skills to figure out how to solve problems”. Andrew also expressed: “If you have a team, you will be able to strategize with them and figure out how you can beat the other team.” Students talked about how leaders on the team got together and figured out certain strategies that would help them gain an advantage in their game play. Hugh talked about a similar activity from class: “Like when we were doing team dodgeball, we came up with a strategy to get this person out and collect as many balls as we can”. The PTRAs from week 11 and 12 also reiterated how the students came together during game play to talk and find strategies to try to win the game. Allie explained leadership and said, “When you are a team leader, and you make a plan, and everyone needs to listen and focus on what you are wanting or doing to solve a problem.” Another example from one of the activities experienced in PE is exemplified in Bryce’s statement:

With capture the flag we had to come up and see who was going to guard the ball and see who was good at running in. Once we found out who was good at guarding the ball they stayed there, and the other ones ran in for the ball and we won.

Andrew also talked about his perspectives of SEL: “Strategizing with everyone you are with and helping those that are in need and asking for help when you need it.” With their comments, students appeared to understand the value of their own social and emotional development.

Research Question 2 Results

A quasi-experimental, within-subject design was used with participants being tested at three different time points. The flanker task was administered to measure inhibitory control. The flanker task took place during the same time in the health room at the high school and was administered at least 7 weeks apart between each task. 21 students completed the task as part of their PE curriculum. After removing two students who did not obtain parental consent or student assent, 19 students remained. Data from two students was removed from the flanker analysis after screening the data revealed performances outside the mean in two or more conditions, suggesting that the respondent did not understand the instructions of the task or that the task was too difficult to complete. Statistical analysis was conducted on reaction time (RT) and response accuracy (RA) using SPSS software. Repeated measures ANOVAs were performed. Findings were reported using the Greenhouse-Geisser statistic with a significance level of $p=0.05$. Flanker RT and RA analyses were conducted using a 3 factor ANOVA of time, which included before PE, mid-term, and after PE and tested each congruent, incongruent, and interference scores for RT and RA. A main effect of time for congruent RT revealed a significant value at $p= 0.018$. Please refer to Table 1 for complete results of each factorial analysis.

Table 1. Values for Flanker Performance

Measure	Before PE	Mid-Term PE	After PE	p-value
Flanker Response Accuracy				
Congruent	76.3 ± 12.7%	66.3 ± 20.0%	69.5 ± 22.2%	0.074
Incongruent	59.8 ± 13.3%	51.3 ± 18.0%	55.8 ± 19.3%	0.100
Interference	16.4 ± 8.0%	15.1 ± 12.2%	14.0 ± 9.2%	0.499
Flanker Reaction Time				
Congruent	414.0 ± 74.0ms	369.4 ± 66.0ms	370.0 ± 55.0ms	0.018*
Incongruent	435.3 ± 80.5ms	397.7 ± 108.0ms	385.3 ± 89.4ms	0.213
Interference	22.0 ± 35.0ms	28.3 ± 49.0ms	16.0 ± 49.0ms	0.692

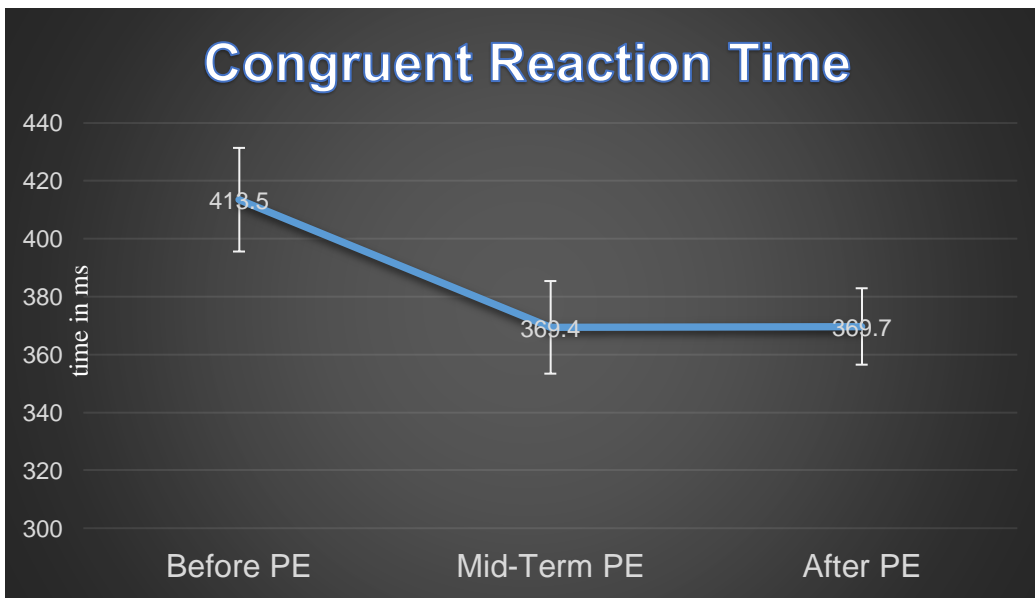
Values are presented with mean ± SD

$p \leq 0.05$

*indicates a significant score

Paired samples t-tests were conducted for *post hoc* comparisons. *Post hoc* tests revealed that the comparisons between before and mid-term PE for congruent RT yielded significant results with $p < 0.001$. Also, there were significant results with the comparison between before and after PE congruent RT with $p = 0.015$. No other main effects were revealed for RA in the congruent ($p = 0.074$), incongruent ($p = 1.000$), or interference ($p = 0.499$) trials or for RTs for incongruent ($p = 0.213$) or interference trials ($p = 0.692$). Figure 1 represents the mean results for congruent RT for before PE, mid-term PE, and after PE along with standard errors to identify a visual for the trend for congruent RT.

Figure 1. Congruent Reaction Time



Since congruent RT trials yielded the only significant results, an assumption can be made that students did get better in their general cognitive processing of information but not inhibitory control. The congruent RT trials improved based on the students' information processing, and they were able to get better and respond faster to stimuli from before PE to mid-term PE. This proves that they are doing better cognitively; however, we cannot say anything about inhibitory control because we did not observe any results or changes for incongruent trials or interference

scores across RA and RT. Therefore, there was a small benefit of being part of the PE class and the activity they completed within the class over the semester, and that benefit is related to the overall general cognitive improvements. There was a quick improvement suggesting a threshold effect from before PE to mid-term PE but not much from mid-term PE to after PE. A claim cannot be made that PE improved inhibitory control; however, based on the results with congruent RT, there was a general cognitive improvement since students processed the information faster. An assumption can be made that the general cognitive improvements are associated with the actual PE class from either the way the lessons were delivered or the actual activity they received in PE where they are doing things in class they may not have done before.

Discussion

The first research question of this study explored 9th grade PE student perspectives on SEL. The results indicated a connection between SEL competencies and what students experienced in PE. Students that are taught SEL competencies in their PE classes can use these skills at all stages in life. The SEL competencies are an integral part of education because of how those skills encompass responsible decision-making, social awareness, self-management, and self-awareness and relationship skills, which enhances the learning environment (CASEL, 2020). This supports preceding work that found that PE can develop students' skills related to goal setting, teamwork, emotional regulation, and relationship development (Ciotto & Gagnon, 2018; Dyson, Howley, & Shen, 2021, Ekeland et al., 2005; Fraser-Thomas et al., 2007; Lubans et al., 2012).

Survey data revealed only four students stated they would participate in sports teams for that semester, and only five students stated in their demographic surveys that they participated in extracurricular activities about 3-5 times a week. This information was used to determine what

students participated in outside of PE, in case this was contributing significantly to their overall physical activity levels. Such activities included band, coon hunting, theater, gardening, and playing video games. Even though the demographic survey revealed that minimal students participated in extracurricular physical activities or sports teams within that semester, during the focus groups, students provided examples of specific activities that they participated in from their PE class, for example communicating with their teammates and how they came up with certain strategies in games that they played in class. Based on the demographics of the students in this study, future studies should consider a more culturally diverse community and to recruit more participants.

The second research question of this study was to explore if PE impacted executive function in the same group of 9th grade students. The data suggests that the students' reaction time got faster indicating improved processing speed. No improvements were made for inhibitory control, which requires students to ignore distracting stimuli, since there were no improvements in incongruent trials or interference scores across RA and RT. Since their RT got faster over the semester this tells us they were able to process the information quicker on the trials where all fish pointed the same direction. If students can process information quicker, they are able to process the information in front of them automatically and without thinking about it, potentially causing learning to be more effective (Lovett et al., 2022).

The lack of improvement in inhibitory control may be related to a few factors including the smaller class size, which led to the smaller participant number, as well as the less developed frontal lobe for students in this age range (Johnson et al., 2009). This was also the first student to use this mobile device in a classroom setting. These factors will need to be considered when considering future research on inhibitory control to see if changes can occur with PE at this age

and if the measurement tools need any adjustment to fit this setting. Another reason could be because this is one of the first few studies to use a mobile device in a real-world setting and is one of the first to explore executive function in teenage years.

The results from this research shows the importance of incorporating SEL competencies, such as responsible decision-making and relationship skills, and integrating group activity opportunities, such as peer debriefing, peer teaching, and small sided cooperative games into PE. Integrating those activities allows students to learn how to interact with each other through building communication and relationship skills that are an essential part of education and human development. Further, such skills can be applied to a person's everyday life, school, and in careers.

Since executive function aids in the learning process, and PE has shown to have a positive impact on processing speed which is a measure within executive function, it is important to continue monitoring it with high school students. The incorporation of SEL competencies into PE classrooms through a variety of strategies also needs to be continued. Study findings can potentially be used to help reduce the marginalization of high school PE by demonstrating that PE with an emphasis on SEL can provide a more equitable and inclusive learning environment (James, 2011).

CHAPTER II: DISSEMINATION

The findings of this research project will be presented during a PowerPoint presentation to the principal and faculty during the first week of June. These stakeholders were chosen since the research took place at this rural high school in Virginia and to share recommendations for implementation of successful SEL strategies they can use in their own classrooms. By sharing the findings and implications, the hope is to reverse a trend at the school to pull students from PE for remediation and help staff to see the value of PE for academic success.

Overview

The hour-long session will provide background information, along with the results and implications, as well as best ways to implement strategies to increase SEL in all classrooms and to share the value of PE beyond increasing physical activity. After the initial presentation, the researcher will make updates and then share this with the Superintendent and School Board Members in August. The goal of this second presentation would be to show the positive impact of PE on SEL and executive function to demonstrate the value of PE and potentially result in greater support across the school system for PE. Another goal would be to gain permission to share this work more broadly so it can be copied at other schools. The presentation narrative is shared here, and the slides can be found in Appendix M.

Slide 1

Hello, my name is Brittany Belcher, and I am a Health and Physical Education Teacher. Today I am going to share my findings from my dissertation for Ed.D. in Kinesiology through the University of North Carolina at Greensboro. I hope you will be able to take away some key information on the importance of PE and the benefits it provides for SEL and executive function. I also hope that you will be able to use the strategies that I found successful in my own PE

classroom through the introduction of SEL competencies. Thank you for taking the time to be here today.

Slide 2

Just to give a little background information, according to the Virginia Department of Education, Physical Education or PE is delivered through a K-12 curriculum and is based on national standards where students learn to become physically active. Only 1 in 5 high school students meet the Physical Activity Guidelines for Americans that suggest that adolescents get 60 minutes of moderate to vigorous physical activity daily (*Lack of Physical Activity, CDC, 2021*). Virginia high schools do not have a time requirement for physical activity and only require two credits of PE to graduate for either a standard or advanced diploma (VDOE: *Physical Education, 2022*). For example, if a high school is grades 8-12 and they take a PE credit their 8th and 9th grade year technically they wouldn't have to have another PE credit the rest of their high school career. This can be a problem if that is the only physical activity they are receiving. PE classes are also being eliminated or able to be substituted for remedial coursework. We know PE is the class where students are commonly pulled from to finish their classwork or to review for upcoming end of year tests. When trying to figure out my dissertation topic I started looking for ways to try to argue for an increase in time for PE or to show the impact PE has on aspects that are important for learning. Despite ample research that documents the positive impact of participation in physical activity on executive function in older adults and elementary aged students, research is lacking for adolescents or high school aged students (Park & Etnier, 2019).

Slide 3

The next two slides will give a quick overview of SEL, executive function and their importance. First, SEL is a set of skills based on the five competencies that are shown here as

outlined by the Collaborative for Academic, Social and Emotional Learning, or CASEL. These competencies and skills can be applied to everyday life, school and later in their careers. It is an essential part of education and human development. What is the first thing that comes to mind when you think of a PE class besides exercise? For me it is cooperative games like basketball, football, baseball, or any other numerous games that require some form of teamwork and communication or coming up with strategies based on what you and your team have analyzed to try to win the game. That is what is so unique about the correlation between PE and SEL because PE classrooms allow this to happen naturally. To ensure that SEL competencies are being achieved, they need to be taught and emphasized. The five competencies of SEL include self-management which places an emphasis on impulse control and organizational skills, social awareness focuses on empathy and respect for others, relationship skills are exactly what it sounds like, teamwork and relationship building, responsible decision-making stresses the importance of identifying problems and then solving those problems, and finally self-awareness is how one acknowledges their own emotions and possessing self-confidence (CASEL 2020).

