ABSTRACT

J. Lance Pickeral, A DIGITAL STORYTELLING INTERVENTION: HOW IT AFFECTS PARTICIPATION IN PHYSICAL ACTIVITY AMONG COLLEGE STUDENTS (Under the direction of Dr. Heidi Puckett). Department of Educational Leadership, May, 2021.

Research indicates that physical activity can increase health benefits in a variety of ways (Plotnikoff et al., 2015), including maintenance of overall body function, mental well-being, increased attention span, cognitive functioning among students, and reduction of risk for chronic diseases (Aaltonen et al., 2013). The purpose of this mixed methods study was to gain insight as to how a digital storytelling intervention could affect college students relative to physical activity from both a quantitative and qualitative perspective. Using prior literature and a theoretical framework focusing on achievement goal theory, a digital storytelling intervention was implemented with students in a Kinesiology 1100 Personal Fitness and Wellness class. Participants were responsible for creating a digital story based on the physical activity they participated in over an 8-week study. Quantitative data were collected based on pre- and post-assessments of Push–up test, PACER test, height, and weight. Qualitative data was gathered via face-to-face semi-structured interviews with five participants. Findings from this study concluded that there was a positive change based on physical assessment scores within the group who utilized the digital storytelling intervention. Additionally, participants indicated that, although they were not familiar with the concept of digital storytelling, they had a positive experience using digital storytelling as an effort to increase their overall participation in and perception of physical activity. Participants reported improvement in feelings of motivation and accountability, as well as an increase in physical activity and strength at the conclusion of the study.

A DIGITAL STORYTELLING INTERVENTION: HOW IT AFFECTS PARTICIPATION IN PHYSICAL ACTIVITY AMONG COLLEGE STUDENTS

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CHAPTER 1: INTRODUCTION

World health organizations recognize weight gain as one of the leading global health problems (Doak et al., 2011; Rolland-Cachera, 2011; Vos et al., 2015). According to the Center for Disease Control (CDC) Behavioral Risk Factor Surveillance System, the obesity rate is 31.3% for the state of North Carolina. A review of the literature indicates that for many students, the first year of college, contributes to the obesity epidemic (Price et al., 2016). In fact, weight gain is