Slide 4

Executive function is an umbrella term for different cognitive and memory skills that take place, therefore making it crucial for the learning process. Some of the major executive function skills that I have highlighted here are cognitive flexibility, inhibition, and behavior, and working memory. Cognitive flexibility is where you can look at things from a different perspective and adapt to changes. Especially with high school kids when they are changing classes, they can adapt to that change from going to one class or another. Cognitive inhibition and behavior is the ability to tend to one task over another so if you are sitting beside of someone in class and your classmates are whispering you can pay attention to what your teacher is saying and not what your

classmates are saying or if you are up working on lesson plans or grading papers, we know it is so easy to pick up your phone and check Tik Tok or Facebook but with your cognitive inhibition you are able to ignore that impulse. Lastly, with working memory is your ability to retrieve information and use it later so you can listen to the lecture from your teacher and go home later that evening and complete your assignments. As you can see there are some similarities between executive function and SEL for example between the social awareness competency and cognitive flexibility by looking at things through different perspectives and between cognitive inhibition and the self-management competency that deals with impulse control (Diamond, 2012)

Slide 5

The purpose of this study was to investigate the impact of PE on SEL and executive function in high school students. The first research question investigated the perspectives of high school students regarding SEL in physical education classes and research question two looked at how participation in a physical education program over one school semester impacted executive function in high school students?

Slide 6

The research took place at a rural public high school in Virginia with students who were enrolled in my 9th grade PE class. I had 21 students enrolled in my class and 19 participated in the study.

Slide 7

For this research study, a SEL focus was added to the PE classes and focus groups were held pre and post PE to determine the impact of the SEL focused curriculum on students. Students were asked questions like “Why is it important to accept differences amongst your classmates”, “Describe why you would need to use teamwork”, based on SEL competencies.

Open coding, which looks for reoccurrences of statements, and axial coding which draws connections, were used to create a code book, and determine meaning from student responses.

Slide 8

During the pre-focus groups, students gave limited comments about SEL that were not well thought out. They couldn't give a uniform description before their participation in PE class. However, with the post focus group answers, students gave specific examples of SEL competencies that were taught during their PE class. For example, one student shared a team strategy when he recalled how they worked together to get the other team out in dodgeball. The four main themes that emerged based on focus group answers were talking to each other, helping others, come up with a team strategy, and new bonds. These are actual quotes from the students. To point out one of the quotes in coming up with a team strategy this student mentioned a particular game that we played in class. I used a post teaching reflective analysis after each weekly lesson, and that allowed me to go back and look at lessons and see the connection of certain themes between student answers and what I observed. For example, one student commented again about the dodgeball game and said if the ball hit me and it didn't, we would replay it and take it from there and my notes confirmed that. This was able to be observed during the class that students were able to cooperatively work through problems together. The results indicated a connection between SEL competencies and what students experienced in PE as described through their focus groups answers.

Slide 9

To assess executive function, I used a mobile app designed by Dr. Drollette at UNCG that administers the flanker task. The flanker task presents stimuli that look very similar to the tester; the tester is to focus on the central stimulus and ignore irrelevant distractor stimuli that are

presented, thereby assessing cognitive control and inhibition (*Flanker Task*, 2021). In short, my students lovingly referred to this as the “fish game” that measured their reaction time and response accuracy. Participants were tested at 3 different time points that occurred in August (before PE began), October (mid-term PE) and again in December (after PE). Trials consisted of congruent where all flankers point the same way even the target, and incongruent where the target image points in a different way from the flanking images (*Flanker Task*, 2021). I have provided a picture for you to see as an example. If I could have a few volunteers, I have a few iPads here that are ready to go for you to test the app out for yourself.

Slide 10

The executive function results showed that the students congruent reaction time got significantly faster, which means students processed the information quicker on trials that had the fish all pointing in the same direction, from before PE to the middle of PE and then slightly faster from the middle of PE to the end of PE meaning they are doing better cognitively. However, students did not get better with their inhibitory control, so them not being able to ignore distractors, but their speed in cognitive processing did. Slow processing of information can impact problem solving and can hinder completing assignments and tasks (Lovett et al., 2022). If students can process information quicker, they are able to process the information in front of them automatically and without thinking about it. Therefore, the quicker information can be processed, the more effectively a student can learn (Lovett et al., 2022). This tells us since the results indicated their RT got faster over the semester, they were able to process the information quicker which is imperative for learning. We can also assume that the improvement is associated with the actual PE class from either the way the lessons were delivered or the actual activity they received in PE where they were doing things in class they may not have done before since the

change was not a linear change that you would see in the case of cognitive developments during adolescence.

Slide 11

With these findings I have been able to change the way I teach my own PE classes. I have found that the incorporation of small-sided group activities, cooperative games, and group activities during health class gave students an opportunity to problem solve, learn to work together, and talk to each other in a respectable manner. Using group activities to practice SEL competencies is a resourceful way for students to learn and apply those skills in classroom settings. Today, I would like to tell you about some of the activities I had success within my classroom that you may be able to take back into your classroom.

Slide 12

My first suggestion is for any group activity that randomization of groups is used. I use a website called Random Lists (<https://www.randomlists.com/team-generator>) to split the teams. This allows students to work with other classmates they would not normally have chosen. Students will be able to learn about their classmates and possibly form new friendships.

Slide 13

For each PE lesson that was taught, I used small-sided games to encourage communication, problem-solving skills, and to teach fundamental skills imperative for game play. This was a big hit in my classroom. For example, if we were playing Ultimate Frisbee that day, I randomly split the groups into 4 different teams. The amount and number of people on each team will depend on the number of students in your class. Students then participated in throwing a frisbee in a relay game which worked on communication, problem solving, and working together to reach a common goal. During Health lessons, students completed various

group activities like escape rooms, listing pros and cons of the use of social media, and evaluating case studies.

Slide 14

Using peer teaching in your classroom is another activity that allows students to work on communication skills, leadership skills, and helping others. You could use this for a variety of lessons; I used it for a basketball lesson. I picked out four students in my classroom that had prior basketball knowledge and had them at different stations that consisted of shooting form, dribbling, passing, and defense. I randomly assigned students to the different stations. After about 10 minutes at each station, students were instructed to go to the next station. Students would switch stations until everyone had visited each station.

Slide 15

One other activity I would like to leave you with is peer debriefing. You can assign random groups for each week and have them talk at the end of class about the activities they enjoyed or did not enjoy or what they felt could have gone differently with the lesson. Give them about 2-3 minutes to discuss amongst themselves. Then, have the students come together as an entire class and talk about the lesson. The use of peer debriefing allows students to work on communication skills and to accept differences amongst their classmates. We are going to do this activity to lead us into our discussion after the closing of this presentation.

Slide 16

These activities can be adapted for core classroom teachers. Group activities, peer teaching, and class discussions can be an integral part of the curriculum and is easy to incorporate into any lesson. It is important to point out that based on these findings, our school and school system should focus on allowing students to stay in PE class for the full amount of

time instead of pulling students for remedial course work, meetings, etc. since this could be a potential detriment. The time students are allowed to spend in PE shows benefits in cognitive processing of information and SEL competencies which can be beneficial for learning and to school performance. I have provided a QR code that will allow you to view my lesson plans if you are interested in using any of the other strategies I used in my classroom.

Closing

Now we are going to go through the debrief process so you can get a chance to experience it. I will use the random generator to split you into groups. Once in your groups, I would like for you to talk together with your group about ideas that you may have for translating these strategies into your own classrooms. Each person in your group should share at least one answer and then decide on one or two that your group will share back with the full group. Also, within your small group talk about one key takeaway from the presentation or one thing you may need more explanation about. We will regroup in about five minutes to share your responses and answer any questions you still may have.

CHAPTER III: ACTION PLAN

The findings of this research help demonstrate the importance of SEL competencies in PE and how PE can positively impact executive function. Sharing these findings and implications will take many forms and are shared in this chapter. Some will be directed towards the school where the work took place while other things will be done to share the findings more broadly at the local, regional, and national levels. Additional exploration of the topic will be done to find out more, and potentially lead to even greater support of PE as a tool to teach SEL and improve cognitive function.

Short-Term Action Plan

As outlined in Chapter II, I plan to disseminate the findings to main stakeholders through a PowerPoint presentation. By sharing the findings and implications, the hope is to reverse a trend at the school to pull students from PE for remediation and help staff to see the value of PE for academic success. The hour-long session will provide background information, along with the results and implications, as well as best ways to implement strategies to increase SEL in all classrooms and to share the value of PE beyond increasing physical activity. I will make updates based on this first session and then present to the Superintendent and School Board Members in August.

I am going to share this with my students so they can see why I design the lessons the way I do and how PE can help them academically. I also plan to meet with other PE teachers in the area to go over my presentation and share strategies. In August, during our beginning of the year, teacher workday, I will present this presentation to our Superintendent and school board members. By presenting to our Superintendent, I can share the SEL strategies I used in my own classroom as well as the results from participation in PE on executive function. I also plan to

present the findings to all high school teachers during our second teacher workday in August before the start of the new school year. I will share the strategies I used in my own classroom and after the presentation we will discuss other strategies and best practices that we can include in our classrooms to implement SEL and to increase time in PE.

Long-Term Action Plan

Within the next year I would like to present my findings using the PowerPoint presentation in surrounding school systems to share the strategies I used in my classroom and the importance of allowing students to stay in PE. I plan on continuing to implement the SEL strategies into my daily PE lesson plans to increase group involvement and promote SEL competencies. I will continue to use the PTRAs to record how lessons went and will add in a student feedback session for each week where students will complete a Google Form for student reflections and comments about the weeks lesson. I also plan to meet with local colleges to share my work and talk with their students in teacher prep classes about the importance of SEL and ways they could implement it into their own lessons. Within the next year, I would like to present this project to larger audiences at the state, regional and national level like SHAPE America.

I would like to take this research a step further and investigate other 9th grade students enrolled in high school in the surrounding county and potentially other grade levels at my current high school. Then, I would like to branch out to other surrounding school systems and complete similar research on SEL perspectives of high school students enrolled in PE. I would also like to reach out to other high school grades and look at schools that are not on block scheduling regarding executive function to see if there is a difference from being in PE for an entire school year as opposed to one semester.

Within that same time frame, I want to advocate on Speak Out Day which helps educate Congress and legislatures about the importance of PE and usually takes place in February of each year (SHAPE, 2023). Speak Out Day. Also, within the next year or two, I plan to submit manuscripts to relevant journals such as the *Journal of Physical Education Recreation and Dance (JOPERD)*, *Society of Health and Physical Education (SHAPE) Journal*, and the *Journal of Physical Activity and Health (JPAH)*. One long term goal is to change the Virginia graduation requirements to include more than two credits of PE to graduate. The findings from this study help demonstrate that benefits of PE for students' academic success can show that time in PE is beneficial for students. This work will continue to educate PE and core classroom teachers both in the short term and long term.

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APPENDIX A: DEMOGRAPHIC SURVEY



Demographic Survey- 9th Grade PE Fall Semester 2022

This survey is to see what kinds of activities you participate in and your experiences in PE. There are no right or wrong answers.

Student id

Your answer _____

What is your age?

Your answer _____

What is your race?

- Caucasian
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other: _____

What is your gender identity?

- Male
- Female
- Other

Do you participate in any extracurricular activities during this semester (i.e. gardening, theater, forensics, art, travel sports teams, etc)?

Yes

No

If you answered YES to the question above, what activities do you participate in?
Mark ALL that apply.

Gardening

Theater

Forensics

Art

Other

N/A

If you answered OTHER to the question above, what activities do you participate in?

Your answer _____

How many times a week do you participate in those activities? If this doesn't apply to you write N/A.

Your answer _____

Do you/will you play on any sports teams this semester?

Yes

No

If you answered YES to the previous question, what sports do you plan to participate in? Mark ALL that apply.

Football

Volleyball

Football Cheerleading

Cross Country

Basketball

What have you liked about high school PE? If you have not had high school PE yet, just put N/A.

Your answer

What have you disliked about high school PE? If you have not had high school PE yet, just put N/A.

Your answer

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APPENDIX B: PACING GUIDE

SOL's	Activity
	<p>August 18 & 19th</p> <p>Classroom Rules and Expectations/Executive function pre-testing for all students.</p>
<p>PE SOL's</p> <p><u>9.1 Motor Skill Development</u> The student will perform all basic movement skills and demonstrate movement and biomechanical principles in a variety of activities that may include outdoor pursuits, fitness activities, dance and rhythmic activities, aquatics, individual performance activities, and games and sports (net/wall, striking/fielding, and goal/target [s]).</p> <p>a. Demonstrate proficiency and refinement in locomotor, non-locomotor, and manipulative skills through appropriate activities (e.g., orienteering, rock climbing, cycling, disc golf, lifetime activities, fitness activities, dance and rhythmic activities, aquatics, individual performance activities, games, and sports [net/wall, striking/fielding, and goal/target]).</p> <p>b. Design, implement, evaluate, and modify a practice plan for a self-selected skill, including the motor learning process of analysis of performance, application of principles of movement and training, goal setting, and improvement of personal skills through practice, correction, practicing at a higher level, and reassessment.</p> <p><u>9.4 Social and Emotional Development</u> The student will explain and demonstrate the skills needed to be safe, responsible, and respectful in all physical activity settings.</p> <p>a. Identify and demonstrate proper etiquette, respect for the differences of others, integrity, safety, and teamwork while engaging in a variety of activities.</p> <p>b. Explain the effects of sports and activities in developing respect for the unique characteristics, differences, and abilities of peers.</p> <p>c. Apply conflict-resolution skills in physical activity settings.</p> <p>d. Identify an opportunity for social support in a self-selected physical activity.</p> <p>e. Apply communication skills and strategies that promote positive team/group dynamics.</p> <p>f. Apply problem-solving and critical-thinking skills in physical activity settings, both as an individual and in groups.</p> <p>g. Apply best practices for participating safely in physical activity, exercise, and dance (e.g., injury prevention, proper alignment, hydration, use of equipment, implementation of rules, sun protection).</p> <p>h. Analyze and compare psychological benefits derived from various physical activities (e.g., decreased stress and anxiety, increased self-esteem, increased mental alertness, improved mood).</p> <p>i. Develop and analyze activities to determine areas of exclusion and inclusion.</p>	<p>Week 1 and 2 August 22-26 August 29-September 2</p> <p align="center">Volleyball</p> <p>(Rules, passing, serving, setting, spiking, small sided games, game play, queens of the court)</p>

<p>Health SOL's (Week 1) 9.1 The student will apply health knowledge and skills to achieve and maintain long-term health and wellness. <u>Body Systems</u> a. Identify and describe the major structures and functions of the endocrine system.</p> <p>9.2 The student will explain the impact of health risks and identify strategies and resources to limit risk. <u>Body Systems</u> a. Identify health risks and other factors that affect the function of the endocrine system.</p> <p>9.3 The student will demonstrate skills to advocate for personal and community health. <u>Body Systems</u> a. Promote behaviors that protect endocrine system health.</p> <p>Health SOL's (Week 2) 9.1 <u>Nutrition</u> b. Explain the differences between fat-soluble and water-soluble vitamins, food and non-food sources of vitamins, the role of vitamin and mineral supplements, and associated dietary reference intakes (DRIs) to maintain health. c. Explain organic, fresh, farm-raised, "lite," low-fat, and fat-free foods.</p> <p>9.2 <u>Nutrition</u> b. Analyze personal daily intake to determine if one is meeting daily values for vitamins and minerals. c. Explore community resources for purchasing locally grown or sourced foods, including the concept of farm-to-table/restaurant.</p> <p>9.3 <u>Nutrition</u> b. Create one or more S.M.A.R.T. goals for personal consumption of vitamins and minerals and develop a plan to meet them. c. Explore careers associated with healthy food choices (e.g., dietetics, nutrition, farming, environmental science, food production, food safety, restaurant ownership).</p>	<p>Health- 2 Days (Week 1) <u>Body Systems</u> -Structures & functions of the endocrine system -Health risks of endocrine system -Promote behaviors to protect endocrine system</p> <p>Health- 2 Days (Week 2) <u>Nutrition</u> -Explain differences between vitamins, mineral supplements, DRIs -Analyze daily intake & create goals -Food sources/choices</p>
<p>PE SOL's 9.1 a, b 9.4 a-i</p> <p>Health SOL's 9.1 <u>Physical Health</u></p>	<p>Week 3 September 5-9 Badminton (Rules, small sided games, doubles games, class game)</p>

<p>d. Describe the prevalence, causes, and long-term consequences of unhealthy eating, sleep deprivation, extended screen time, and sedentary lifestyle.</p> <p>9.2 <u>Physical Health</u> d. Explain the physical, mental, and academic benefits of proper nutrition, sleep and rest, physical activity, maintaining a healthy body weight, and other personal wellness behaviors.</p> <p>9.3 <u>Physical Health</u> d. Design a wellness plan for physical activity, sleep, rest, and nutrition to meet current health goals.</p>	<p>Health- 2 Days</p> <p><u>Physical Health</u> -Consequences of unhealthy eating, sleep deprivation, sedentary lifestyle, etc. -Benefits of proper nutrition -Wellness plan</p>
<p>PE SOL's 9.1 a, b 9.4 a-i</p> <p>Health SOL's 9.1 <u>Disease Prevention/Health Promotion</u> e. Identify common types of chronic disease including diabetes, heart disease, cancer, obesity, and stroke. f. Define herd immunity and explain how immunizations can prevent the spread of diseases. g. Describe the importance of health habits that promote vision, hearing, and dental health.</p> <p>9.2 <u>Disease Prevention/Health Promotion</u> e. Identify behaviors that contribute to heart disease, stroke, diabetes, cancer, obesity, and other chronic diseases and conditions. f. Understand the difference between an epidemic and a pandemic and how they impact populations. g. Determine strategies to protect vision, hearing, and dental health.</p> <p>9.3 <u>Disease Prevention/Health Promotion</u> e. Assess personal risk factors for diabetes, heart disease, cancer, obesity, and stroke, and develop personal prevention strategies. f. Analyze data on the spread of diseases and develop personal prevention strategies based on information analyzed. g. Promote vision, hearing, and dental health.</p>	<p>Week 4 September 12-16</p> <p>Flag Football (Rules, mini scrimmages, handoff relays, passing, sharks and minnows' game, game play)</p> <p>Health- 2 Days <u>Disease Prevention/Health Promotion</u> -Chronic diseases (diabetes, heart disease, cancer, obesity, stroke) -Herd immunity, immunizations, pandemics, etc. -Vision, hearing, dental health</p>
<p>PE SOL's 9.1 a,b 9.4 a-i</p> <p>Health SOL's 9.1 <u>Substance Abuse Prevention</u></p>	<p>Week 5 September 19-23</p> <p>Archery (Rules/Safety, practice shooting, 21, pop balloons, group vs group shoot)</p>

<p>h. Explain how alcohol and other drugs increase the risk of injury. i. Analyze the consequences of binge drinking. j. Explain facts about opioids and why teens are more vulnerable to heroin and prescription opioids.</p> <p>9.2 <u>Substance Abuse Prevention</u> h. Evaluate the effects of alcohol and other drugs on human body systems, brain function, and behavior, and describe health benefits associated with abstaining from alcohol, tobacco, or other drugs. i. Develop a set of personal standards to resist the use of alcohol, tobacco, and other harmful substances and behaviors. j. Analyze and draw inferences about behaviors connected to addiction and mental health.</p> <p>9.3 <u>Substance Abuse Prevention</u> h. Promote ways to encourage reporting peer substance use to trusted adults (e.g., parents, teachers, coaches, doctors). i. Develop a personal plan to prevent substance use. j. Research consequences of drug abuse, including stealing to support a drug habit, arrest, prosecution, and jail.</p>	<p>Health- 2 Days</p> <p><u>Substance Abuse Prevention</u> -Alcohol & drug effects/risks -Promote reporting substance abuse -Teen vulnerability -Addiction & mental health</p>
<p>PE SOL's 9.1 a,b 9.4 a-i</p> <p>Health SOL's 9.1 <u>Safety/Injury Prevention</u> k. Identify behaviors that contribute to injuries and that may result in irreversible consequences. l. Define traumatic and non-traumatic brain injury and identify examples of each, including concussion. m. Describe actions, behaviors, and signs that may indicate potential threats to individuals or the school. n. Identify effective time-management and organizational skills.</p> <p>9.2 <u>Safety/Injury Prevention</u> k. Evaluate the long-term consequences of injury and describe controllable and uncontrollable risk factors. l. Identify common signs/symptoms (e.g., cognitive, emotional, physical, sleep) of a concussion. m. Analyze level of risk associated with a variety of behaviors, including weapon use and gang involvement. n. Identify strategies to respond to and report potential threats to individuals or the school.</p> <p>9.3 <u>Safety/Injury Prevention</u></p>	<p>Week 6 September 26-30</p> <p>Ultimate Frisbee (Rules, small sided passing games, game play)</p> <p>Health 2- Days <u>Safety/Injury Prevention</u> -Identify behaviors that contribute to injuries -Traumatic/non-traumatic brain injuries -Identify signs/symptoms -Strategies to prevent</p>

<p>k. Demonstrate adult and child cardiopulmonary resuscitation (CPR), use of automated external defibrillator (AED), and first aid skills for choking, bleeding, contusions, fractures, and anaphylactic shock.</p> <p>l. Advocate for reporting signs and symptoms and or safety practices to prevent brain injury.</p> <p>m. Demonstrate healthy decision-making strategies related to risky behaviors.</p> <p>n. Develop action steps to promote a safe and inclusive school environment.</p>	
<p>PE SOL's 9.1 a,b 9.2 g 9.4 a-i</p> <p>Health SOL's 9.1 <u>Mental Wellness/Social and Emotional Skills</u> o. Describe the positive and negative effects of social media and of sharing personal information online. p. Identify signs and symptoms of mental illnesses or challenges (e.g., anxiety, depression, suicide, eating disorders, and self-harm behaviors). q. Identify causes of conflict with friends and family and feelings/emotions both sides might experience. r. Identify types of gangs, gang-related behaviors, and associated consequences.</p> <p>9.2 <u>Mental Wellness/Social and Emotional Skills</u> o. Analyze how time management might contribute to stress reduction. p. Explain limitations to effective communication online. q. Identify school and community mental health resources to help and assist with mental illnesses or challenges. r. Identify strategies for peaceful resolution of conflict.</p> <p>9.3 <u>Mental Wellness/Social and Emotional Skills</u> o. Create strategies to manage deadlines for a school-related activity (e.g., studying for a test, completing a project). p. Create strategies to manage personal information and communicate effectively online, and balance technology use with offline activities. q. Promote access to mental health resources to help oneself and others. r. Apply appropriate conflict-resolution skills to prevent, manage, deescalate, defuse and/or resolve conflict in a variety of situations</p>	<p>Week 7 October 3-7 (Proposed Executive Function Mid-Term Testing)</p> <p>Wiffle Ball (Rules, batting with partners, throwing/relays, baserunning/relays, game play)</p> <p>Health- 2 Days <u>Mental Wellness/Social and Emotional Skills</u> -Mental illnesses or challenges -Conflict with friends/family -Gangs, gang-related behaviors, associated consequences -Peaceful resolution</p>
<p>PE SOL's 9.1 a,b 9.2 g 9.4 a-i Health SOL's</p>	<p>Week 8/9 October 10-14/ October 17-21 Basketball (Rules, dribbling, shooting, small sided games, game play)</p>

<p>9.1 <u>Violence Prevention</u> s. Identify risky behaviors adolescents engage in, including weapon use and gang involvement.</p> <p>9.2 <u>Violence Prevention</u> s. Examine how the consequences associated with gang involvement could affect oneself, the family, and the community in the present and the future.</p> <p>9.3 <u>Violence Prevention</u> s. Create a message about the importance of avoiding gang involvement.</p> <p>Health SOL's</p> <p>9.1 <u>Community/Environmental Health</u> t. Identify health-related social issues, such as homelessness, underage drinking, and substance abuse. u. Identify global environmental health issues.</p> <p>9.2 <u>Community/Environmental Health</u> t. Evaluate strategies for improving health-related social issues. u. Examine the impact of global environmental health issues on local communities.</p> <p>9.3 <u>Community/Environmental Health</u> t. Develop a long-term plan for oneself and/or the family to positively impact health-related social issues. u. Promote global environmental health and/or disease prevention projects.</p>	<p>Health- October 11th & 13th (Week 1) <u>Violence Prevention</u> -Identify risky behaviors -Weapon use -Gang involvement -Consequences & avoidance</p> <p>Health- October 18th and 20th (Week 2) <u>Community/Environmental Health</u> -Social issues (homelessness, underage drinking, substance abuse) -Global environmental health issues -Impact of issues (global & local)</p>
<p>P.E. SOL's 9.1 a,b 9.4 a-i</p>	<p>Week 10 October 24-28</p> <p>Pickleball (Rules, practice hitting, small sided games, queens of the court, game play)</p>
<p>P.E. SOL's 9.1 a,b 9.4 a-i</p>	<p>Week 11/12 October 31-November 4/ November 7-11</p> <p>Swamp Ball/ Team Dodgeball/ Spider Ball/ Take Cover (Rules, game play)</p>

PE SOL's

9.1 a,b

9.2 Anatomical Basis of Movement

The student will explain the structures and functions of the body and how they relate to and are affected by human movement.

a. Analyze and evaluate proficient and efficient movement in relation to how movement is directed, including the type of muscle action that directs a movement (concentric, eccentric, and isometric), the direction the body part moves relative to its joints (abduction, adduction, flexion, and extension), and planes of motion.

b. Describe the relationship between the endocrine system and the body's metabolic response to short- and long-term physical activity.

c. Explain the body's response to the principles of specificity, overload, and progression (SOP) in relation to frequency, intensity, time, and type of exercise (FITT).

d. Explain the anaerobic respiration (ATP-PC and lactic acid system) and aerobic respiration systems used for energy during activity.

e. Analyze movement performance and use feedback to learn or to improve the movement skills of self and others.

f. Apply the concepts and principles of levers, force, motion, and rotation to a variety of activities.

g. Apply biomechanical principles of balance, energy, and types of muscle contractions to a variety of activities.

9.3 Fitness Planning

The student will evaluate current fitness behaviors and demonstrate achievement and maintenance of a health-enhancing level of personal fitness by designing, implementing, self-assessing, and modifying a personal fitness program.

a. Demonstrate program-planning skills by assessing and analyzing personal fitness levels, setting goals, devising strategies, making timelines for a personal physical fitness plan, and evaluating the components and progress of the personal fitness plan.

b. Apply the FITT (frequency, intensity, time, type of exercise) principle and other principles of training, such as overload, specificity, and progression, in accordance with personal goals to the personal fitness plan.

c. Explain the characteristics, including scientific principles and concepts, of safe and appropriate muscular-stretching, muscular-strengthening, and cardiorespiratory exercise programs to improve the health-related components of fitness.

d. Calculate and explain the relationship between resting heart rate, target heart rate, recovery heart rate, blood pressure, training zones, and exercise intensity, including measurement devices (e.g., heart rate monitors, pedometers, accelerometers) to meet exercise and personal fitness goals.

e. Demonstrate appropriate techniques and describe the benefits of resistance-training activities, machines, and/or free weights.

f. Use the scientific process to analyze and compare resources, including available technology, to evaluate, monitor, and record activities for fitness improvement.

g. Identify types of strength exercises (isometric, concentric, eccentric) and stretching exercises (static, proprioceptive neuromuscular facilitation, dynamic) for personal fitness development (e.g., strength, endurance, range of motion).

Week 13

November 14-18

Circuit Training/Fitness Testing

(Rules, group workouts, individual testing)

<p>h. Define and describe terms and activities associated with fitness, including <i>set, repetition, isometric, isotonic, isokinetic, core,</i> and <i>upper-body exercises</i> and <i>lower-body exercises</i>.</p> <p>i. Apply physiological principles of warm-up, cool down, overload, specificity, and progression.</p> <p>9.4 a-i</p> <p>9.5 Energy Balance</p> <p>The student will explain the importance of energy balance and evaluate current caloric intake and caloric expenditure to maintain optimal health and prevent chronic disease.</p> <p>a. Explain the body’s physiological response to sugar, sodium, and fat.</p> <p>b. Assess and analyze current energy balance, including intake and expenditure, activity levels, food choices, and amount of sleep.</p> <p>c. Explain body composition, using body mass index (BMI) and other measures, the variety of body types, and healthy body weight.</p> <p>d. Design and implement a plan to maintain an appropriate energy balance for a healthy, active lifestyle, including a balanced intake, expenditure (levels of intensity), and sleep.</p>	
<p>PE SOL’s 9.1 a,b 9.4 a-i</p>	<p>Week 14 November 28- December 2</p> <p>Capture the Flag (Rules, game play)</p>
<p>PE SOL’s 9.1 a,b 9.4 a-i</p>	<p>Week 15 December 5-9</p> <p>Mat Ball (Rules, game play)</p>
<p>PE SOL’s 9.1 a,b 9.4 a-i</p>	<p>Week 16 December 12-16</p> <p>Floor Hockey (Rules, small sided games, game play)</p>

APPENDIX C: SAMPLE LESSON PLANS

Week 1

Teacher: Brittany Belcher Subject Area: Health and Physical Education Grade: 9

Activity: Volleyball Skills/Endocrine System

Date: August 22nd-26th 2022

Standards of Learning (SOL)	Essential Questions
<p>PE SOL's</p> <p>9.1 The student will perform all basic movement skills and demonstrate movement and biomechanical principles in a variety of activities that may include outdoor pursuits, fitness activities, dance and rhythmic activities, aquatics, individual performance activities, and games and sports (net/wall, striking/fielding, and goal/target [s]).</p> <p>a. Demonstrate proficiency and refinement in locomotor, non-locomotor, and manipulative skills through appropriate activities (e.g., orienteering, rock climbing, cycling, disc golf, lifetime activities, fitness activities, dance and rhythmic activities, aquatics, individual performance activities, games, and sports [net/wall, striking/fielding, and goal/target]).</p> <p>b. Design, implement, evaluate, and modify a practice plan for a self-selected skill, including the motor learning process of analysis of performance, application of principles of movement and training, goal setting, and improvement of personal skills through practice, correction, practicing at a higher level, and reassessment.</p> <p>9.4 The student will explain and demonstrate the skills needed to be safe, responsible, and respectful in all physical activity settings.</p> <p>a. Identify and demonstrate proper etiquette, respect for the differences of others, integrity, safety, and teamwork while engaging in a variety of activities.</p> <p>e. Apply communication skills and strategies that promote positive team/group dynamics.</p> <p>f. Apply problem-solving and critical-thinking skills in physical activity settings, both as an individual and in groups.</p>	<p>PE Questions</p> <ul style="list-style-type: none"> • What are the rules for Volleyball? • Why is it important to follow safety procedures for Volleyball? • Why is serving an important skill to master in Volleyball? • Why is setting an important skill to master in Volleyball? • What movement principles will be used to participate in Volleyball? How can all these skills, or games, help you live a healthy lifestyle? • How does working together in small groups allow you to work on teamwork?

<p>Health SOL's</p> <p>9.1 The student will apply health knowledge and skills to achieve and maintain long-term health and wellness. <u>Body Systems</u></p> <p>a. Identify and describe the major structures and functions of the endocrine system.</p> <p>9.2 The student will explain the impact of health risks and identify strategies and resources to limit risk. <u>Body Systems</u></p> <p>a. Identify health risks and other factors that affect the function of the endocrine system.</p> <p>9.3 The student will demonstrate skills to advocate for personal and community health. <u>Body Systems</u></p> <p>a. Promote behaviors that protect endocrine system health.</p>	<p>Health Questions</p> <ul style="list-style-type: none"> • What are the major functions of the endocrine system? • What are health risks that affect the endocrine system? • What are healthy behaviors to support the endocrine system?
<p style="text-align: center;">Anticipatory Set (Hook)</p> <p>PE: Students will watch a video on the rules of Volleyball https://www.youtube.com/watch?v=jxhuopeNAHE.</p> <p>Health: Students will watch a video on the Endocrine System.</p>	
<p style="text-align: center;">Continuing Understanding</p> <p>PE Understandings Students will improve locomotor and nonlocomotory skills while participating in team games and applying movement principles. Students will also gain knowledge of a competitive game that can be used later in life. Students will acquire knowledge from small group work that will strengthen social and emotional development through teamwork and problem-solving skills.</p>	<p style="text-align: center;">Student Objectives</p> <p>PE Understandings Students will learn different techniques and fitness skills to help lead a healthier lifestyle and develop/improve motor skills. Students will learn a variety of social and emotional skills like teamwork, accepting differences, and problem-solving skills through work in small groups. Communication and strategy skills will also be demonstrated during</p>

<p>Health Understandings The student will learn that the endocrine system regulates many processes in the body, including mood, growth and development, tissue function, metabolism, sexual function, and reproduction.</p>	<p>small group work with passing, setting, spiking, and serving.</p> <p>Health Understandings The student will be able to describe the major structures and functions of the endocrine system, research health risks that affect the endocrine system, and promote healthy behaviors to support endocrine system health.</p>
<p>Schedule</p>	
<p>Monday August 22nd, 2022</p> <p style="text-align: center;">Rules/Passing</p> <p>11:35-11:40: Students will dress out. 11:40-11:45: Students will walk/jog. 11:45-12:00: Students will stretch and do agilities. 12:00-12:50:</p> <ol style="list-style-type: none"> 1.) Students will watch a video describing the rules of Volleyball. 2.) Students will be shown a demonstration of the proper way to pass (bump). <p>Passing Learning Cues:</p> <ul style="list-style-type: none"> • Make a platform with arms by making a fist with one hand and cupping it with the other. • Move feet to get under the ball. • Knees should be bent. • Extend arms, body, and knees to the ball. • DO NOT swing your arms, meet the ball with your arms. <p>3.) Students will pair up in groups of 2 to begin practicing passing Students will toss the ball to their partner while they hit it back and their partner catches it. This will continue until the passer has hit 20 balls. They will then switch roles.</p>	

We are working in small groups to meet the SEL:

- Relationship Skill Competency: Students will work together to bump the ball. Students will work with their teammates through social engagement and communication to bump the ball. There will be small groups of 2-3 students to allow for communication amongst teammates to work on teamwork. We will work on SOL 9.4 e to promote positive team and group work.

4.) Students will then play “Golf” where students must work closely together to get through the different “holes” of the course by either passing or setting the ball to each other and through obstacles.

We are implementing teamwork to meet the SEL:

- Self-Management Competency: This will be achieved through setting goals and through self-motivation to get to the desired outcome.
- Relationship Skill Competency: Students will have to communicate to work through the course through communication and social engagement. Students will be working on relationship building by communicating with each other as they work through the course as outlined in 9.4 e.
- Social Awareness Competency: Students will learn to work with others of different skill levels and appreciate diversity and respect for others as they learn to work through the course as outlined in 9.4 a.
- Self-Awareness Competency: Students will be able to recognize their strengths as the team works on different skill sets. The student can gain self-confidence through practicing their skill set through the “Golf course”.
- Self-Management: Students will work on impulse control through the “Golf course” by controlling their actions and not showing anger towards their teammates or others as outlined in 9.4 a by being responsible and respectful in activity settings.

5.) Students will then get into groups of 3 and see a demonstration of the Russian Pass Drill, which works on passing and moving your feet. Students will form a line with one person in the middle while the two partners on the outside throw a ball. The person in the middle must drop step to move their feet and get to the ball and pass the ball back to the tosser. They will drop step again to receive the ball from the other tosser. The passer will hit 10 balls and then switch with their partner until everyone has gotten the chance to go.

We are working in small groups to meet the SEL:

- Relationship Skill Competency: Students will work on communication and social engagement while building relationships with their partners while working with each other in small groups as outlined in 9.4 e to apply communication skills.

12:50-12:55: Student-Self Assessment Group Discussion.

- Get students talking about what went well during the lesson.
- What do we need to work on?
- Students will critique the activity in pairs and then in groups through comparing and contrasting the activity with other activities they have experienced.

12:55-1:00: Students will dress back out.

Tuesday August 23rd, 2022

Health

Endocrine System Structures and Functions

11:35:1:00

1.) Students will be introduced to the endocrine system.

https://www.youtube.com/watch?v=YOe_HQZOCdM

2.) Students will be introduced to the functions of the endocrine system.

3.) Resources will be used from the URL below as well as our textbook to go over the endocrine system.

https://healthsmartva.org/uploads/rteitor/file/gr9-bod-1-endocrine-system_rev2021.pdf

4.) Students will engage in group discussions about the lesson and answer questions from the teacher.

Group discussions will meet the SEL:

- Self-Awareness Competency: Students will be able to answer questions confidently after learning material to be able to answer questions and lead discussions with their peers.
- Social Awareness Competency: Students will have group discussions about the lesson and learn to listen and appreciate diversity and respect for others through these discussions.
- Responsible decision-making: Students will have the opportunity to identify problems and work on solving problems through small group discussions.

Wednesday August 24th, 2022

Passing & Setting

11:35:11:40: Students will dress out.

11:40-11:45: Students will walk/jog.

11:45-12:00: Students will stretch and do agilities.

12:00-12:50:

1.) Students will warm up passing while continuing to work on passing with different partners.

We are working in small groups to meet the SEL:

- Relationship Skill Competency: Students will work on communication while passing through social engagement through their work in small groups. SOL 9.4 e is addressed through communication with partners.

2.) Students will get into groups of 4 and work on passing in larger groups. Students will form a circle and will work together to try to hit the ball 21 times. The ball can only hit the ground once.

We are implementing teamwork to meet the SEL:

- Self-Management Competency: Students will set goals for themselves while working on self-motivation to keep the ball from hitting the floor.
- Relationship Skill Competency: Students will work on communication through social engagement and teamwork in their small groups. SOL 9.4 e and f will be addressed through the small group game.
- Social Awareness Competency: Students will work with others while working as a group and showing respect for others with different skill levels while working on SOL 9.4 a.
- Self-Awareness Competency: Students will be able to recognize their strengths and focus on self-confidence through passing with their teammates.
- Self-Management: Students will work on impulse control while playing the small group game by learning to control when they get mad at others for mistakes.

3.) Students will be shown a demonstration of the proper form. for setting.

Setting Learning Cues:

- Elbows high
- Make a diamond shape with your hands using your thumb and index fingers.
- Bend knees.
- Quick "catch" and push with your fingers.

- Extend your arms and wrist.
- Pretend you are catching a water balloon to help you get the feel of not "stabbing" at the ball.

4.) Students will then practice setting the ball against the wall trying to keep it up for 10 touches without it hitting the ground.

We are doing individual work to meet the SEL:

- Self-Awareness Competency: As students work on individually setting the ball, they will recognize strengths and gain self-confidence through practice of the setting skills.

5.) Students will then get back into groups of 2 and begin setting back and forth to each other. They will set 20 balls each.

We are working in small groups to meet the SEL:

- Relationship Skill Competency: Students will work on communication and teamwork through setting the ball to each other in their small group. SOL 9.4 e is being worked on through this skill with their partners.

12:50-12:55: Student-Self Assessment Group Discussion.

- Get students talking about what went well during the lesson.
- What do we need to work on?
- Students will critique the activity in pairs and then in groups through comparing and contrasting the activity with other activities they have experienced.

12:55-1:00: Students will dress back out.

Thursday August 24th, 2022

Health

Endocrine System Health Risks and Positive Behaviors

11:35-1:00

1.) Students will learn about behaviors that protect the endocrine system. The URL below will be used for resources as well as our

textbook. https://healthsmartva.org/uploads/rteeditor/file/gr9-bod-1-endocrine-system_rev2021.pdf

2.) Students will be in teams and participate in the Endocrine System Escape Room.

3.) Google Form Quiz will be assigned for Homework on the endocrine system.

We are working in small groups to meet the SEL:

- Self-Awareness Competency: Students will have the opportunity to work on self-confidence and strengths through working through the escape room.

- Social Awareness Competency: Students will look at the perspectives of others and respect others' opinions and their differences through their teamwork in the escape room.
- Self-Management Competency: Students will work on impulse control through work with others. The small groups will set their goals to move through the escape room and work on organizational skills to solve the problems.
- Responsible Decision-Making Competency: Students will identify and solve problems while analyzing situations that arise in the escape room.
- Relationship Skills Competency: Students will need to use communication through social engagement and teamwork to move through the escape room.

Friday August 25th, 2022

Spiking & Serving

11:35-11:40: Students will dress out.

11:40-11:45: Students will walk/jog.

11:45-12:00: Students will stretch and do agilities.

12:00-12:50:

1.) Students will be shown a demonstration on how to spike.

Spiking Learning Cues:

- Use a three-step approach on a 45-degree angle. A right-handed spiker should have a left, right, left sequence.
- Jump off two feet.
- Throw both arms in air with elbow of hitting arm high (like throwing action).
- Contact point is slightly in front of shoulder with arm fully extended.
- Contact is made with an open hand over the ball. Top spin is created by snapping wrist.
- Cushion landing by having knees bent.

Students will work on the proper footwork for spiking by performing just the footwork 20 times. Students will then work on proper footwork plus adding a jump for 10 times.

We are working individually to meet the SEL:

- Self-Awareness Competency: Students will be able to work on strengths through working on individual footwork.

2.) Students will take turns setting the ball to groups of spikers. Everyone will go through the hitting lines, and everyone will take turns being the setter and the spiker.

We are working with our classmates to meet the SEL:

- Social Awareness Competency: Students will work together and will be able to learn respect for others. SOL 9.4 a will be demonstrated through showing a respect for others and their differences or skill sets.
- Responsible Decision-Making Competency: Students will have to evaluate the correct timing to spike the ball from the setter.
- Self-Management Competency: Students will work on self-motivation and self-discipline through working on their spiking footwork and timing.
- Relationship Skills Competency: Students will have to use communication through social engagement and teamwork in being able to receive the ball from their setter to properly spike it. SOL 9.4 e will be demonstrated using communication with their teammates.

3.) Students will be shown the proper form for serving overhand and underhand.

Underhand Serve Learning Cues:

- Face your target.
- Hold the ball in medium space with your non-striking hand (imagine the ball sitting on a batting tee).
- Use a bowling motion (step with the opposite foot and bring your striking hand back).
- As your open hand comes forward, strike the ball with the heel of your hand.
- Do not toss the ball in the air during the striking motion.
- Follow through toward your target.

Overhand Serve Learning Cues:

- Align shoulders square to the net facing the target area. Step forward with the foot opposite the striking/serving hand.
- Toss the ball, 3-4 feet above your head and in front of the serving shoulder.
- Strike the ball with an open hand in one continuous motion ("Swing through the ball").
- Keep your eyes on the ball ("See actual contact take place").
- Follow through with the striking hand in the direction of the ball.
- Transfer weight from your back foot to the front foot.

Students will be split into 2 groups and will serve balls back and forth starting from the attack line and will start with underhanded and work their way to overhanded as they feel comfortable.

4.). Students will then play a serving game. One person will be the server while the rest of the team goes to the opposite side of the net. The server will serve the ball over the net while trying to aim for their teammates. The teammate must catch the ball in the air without it hitting the ground. If they catch the ball, they go to join their teammate and begin to serve, working on the goal of getting all their teammates up first before the other team does.

We are implementing teamwork to meet the SEL:

- Self-Management Competency: Students will work on motivation and goal setting through trying to perform a specific task for the serving game.
- Relationship Skill Competency: Students will work on communication through social engagement with their teammates. They will use teamwork to work toward a common goal. Communication is the key component for SOL 9.4 e.
- Social Awareness Competency: Students will learn respect for others and respect of differences through the playing of the serving game. SOL 9.4 a will be for students to identify the differences of their teammates and opponents.
- Self-Awareness Competency: Students will work on self-confidence and recognizing their strengths in achievement through this game.
- Self-Management: Students will work on impulse control and managing anger towards themselves and their teammates.

5.) We will then play another serving game where students will be on the same team. Everyone will start out serving except for one teammate that will be on the other side of the net. The person on the other side of the net will make a circle with their arms. They are allowed to move to where the serve is going. The object is to serve the ball through the circle. Whichever teammate makes the serve through the circle goes and joins the other teammate and makes a bigger circle. Play will continue until all teammates have served the ball through the circle and joined their teammates on the other side and sit down before the other team.

We are implementing teamwork to meet the SEL:

- Self-Management Competency: Students will work on motivation and goal setting through trying to perform a specific task for the serving game.
- Relationship Skill Competency: Students will work on communication through social engagement with their teammates. They will use teamwork to work toward a common goal. SOL 9.4 e and f will be addressed as they will have to talk to their teammates and come to a conclusion for the best strategy to try to win the game using problem-solving and critical-thinking skills.

<ul style="list-style-type: none"> • Social Awareness Competency: Students will learn respect for others and respect of differences through the playing of the serving game. Learning to accept the differences of others and skill levels will be addressed through SOL 9.4 a. • Self-Awareness Competency: Students will work on self-confidence and recognizing their strengths in achievement through this game. • Self-Management: Students will work on impulse control and managing anger towards themselves and their teammates. <p>12:50-12:55: Student-Self Assessment Group Discussion.</p> <ul style="list-style-type: none"> • Get students talking about what went well during the lesson. • What do we need to work on? • Students will critique the activity in pairs and then in groups through comparing and contrasting the activity with other activities they have experienced. <p>12:55-1:00: Students will dress back out.</p>	
<p>Diagnostic Formative Assessment</p>	<p>Summative Assessment</p>
<p>PE The teacher will evaluate each student's performance through observation and critique as necessary.</p> <p>Health Students will complete a variety of activities like the Escape Room to check for understanding of material as well as quizzes on Google Forms over the material covered.</p>	<p>PE The progression of each student will be monitored daily.</p> <p>Health A test on Google Forms will be completed to check for understanding.</p>

WEEK 8

Teacher: Brittany Belcher

Subject Area: Health and Physical Education

Grade: 9

Activity: Basketball (Part 1)/ Violence Prevention

Date: October 10th-October 14th, 2022

Standards of Learning (SOL)	Essential Questions
<p>PE SOL's</p> <p>9.1 The student will perform all basic movement skills and demonstrate movement and biomechanical principles in a variety of activities that may include outdoor pursuits, fitness activities, dance and rhythmic activities, aquatics, individual performance activities, and games and sports (net/wall, striking/fielding, and goal/target [s]).</p> <p>a. Demonstrate proficiency and refinement in locomotor, non-locomotor, and manipulative skills through appropriate activities (e.g., orienteering, rock climbing, cycling, disc golf, lifetime activities, fitness activities, dance and rhythmic activities, aquatics, individual performance activities, games, and sports [net/wall, striking/fielding, and goal/target]).</p> <p>b. Design, implement, evaluate, and modify a practice plan for a self-selected skill, including the motor learning process of analysis of performance, application of principles of movement and training, goal setting, and improvement of personal skills through practice, correction, practicing at a higher level, and reassessment.</p> <p>9.4 The student will explain and demonstrate the skills needed to be safe, responsible, and respectful in all physical activity settings.</p> <p>a. Identify and demonstrate proper etiquette, respect for the differences of others, integrity, safety, and teamwork while engaging in a variety of activities.</p> <p>e. Apply communication skills and strategies that promote positive team/group dynamics.</p> <p>f. Apply problem-solving and critical-thinking skills in physical activity settings, both as an individual and in groups.</p>	<p>PE Questions</p> <ul style="list-style-type: none"> • What are the rules for Basketball? • Why is it important to follow safety procedures for Basketball? • Why is dribbling an important skill to master in Basketball? • Why is passing an important skill to master in Basketball? • Why is defense an important skill to master in Basketball? • What movement principles will be used to participate in Basketball? How can all these skills, or games, help you live a healthy lifestyle? • How does working together in small groups allow you to work on teamwork?

<p>Health SOL's</p> <p>9.1 <u>Violence Prevention</u> s. Identify risky behaviors adolescents engage in, including weapon use and gang involvement.</p> <p>9.2 <u>Violence Prevention</u> s. Examine how the consequences associated with gang involvement could affect oneself, the family, and the community in the present and the future.</p> <p>9.3 <u>Violence Prevention</u> s. Create a message about the importance of avoiding gang involvement.</p>	<p>Health Questions</p> <ul style="list-style-type: none"> • What are the risks involved in weapon use and gang involvement? • What are consequences associated with negative behavior that can affect you, your family, your community? • What is a positive message you can send about avoiding gang involvement?
<p style="text-align: center;">Anticipatory Set (Hook)</p> <p>PE: Students will review the rules and skill sets of Basketball. Health: Students will watch a video on Violence Prevention.</p>	
<p style="text-align: center;">Continuing Understanding</p>	<p style="text-align: center;">Student Objectives</p>
<p>PE Understandings Students will improve locomotor and nonlocomotor skills while participating in team games and applying movement principles. Students will also gain knowledge of a competitive game that can be used later in life. Students will acquire knowledge from small group work that will strengthen social and emotional development through teamwork and problem-solving skills.</p>	<p>PE Understandings Students will learn different techniques and fitness skills to help lead a healthier lifestyle and develop/improve motor skills. Students will learn a variety of social and emotional skills like teamwork, accepting differences, and problem-solving skills through work in small groups. Communication and strategy skills will also be demonstrated during small group work with passing, setting, spiking, and serving.</p>

<p>Health Understandings The student will be able to describe risky behaviors identified with violence.</p>	<p>Health Understandings The student will learn about violence prevention and the risks associated with violence and the consequences that can stay with them for the future. Students will also learn ways to prevent violence through positive behaviors.</p>
<p>Schedule</p>	
<p>Monday October 10th, 2022</p> <p style="text-align: center;">Rules/History/Skills</p> <p>11:35-11:40: Students will dress out. 11:40-11:45: Students will walk/jog. 11:45-12:00: Students will stretch and do agilities. 12:00-12:50:</p> <p>1.) Students will be shown a video of the rules and history of Basketball. https://www.youtube.com/watch?v=AdGeedbIIfg https://www.youtube.com/watch?v=Q7SIQhiJNfY https://www.youtube.com/watch?v=LsASn1k0o9s</p> <p>2.) Students will be shown the proper mechanics for dribbling, passing, shooting, offense, and defense. 3.) Students will be split into 4 even groups. Each group will go to a station that consists of dribbling, passing, shooting, and defense/offense. Each group/station will have a “peer teacher” to help teach the lesson to the other students.</p> <p>Dribbling Learning Cues:</p> <ul style="list-style-type: none"> • Eyes up. • Use your finger pads. • Keep the ball at your side for control. 	

- Keep the ball at waist level or lower.
- Keep the ball in your "foot pocket" which is done by dropping the right foot behind your left foot (right handers). This will help control the ball and protect it from defenders.

Bounce Pass Learning Cues:

- Spread fingers along the sides of the basketball.
- Start the ball at chest level.
- Keep the knees bent.
- Release the ball by extending arms downwards.
- Upon release, turn palms outward towards the floor.
- Ball should contact the ground two-thirds of the way to the receiving player.

Chest Pass Learning Cues:

- Square body to target.
- Thumbs against chest--elbows bent and out.
- Step toward the target.
- Extend arms fully releasing ball to target.
- Thumbs should now be pointing down.

Overhead Pass Learning Cues:

- Grab the ball and place it, with both hands, over the back of your head.
- Utilizing your arm strength, throw the ball to a receiving teammate.
- Snap your wrists.
- Aim to throw the ball near the recipient's chest, making it easy for them to catch.

Lay-Up Learning Cues:

- Approach the basket on a 45-degree angle.
- Step with the outside foot followed by the inside foot.
- Lift the ball to approximately eye level with both hands.
- Place the shooting hand behind and under the ball.
- Place the shooting hand behind and under the ball.

- Bank the ball off the backboard.

Jump Shot Learning Cues:

- Start with your shooting hand on the bottom of the ball and your "support" hand on the side of the basketball.
- Your shooting elbow should be directly underneath the basketball.
- To shoot you should bend your knees and jump up in the air.
- "Push" the basketball towards the back of the rim while at the top of your jump.
- Follow through and finish with your hand in the "Cookie Jar." (Which will look like your fingertips are in the goal)

Shooting Learning Cues:

- Balance the ball on your shooting hand.
- Elbow stays directly under the ball and over your knee.
- Eye on the target (the front of rim).
- Follow through snapping the wrist high over your head.

Defensive Learning Cues:

- Stand with your feet a little more than shoulder width apart.
- Stand on the balls of your feet.
- Drop your hips and bend your knees.
- Keep your back straight.
- Keep your hands up.
- Watch the offensive player's waist.
- If the opponent moves, you will "slide" with the offensive player to protect the basket and restrict potential scoring options for the offensive team.

Offensive Learning Cues:

- Move to an open spot on the floor.

- Try to get open for your teammates to pass you the ball.
- If you are open and you get the ball, look for the goal to shoot, or for a teammate who is open, maybe closer to the goal.
- Try to move the ball around until your team can get the best opportunity to score.

5.) Students will stay at each station for 10 minutes.

6.)

- Students in the Dribbling station will be shown again how to dribble. Students will work on stationary dribbling using left and right hands while the “Peer Teacher” helps, answers questions, and gives feedback to the students.
- Students in the Passing station will partner up and work on different types of passing such as bounce pass, chest pass, and overhead pass. The “Peer Teacher” will help answer questions and give feedback to the students.
- Students in the Shooting station will work on shooting form, stationary shooting, jump shots, and layups. The “Peer Teacher” will help answer questions and give feedback to the students.
- Students in the Defense/Offense group will learn how to play defense and offense and the tactics involved to try to stop the defender, or how to score. The “Peer Teacher” will help answer questions and give feedback to the students.

We are working in small groups to meet the SEL:

- Relationship Skill Competency: Students will work with their teammates through social engagement and communication. Peers will work together to achieve the goal at each station while working on the different Basketball Skills. We will work on SOL 9.4 e to promote positive group work. Social Awareness Competency: Through Peer Teaching students can work on showing understanding and empathy

for their classmates as they work together to teach and learn Basketball skills.

12:50-12:55: Student-Self Assessment Group Discussion.

- Get students talking about what went well during the lesson.
- What do we need to work on?
- Students will critique the activity in pairs and then in groups through comparing and contrasting the activity with other activities they have experienced.

12:55-1:00: Students will dress back out.

Tuesday October 11th, 2022

Health

Violence Prevention

11:35-1:00

1.) Students will be introduced to Violence Prevention .

<https://www.youtube.com/watch?v=Kjj27IFU3DA>

2.) Students will learn about risky behaviors and consequences associated with violence of different kinds.

3.) Resources will be used from the URL below as well as our textbook to go over nutrition.

<https://healthsmartva.org/9th-grade>

4.) Students will engage in group discussions about the lesson and answer questions from the teacher.

5.) Students will play the “Phone game” to communicate with their classmates and show how things get misinterpreted or misunderstood going from person to person which could result in conflict.

Group discussions will meet the SEL:

- Self-Awareness Competency: Students will be able to answer questions confidently after learning material to be able to answer questions and lead discussions with their peers.
- Social Awareness Competency: Students will have group discussions about the lesson and learn to listen and appreciate diversity and respect for others through these discussions.

- Responsible decision-making: Students will have the opportunity to identify problems and work on solving problems through small group discussions.

Wednesday October 12th, 2022

Dribbling and Passing Games/Drills

11:35-11:40: Students will dress out.

11:40-11:45: Students will walk/jog.

11:45-12:00: Students will stretch and do agilities.

12:00-12:50:

1.) Students will be split into two separate teams using a random generator.

2.) Dribbling games will consist of:

- Relays: Each team will dribble down the court and back and then hand the ball off to their partner. We will do this multiple times using left hand only, right hand only and then going down with the right hand and back with the left hand. First teams to finish wins.
- Students will then play Sharks and Minnows where everyone will have a ball and they will dribble as each person tries to knock the ball away from their opponents. As the students get eliminated, the playing area shrinks that they must stay in. Last one standing wins.
- Students will play Tic Tac Toe in two different groups. Students will dribble down, place their color in the box, and dribble back. First team to get a Tic Tac Toe wins.

Passing Game:

- Students will be on different teams depending on the number of students. Passing relays will consist of overhead passes, chest passes, and bounce passes.

We are working in small groups and teamwork to meet the SEL:

- **Relationship Skill Competency:** Students will work together to achieve the outcomes of each game. Students will work with their teammates through social engagement and communication to talk to each other and encourage each other throughout game play. We will work on SOL 9.4 e to promote positive team and group work.
- **Self-Management Competency:** This will be achieved through setting goals and motivating themselves to get to the desired outcome.
- **Social Awareness Competency:** Students will learn to work with others of different skill levels and appreciate diversity and respect for others including their teammates as well as their opponents as outlined in SOL 9.4 a.
- **Self-Awareness Competency:** Students will be able to recognize their strengths as their team works on the different skills necessary for playing Basketball. The student can gain self-confidence through practicing their skills as games progress.
- **Self-Management:** Students will work on impulse control by controlling their actions and not showing anger towards their teammates or opponents as outlined in 9.4 a by being responsible and respectful in activity settings.

12:50-12:55: Student-Self Assessment Group Discussion.

- Get students talking about what went well during the lesson.
- What do we need to work on?
- Students will critique the activity in pairs and then in groups through comparing and contrasting the activity with other activities they have experienced.

12:55-1:00: Students will dress back out.

Thursday October 13th, 2022

Health

Violence Prevention

11:35-1:00

1.) Students will learn about the importance of preventing violence for themselves, families, and communities.

2.) Students will participate in the Instances of Violence Activity where students are asked to think about instances of violence that have occurred in their community. They will answer questions about how safe and comfortable they feel at school, in their neighborhood, and how these instances affect their feelings of safety and comfort. Students will share their answers with the class and will complete a group discussion.

3.) Students will complete the Conflict Resolution Activity where they will write down things that stress them out on a piece of paper. It will be anonymous. They will crumple it up and throw it around the room until they hear the word stop. Students will pick up one piece of paper and read it. This helps work on empathy and active listening to their peers and to identify signs and symptoms of stress and how to manage stress in positive ways.

Group discussions will meet the SEL:

- Self-Awareness Competency: Students will be able to answer questions confidently after learning material to be able to answer questions and lead discussions with their peers.
- Social Awareness Competency: Students will have group discussions about the lesson and learn to listen and appreciate diversity and respect for others through these discussions.
- Responsible decision-making: Students will have the opportunity to identify problems and work on solving problems through small group discussions.

3.) Google Form Quiz will be assigned for Homework on Violence Prevention.

We are working in small groups to meet the SEL:

- Self-Awareness Competency: Students will have the opportunity to work on self-confidence and strengths through talking through their presentation.

- **Social Awareness Competency:** Students will look at the perspectives of others and respect others' opinions and their differences through their teamwork in finding alternative meal choices.
- **Self-Management Competency:** Students will work on impulse control through work with others in finding alternative meal choices.
- **Responsible Decision-Making Competency:** Students will identify and solve problems while analyzing the different choices they could decide on for a healthy meal choice.
- **Relationship Skills Competency:** Students will need to use communication through social engagement to talk about the different alternatives they come up with and come to a final decision everyone agrees on.

Friday October 14th, 2022

Shooting and Offense and Defense Games

11:35-11:40: Students will dress out.

11:40-11:45: Students will walk/jog.

11:45-12:00: Students will stretch and do agilities.

12:00-12:50:

1.) Students will be split into two teams to play a shooting game. Students will shoot from opposite sides from the goal (but from the same spot). The first person in each line will shoot first, if the shot is made the team gets one point, if the shot is missed no point is received. The shooter will then go get their own rebound and pass it to their teammate to continue the game. The first team to 5 wins. Students will then move to another spot on the floor and start over with the game.

Remind students of shooting learning cues.

We are working in small groups and teamwork to meet the SEL:

- **Relationship Skill Competency:** Students will work together to play the shooting game. Students will work with their teammates through

social engagement and communication to encourage each other and work together. We will work on SOL 9.4 e to promote positive team and group work.

2.) Students will then participate in a game of knock-out. This is an individual game where students will line up in a line and shoot from a spot on the floor. The first and second person in the line have the basketballs. The first person shoots the ball and if it is missed runs to get their rebound and tries to shoot the ball again while the person behind them shoots and tries to make it before the person in front of them does. If the person behind them makes it before the person in front, the person in front is out. Game play continues until there is only one person left.

We are doing individual work to meet the SEL:

- Self-Awareness Competency: As students work on individually shooting the basketball, they will recognize strengths and gain self-confidence through practice of the setting skills.

3.) Students will be split into two teams and do a layup relay. One team will dribble the length of the court and shoot a right-handed lay up while the other team dribbles down and shoots a left-handed layup. The whole line will go through and the team that makes the most layups wins.

We are working on teamwork to meet the SEL:

- Self-Management Competency: This will be achieved through setting goals and motivating themselves to get to the desired outcome.

- **Relationship Skill Competency:** Students will have to work as a team by scoring and dribbling the ball down the court. Students will have to use communication and social engagement. Students will be working on relationship building by communicating with each other as they work through to play the game as outlined in 9.4 e.
- **Social Awareness Competency:** Students will learn to work with others of different skill levels and appreciate diversity and respect for others including their teammates as well as their opponents as outlined in SOL 9.4 a.
- **Self-Awareness Competency:** Students will be able to recognize their strengths as their team works on the different skills necessary for playing Basketball. The student can gain self-confidence through practicing their skills as the game progresses.
- **Self-Management:** Students will work on impulse control by controlling their actions and not showing anger towards their teammates or opponents as outlined in 9.4 a by being responsible and respectful in activity settings.

5.) Students will then compete in a 3 on 2, 2 on 1 drill that works on passing, defense, and shooting in a small group setting. You will have 3 offensive players against 2 defensive players. Whoever shoots the ball in the offensive group goes back down the floor to play defense on the group of two that will now be the offensive group. The two people now stay for defense while a new group of 3 comes down the court and this goes on continuously.

We are working in small groups and teamwork to meet the SEL:

- **Relationship Skill Competency:** Students will work together to play the defensive game. Students will work with their teammates through social engagement and communication to encourage each other and work together. We will work on SOL 9.4 e to promote positive team and group work.

<p>10:50-10:55: Student-Self Assessment Group Discussion.</p> <ul style="list-style-type: none"> • Get students talking about what went well during the lesson. • What do we need to work on? • Students will critique the activity in pairs and then in groups through comparing and contrasting the activity with other activities they have experienced. <p>12:55-1:00: Students will dress back out.</p>	
<p>Diagnostic Formative Assessment</p>	<p>Summative Assessment</p>
<p>PE The teacher will evaluate each student's performance through observation and critique as necessary.</p> <p>Health Students will complete a variety of activities to check for understanding of material as well as quizzes on Google Forms over the material covered.</p>	<p>PE The progression of each student will be monitored daily.</p> <p>Health A test on Google Forms will be completed to check for understanding.</p>

Accommodations: Check for understanding frequently, give verbal instructions, modify activities as needed, read material aloud, give visual demonstrations.

APPENDIX D: FOCUS GROUP PROTOCOL

- 1.) Tell me a little about yourself. What is your background and experience with Physical Education and physical activity?
- 2.) Tell me a little bit about yourself as a participant in this physical education program. What parts of the class have you enjoyed the most? Which ones do you find challenging or difficult or things you didn't like?

Social and Character Education in Physical Education

- 3.) Why are rules important to follow in PE class?
- 4.) We all make bad decisions at times. I know sometimes I get angry and yell at my husband. Can you give me any examples of that in PE or Sport?
- 5.) Describe how you dealt with a conflict during PE.
- 6.) Describe why you would need to use teamwork in PE.
- 7.) Describe an experience you have had in PE that has caused you to use leadership skills.
- 8.) Describe when you have had to use communication skills during PE.
- 9.) Why is it important to accept differences amongst your classmates?
- 10.) Describe when you have had to work together with your teammates to come up with a strategy during PE? How did you get to this outcome?
- 11.) Tell students “We are trying to define Social and Character Education in PE from the students’ perspective, that means, we are interested in your view.” So, from your experiences, what does Social and Character Education look like for you? Can you give some examples of what you think Social and Character Education is?
- 12.) What role does Social and Character Education have in your experiences in PE? 13.)
- 13.) Describe examples of Social and Character Education in your classes. How have these experiences made you think, feel, or act?

Conclusion

- 14.) Do you have any other comments you would like to make?
- 15.) Do you have any questions you would like to ask?

APPENDIX E: PRESENTATION MOBILE INSTRUCTIONS

Presentation Mobile Instructions

Downloading ‘Presentation Mobile’ App for Task Completion

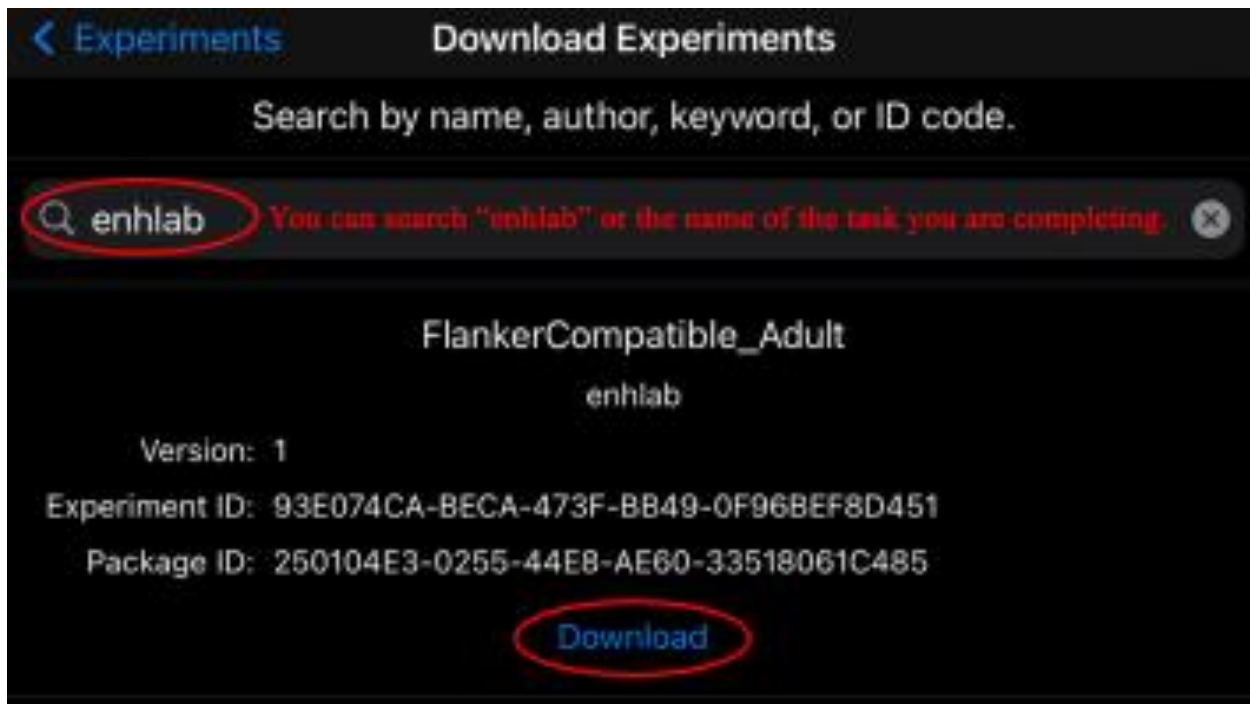
1. Participants need to download the free “Presentation Mobile” App from the Google Play Store or App Store on their phone.
 - a. To locate this app, use the SEARCH TERM: “Neurobehavioral systems, inc”



2. This app automatically switches your screen to landscape mode
3. Before running any ‘experiments,’ you need to go to the upper right-hand corner: “**Download**” to locate the task needed.



- a. You can find the appropriate task by **searching either “enhlab” OR the task’s name**
 - i. You will be using the task named **“FlankerCompatible_Kids”**
- b. The following picture shows what the search results will look like. Then **select “Download”**



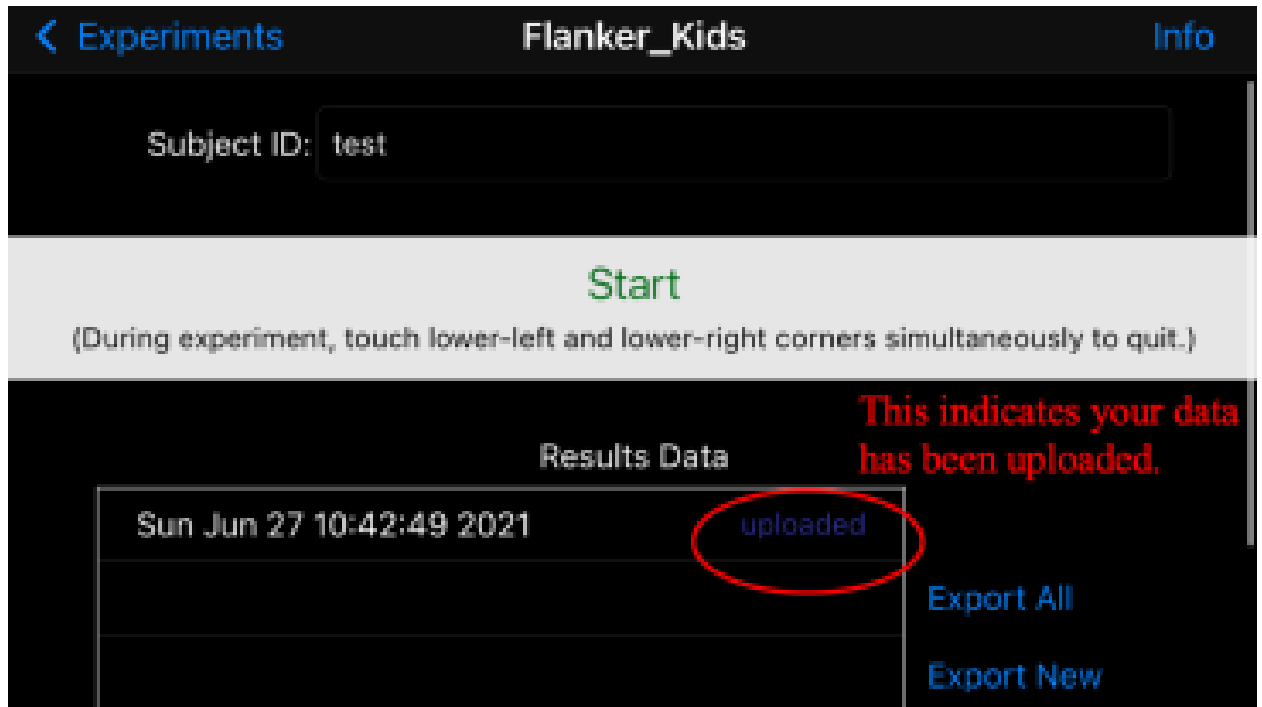
4. Once you have downloaded this task, you will be able to select it from the main menu/first screen you encounter when opening the app and complete the task.
 - a. Participants will be prompted to provide a subject ID before starting. **Please use your subject ID provided by the research team.**



- b. After selecting “Start”, you will complete the Task/ Cognitive Assessment by following the instructions provided on the screen.

Instructions: During this task, you will see a row of arrows. Participants are asked to touch the side of your screen that matches the direction that the middle arrow is pointing. For instance, if the middle arrow is pointing to the left, the participant will touch the left side of the screen. It is important that each participant responds as quickly as possible, but we also would like you to respond as accurately as possible.

5. When you complete your cognitive assessment, you want to **ensure the data has been uploaded EACH TIME**
 - a. For most of you, the task will upload automatically. Therefore, once you are done with the task, you will already see the **purple/blue “uploaded” after each task** b. If it does not upload automatically, all you have to do is select the task you want to upload and an upload button should appear near the “Export All” tab on the right hand side. If the upload was successful, the word “uploaded” will appear on the



right-hand side of the listed task

How to End the Task and Restart in Case of Interruption

1. If the task is interrupted or an emergency occurs while completing the task, please exit and fully close the app. Upon re-opening the app, please select “Quit Experiment” to officially end the first task and restart the task following the same instructions above.

APPENDIX F: MOBILE APP SECURITY AND DESCRIPTION

Cognition data completed on a mobile device will be automatically encrypted by the mobile application and then stored on the application host server (i.e., Neurobehavioral Systems, NBS; www.neurobs.com) in a password protected account. Data will then be downloaded, decrypted, and stored on a UNCG approved digital backup device and Box account. There is only one encryption key available that is stored on a single password protected laboratory computer in the ENH lab (room 353 Coleman Building).

The following is a detailed description of this process to provide sufficient information regarding privacy of data. Presentation Mobile is a free iOS and Android app hosted by NBS. NBS provides a license subscription for researchers to create and manage an experiment, or cognitive task, on their secure server via a password protected account. The cognitive task is stored on the NBS server and available through the application to participants who download Presentation Mobile. After a participant downloads and completes a cognitive task, Presentation Mobile software will automatically and immediately encrypt and send the results to the account on the NBS server. This data can only be accessed on the account with NBS, and must be decrypted with a decryption key that is connected to a single computer in the ENH Lab. This encryption key cannot be used on multiple computers and cannot transfer to a new computer without written permission to NBS. Thus, data from each time a participant completes a cognitive task, regardless of where, when, or on what device they complete the task, will be incomprehensible and impossible to decipher if accessed at any time either on the mobile device or by accessing the account with NBS. Hence, this encryption method ensures secure transfer of data from real-world environments to a location that is approved by the research institution for securing research data.

APPENDIX G: POST TEACHING REFLECTIVE ANALYSIS

Week 4 Post-Teaching Reflective Analysis (Provided by Dr. Dyson)

1. What were your learning intentions/objectives for the lesson?

For you as a teacher:

- P.E.: My learning objectives for the lesson was to introduce the students to Flag Football and to introduce the skills necessary for being able to participate in the game.
- Health: My learning objective for Health was to introduce the different types of diseases and disease prevention to students. I tried to make learning fun and active for them and introduce new ways of presenting lessons to them. I wanted students to work together and talk to each other about the lesson.

For your students:

- P.E.: The objectives for my students were for them to learn to work together through different groups while participating in small sided Flag Football games with their teammates and work on communication skills.
- Health: To work together in groups to work on problem solving, critical thinking skills, and communications skills.

2. What did you see in your lesson that you met your learning intentions/objectives? Be specific.

For you as a teacher:

- P.E.: Students worked together with their peers and were able to play cooperatively with their teammates and against their peers. Students were able to take the skills that were learned previously in the week and utilize them while playing Flag Football.
- Health: Students were randomly paired. Some students ended up with people they didn't normally work with. Students were working together and not arguing and all were participating in the activity. They worked together to use the internet to find the answers to the prompt and then communicate their information to the class.

For your students:

- P.E.: Students worked through differences and came up with strategies they thought were best to try to win the game. They worked to figure out which was the best strategy to try to score. They verbalized this in our wrap up class discussions.
- Health: Students communicated with their groups and listened intently while other groups gave their presentation.

3. What were the most positive aspects of the class?

- For you as a teacher: The most positive aspect of the class is when we played the small sided games that led up to the different skills needed for Flag Football (i.e., playing triangle ball and the sharks and minnows game).
- For your students: The students enjoyed doing the small sided sharks and minnows game that taught them how to tag and grab their opponents flag.

4. What aspects did you feel did not go well?
 - I feel as if some of the students who were less skilled did not enjoy the organized game of Flag Football as much. They didn't move around much while the game was going on.
5. What changes would you make to the lesson the next time you teach it?
 - The next time I teach this lesson I would focus more on getting kids to move and the fundamentals of the game. Some students didn't have a good concept of the game. I would also try to incorporate more time for triangle ball to help simulate movement and how to track the ball.
6. Learning Outcomes: Did you see learning occur? Specifically, what?
 - I did see learning occur. Students who may not have shown strengths in catching or throwing the Football were able to make up for it by grabbing their opponent's flag. They were able to recall the rules and what to do during game play.
7. What are your specific learning intentions/objectives for the next lesson? What strategies will help you achieve your learning intentions/objectives?

Teacher Goals:

- P.E.: My goal is to teach students how to shoot a bow and the proper safety precautions for Archery. They will participate in multiple team games as well as individual games.
- Health: Students will be introduced to Substance Abuse and ways to say no.

Student Goals:

- P.E.: Students will continue to work together through communication and teamwork to find the best way to compete and work together. They will find their strengths and weaknesses as well as their opponent's strengths and weaknesses.
- Health: Students will learn about Substance Abuse and ways to say no to peer pressure.

Week 11 and 12 Post-Teaching Reflective Analysis (Provided by Dr. Dyson)

1. What were your learning intentions/objectives for the lesson?

For you as a teacher:

- P.E.: My learning objectives for the lesson were to introduce the students to different games of Dodgeball and to introduce the skills necessary for being able to participate in the game.

For your students:

- P.E.: The objectives for my students were for them to practice relationship skills and learn to work together. Students were to work on communication skills with each other as they worked on strategies to participate in the game.

2. What did you see in your lesson that you met your learning intentions/objectives? Be specific.

For you as a teacher:

- P.E.: While playing Team Dodgeball students communicated with each other to come up with strategies to eliminate other players to win the game. They would also let their teammates know who on the other team had dodgeballs or where they were coming from.

For your students:

- P.E.: Students worked together to meet a common goal of trying to eliminate opponents to win the Dodgeball game.

3. What were the most positive aspects of the class?

- For you as a teacher: Most students communicated well with each other and talked through conflicts. For example, if one student got someone out at the same time as another student, they worked through it to see who was out and who stayed in. Other students also apologized to each other if they accidentally hit someone in the face with a dodgeball.
- For your students: Students complimented their own teammates and communicated well with each other.

4. What aspects did you feel did not go well?

- Some parts of the game didn't go well because if a student got out sometimes, they wouldn't sit down.

5. What changes would you make to the lesson the next time you teach it?

- I would make sure students understood the rules of each Dodgeball game so there would be no confusion of the rules.

6. Learning Outcomes: Did you see learning occur? Specifically, what?

- I did see learning occur. Students were able to take their learning cues and complete the skills necessary and apply the rules to game play. Also, while students got to "create" their own Dodgeball game they worked together to work through coming up with rules and game play and everyone agreeing on it and making an input. They were able to hear each other's concerns about rules and work on an outcome to allow for everyone's opinions.

7. What are your specific learning intentions/objectives for the next lesson? What strategies will help you achieve your learning intentions/objectives?

Teacher Goals:

- P.E.: Students will be introduced to the game of Mat Ball. My goal is for them to continue to use effective communications skills with their classmates while participating in game play.

Student Goals:

- P.E.: Students will continue to work together through communication, teamwork, and small groups to find the best way to compete, work together, and strategize. They will find their strengths and weaknesses as well as their opponents' strengths and weaknesses.

Week 15 Post-Teaching Reflective Analysis (Provided by Dr. Dyson)

1. What were your learning intentions/objectives for the lesson?

For you as a teacher:

- P.E.: My learning objectives for the lesson were to introduce the students to the game of Capture the Flag and to introduce the skills necessary for being able to participate in the

game. I wanted students to learn to work together in a team style game and focus on communication and strategy.

For your students:

- P.E.: The objectives for my students were for them to practice relationship skills and learn to work together. Students were to work on communication skills with each other as they worked on strategies to participate in the game and communicate those strategies with other teammates.

2. What did you see in your lesson that you met your learning intentions/objectives? Be specific.

For you as a teacher:

- P.E.: With Capture the Flag, students communicated well and worked through strategies and different game plans to attempt to be the first team to retrieve the flag. If something didn't work, I would see them regroup and work on coming up with another strategy. Students also worked through conflicts. For example, if I couldn't see who got out the students came up with a solution to determine who was out.

For your students:

- P.E.: Some students walked to their teammates or called them to huddle up to talk over game strategies and who was going to guard the flag or who was going to run and get the flag.

3. What were the most positive aspects of the class?

- For you as a teacher: Most students communicated well with each other and talked through conflicts as I mentioned above. When we did our small groups after class most students talked about how they really liked this game.
- For your students: Students complimented their own teammates and communicated well with each other.

4. What aspects did you feel did not go well?

- Some students would try to say they weren't tagged out to try to stay in the game which sometimes led to small conflicts however, they were able to work through it and come to a solution all could agree on.

5. What changes would you make to the lesson the next time you teach it?

- I would maybe change the rules about tagging their teammates to reduce conflict.

6. Learning Outcomes: Did you see learning occur? Specifically, what?

- I did see learning occur. Students were able to take their learning cues and complete the skills necessary and apply the rules to game play. Students communicated effectively with their classmates.

7. What are your specific learning intentions/objectives for the next lesson? What strategies will help you achieve your learning intentions/objectives?

Teacher Goals:

- P.E.: Students will be introduced to Floor Hockey. My goal is for them to continue to use effective communications skills with their classmates while participating safely in game play.

Student Goals:

- P.E.: Students will continue to work together through communication, teamwork, and small groups to find the best way to compete, work together, and strategize. They will find their strengths and weaknesses as well as their opponents' strengths and weaknesses for the games they choose.

APPENDIX H: RECRUITMENT FLYER

\$50 VISA GIFT CARD

After completion of study

**WE NEED
YOUR HELP**

Be a part of our research study investigating the impact of Physical Education on executive function (which aids in learning) and Character Education.



OVERVIEW

FOCUS GROUPS

Engage in two, 30 minute focus groups during school.

USE OF DATA

Data will be used that will be completed through Physical Education class

PHYSICAL EDUCATION

Must be enrolled in Fall Semester 9th Grade Physical Education.

Study conducted by Brittany Belcher at the University of North Carolina at Greensboro

July 12th, 2022

APPENDIX I: SCREENSHOTS FROM PRESENTATION MOBILE

For this task, you will see a row of fish.
Please touch the side that matches the direction that the MIDDLE fish is pointing.
It is important that you respond as quickly as possible,
but we also want you to respond as accurately as you can.
Touch the LEFT side of the screen for examples.

If the MIDDLE fish is pointing to the LEFT, touch the LEFT side of the screen
as indicated below.



Touch the LEFT side of the screen to continue.



APPENDIX J: STUDENT ASSENT

Assent Template for Minors 12-17

Project Title: The Impact of Physical Education on Executive Function and Social and Character Education in High School Students.

Principal Investigator: Brittany Belcher

Why am I here?

We want to tell you about a research study we are doing. Research studies are done to find better ways of helping and understanding people or to get information about how things work. In this study we want to find out more about how Physical Education impacts executive function and Social and Character Education. Executive function is a term used for different cognitive and memory skills that take place, making it crucial for learning. Executive function deals with mental processes that enable us to plan, focus attention, remember instructions, and the ability to multitask. Social and Character Education views how you interact with your peers with teamwork, accepting differences amongst your peers, and managing emotions. You are being asked to be in this study because you are in 9th grade Physical Education. In a research study, only people who want to take part are allowed to do so.

What will happen to me in this research study?

If it is okay with you and you agree to join this study, you will be asked to:

Participate in two focus groups which are small group conversations among your classmates. One focus group will take place near the end of August into the first of September, and the other one will happen in December. Each focus group will last around 20-30 minutes. The focus groups will consist of questions that will ask you various questions about experiences you have had in PE like why it is important to accept differences amongst their peers, how you have used leadership skills in PE, and why teamwork is important in PE. As a required part of your PE course, you will complete what is called a Flanker Task. This task is taken on a mobile device or iPad and shows a series of arrows where you will be given instructions on which arrow to touch and answer as quickly and accurately as possible. Scores from the Flanker Task that you will take at the beginning, middle, and end of the semester in Physical Education will be used for data analysis. Everything will be confidential, meaning all information will be kept private, no names or identifiable information will be reported in presentations or reports.

How long will I be in the research study?

You will be in this research study for the duration of the Fall Semester.

Can anything bad happen to me?

Sometimes the questions we ask you might seem strange and make you feel uncomfortable/sad. If anything hurts or you are uncomfortable with some of the questions, please let us know and we will stop or do whatever we can to make you feel better.

Can anything good happen to me in this research study?

We do not know if you will be helped by being in this project. However, we may learn something that will help other children and people stay physically active through participation in Physical Education in the future.

Do I have other choices?

You do not have to be in this study. No other options are available at this time. If you choose not to participate in the study, you will participate in PE class and complete any related assignments as you normally would.

What if I do not want to be in this research study?

You do not have to be part of this project. It is up to you. You can even say okay now but change your mind later. All you must do is tell us. No one will be mad at you if you change your mind.

What about my confidentiality?

The study team will do everything possible to make sure that your data and or records are kept confidential.

Will I be paid for being in this research study?

If you participate and complete this study, you will receive a \$50 Visa gift card.

Do my parents know about this research study?

This study has been explained to your parent/parents/guardian and they have given permission for you to be in it.

What if I have questions?

You can ask Mrs. Brittany Belcher or her faculty advisor Dr. Benedict Dyson anything about the study. You may also call The Office of Research Integrity at or 855-251-2351.

Assent

This study has been explained to me and I am willing to be in it.

Child's Name (printed) and Signature

Date

Check which applies below

_____ The child is capable of reading and understanding the assent form and has signed above as documentation of assent to take part in this study.

_____ The child is not capable of reading the assent form, but the information was verbally explained to him/her. The child signed above as documentation of assent to take part in this study.

Signature of Person Obtaining Assent

Date

APPENDIX K: PARENT CONSENT

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

CONSENT FOR A MINOR TO ACT AS A HUMAN PARTICIPANT: Long Form

Project Title: The Impact of Physical Education on Executive Function and Social and Character Education.

Principal Investigator and Faculty Advisor: Brittany Russell-Belcher and Dr. Ben Dyson

Participant's Name: _____

What are some general things you should know about research studies?

Your child is being asked to take part in a research study. Your child's participation in the study is voluntary. You may choose for your child not to join, or you may withdraw your consent for him/her to be in the study, for any reason, without penalty.

Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to your child for being in the research study. There also may be risks to being in research studies. If you choose for your child not to be in the study or choose for your child to leave the study before it is done, it will not affect your relationship or your child's relationship with the researcher or the University of North Carolina at Greensboro.

Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about your child being in this research study.

You will be given a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

What is the study about?

This is a research project. Your child's participation in this project is voluntary. This study involves research, and your child will be involved through their participation in Physical Education class. The purpose of this study is to examine the impact Physical Education has on executive function and Social and Character Education in high school students. Executive function is an umbrella term for different cognitive and memory skills that take place, therefore making it crucial for the learning process. Executive function deals with mental processes that enable us to plan, focus attention, remember instructions, and the ability to multitask.

Why are you asking my child?

Your child is in the 9th grade and enrolled in Physical Education.

What will you ask my child to do if I agree to let him or her be in the study?

As a required part of your child's physical education course, your child will complete what is called a Flanker Task. This task is taken on a mobile device or iPad and shows a series of arrows where your child will be given instructions on which arrow to touch and answer as quickly and accurately as possible. I would like to use the results of your child's Flanker Task as data for my study. Your child will also participate in two focus groups, which are small group interview sessions with their peers. The focus groups will consist of questions that will ask your child various questions about experiences they have had in PE like why it is important to accept differences amongst their peers, how they have used leadership skills in PE, and why teamwork is important in PE. One focus group will take place at the beginning of the school year and another one will take place in December. A teacher liaison will be conducting the focus groups. These focus groups should last approximately 20-30 minutes and will be completed during school. I would like to use the results of your child's focus groups as data for my study as well. If you choose for your child not to participate in the study, they will participate in PE class as normal.

Is there any audio/video recording of my child?

Audio recording of the focus groups will be used for purposes of transcription only. Because your child's voice will be potentially identifiable by anyone who hears the tape, confidentiality for things said on the tape cannot be guaranteed although the researcher will try to limit access to the tape through securing it in a password protected account.

What are the dangers to my child?

The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants. Breach of confidentiality could occur. However, participants in the study will not be named and no personally identifiable information will be reported in any written report or presentation to maintain the confidentiality of personally identifiable information. We designate this risk to be infrequent and will do everything possible to keep your child's information private. There will be no class time missed as a result of your child's participation in this study.

If you have questions, want more information, or have suggestions, please contact Brittany Belcher or Dr. Ben Dyson

If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

Are there any benefits to society as a result of my child taking part in this research?

Benefits to society may result in added knowledge for future researchers and stakeholders regarding executive function and Social and Character Education.

Are there any benefits to *my child* as a result of participation in this research study? There are no direct benefits to study participants.

Will my child get paid for being in the study? Will it cost me anything for my kid to be in this study?

Students who participate in this study will receive a \$50 Visa gift card after completing the research.

How will my child's information be kept confidential?

Participants in the study will not be named. However, they will be associated with a student id#. The master list linking the participant's name to their student id will be kept locked in a filing cabinet in Mrs. Belcher's locked office. Every effort will be made in any written report or presentation to maintain the confidentiality of personally identifiable information. We designate any risk that may emerge from the study as minimal. Your child's PE teacher will not know who has agreed to be in the study until after final grades have been assigned. Flanker task data will be stored on the Neurobehavioral System, NBS, and is automatically encrypted and can only be decrypted by using an encryption key available only to the study team. Once decrypted, flanker task data will be stored on Box. The focus groups will be recorded on an audio recorder, recorded for transcription purposes only and will be deleted after completion of the research project. All information obtained in this study is strictly confidential unless disclosure is required by law.

Will my child's de-identified data be used in future studies?

Per the University of North Carolina at Greensboro's policy, data must be stored for 5 years following the closure of the study. Your child's data will be destroyed after that time period. Your child's de-identified data will not be stored and will not be used in future research projects.

What if my child wants to leave the study or I want him/her to leave the study?

You have the right to refuse to allow your child to participate or to withdraw him or her at any time, without penalty. If your child does withdraw, it will not affect you or your child in any way. If you or your child chooses to withdraw, you may request that any data which has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your child's participation at any time. This could be because your child has had an unexpected reaction, has failed to follow instructions, or because the entire study has been stopped.

What about new information/changes in the study?

If significant new information relating to the study becomes available which may relate to your willingness to allow your child to continue to participate, this information will be provided to you.

Voluntary Consent by Participant:

By signing this consent form, you are agreeing that you have read it or it has been read to you, you fully understand the contents of this document and consent to your child taking part in this study. All your questions concerning this study have been answered.

By signing this form, you are agreeing that you are the legal parent or guardian of the child who wishes to participate in this study described to you by _____.

Participant's Parent/Legal Guardian's Signature

Date

APPENDIX L: DISSEMINATION SLIDES



UNC
GREENSBORO

The Investigation of the Impact of Physical Education on Social and Emotional Learning and Executive Function in High School Students

Presented By: Brittany Russell-Belcher



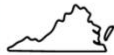
Background Information

Physical Education (PE) is delivered through a K-12 curriculum and is based on national standards where students learn to become physically active .

(Physical Education, Physical Activity, Healthy Schools CDC, 2020)



Only 1 in 5 high school students meet activity guidelines. (Lack of Physical Activity, CDC, 2021)



Virginia high schools do not have a time requirement for physical activity. (Shape of the Nation State Profile, 2016)



Virginia students only need two credits of PE to graduate (VDOE: Physical Education, n.d.).



PE classes are being eliminated or they are able to be substituted for remedial coursework (Shape of the Nation State Profile, 2016).



Research is lacking for adolescents.

Social and Emotional Learning Competencies



Self-Management

- Impulse Control
- Organizational Skills



Social Awareness

- Empathy
- Respect for Others
- Perspectives



Relationship Skills

- Team Work
- Relationship Building



Responsible-Decision Making

- Identifying Problems
- Problem Solving



Self-Awareness

- Identifying Emotions
- Self Confidence



(CASEL, 2020)

Executive FUNCTION



Cognitive Flexibility

Cognitive Flexibility

- Being able to look at things from a different perspective
- Being able to adapt to changes
- To think of multiple concepts at once



Inhibition and Behavior

Inhibition and Behavior

- Ability to attend to one task over another
- Control focus and attention



Working Memory

Working Memory

- Ability to retrieve information and use it later on
- How we process and use the information

(Active Living Research, 2015; Barenberg et al., 2011; de Greeff et al., 2018; Diamond, 2012, 2013, 2015; Guiney & Machado, 2012; Harvey, 2019)





Purpose

The purpose of this study was to investigate the impact of Physical Education on Social and Emotional Learning and executive function in high school students.



Research Questions

RQ 1: What are the perspectives of high school students regarding Social and Emotional Learning in Physical Education class?

RQ 2: How does participation in a Physical Education class over one semester impact executive function in high school students?



Participants and Program

This study was conducted at a public high school in Virginia.



9th Grade Students

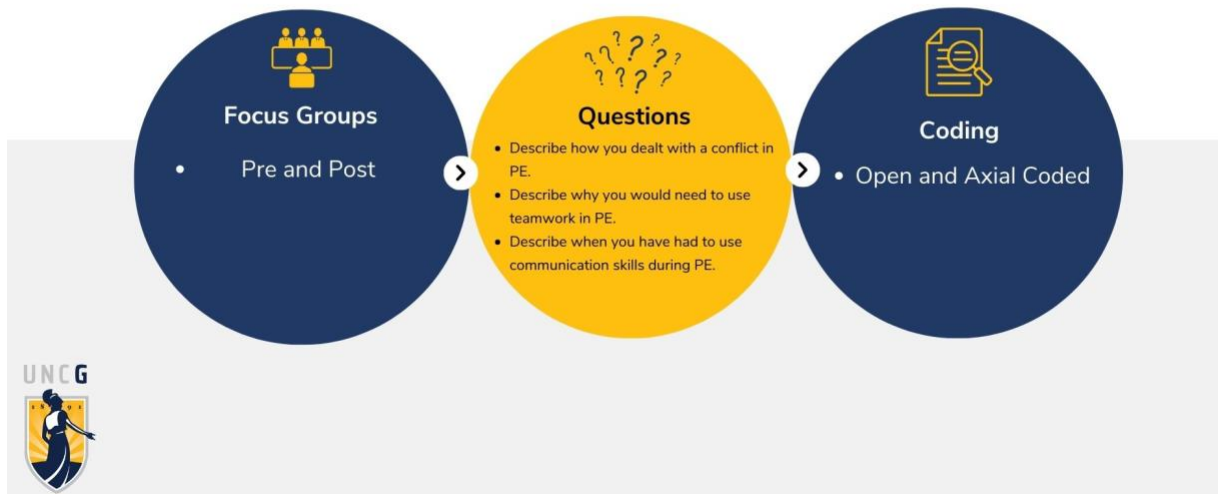


21 Students Enrolled



14 Males and 5 Females

RQ 1: Social and Emotional Learning



SEL Results

4 main themes emerged based on the focus group answers.

Come Up With a Team Strategy

Talking to Each Other

If we are doing a team sport you have to communicate.

Helping Others

We helped people get more involved.

Like when we were doing team dodgeball, we came up with a strategy to get this person out...

New Bonds

Teamwork helps you make bonds with people you don't talk to.





RQ 2: Executive Function



Flanker Task

- Students were given random ID's
- Given at 3 different time points
- Took students about 15 minutes



- Congruent and incongruent trials



Executive Function Results



Before PE and Mid-Term PE
Congruent RT=significantly quicker.

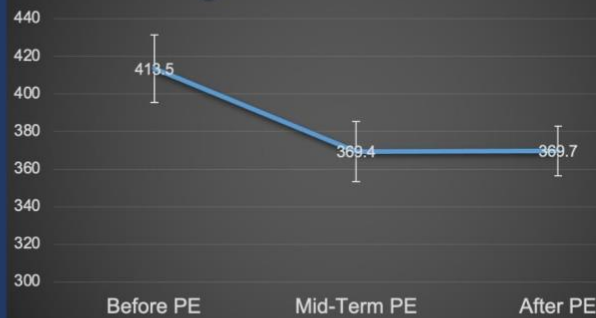


Able to process information quicker.



Improvement in general cognitive processing of information but not inhibitory control.

Congruent Reaction Time





Successful Strategies



Randomizing Groups



- Randomly select students for groups.
- <https://www.randomlists.com/team-generator>



Small Sided Games and Group Activities

Relays



Escape Rooms

Triangle Ball



Allow students to teach their peers



Put the "peer teachers" at different stations



Peer Debriefing



Assign Groups



Assign Questions



Regroup



Share Answers

**Thank You!
Questions?**

Brittany Russell-Belcher

 brittanyrbelcher@gmail.com



Feel free to scan the QR
code for access to my
lesson plans.

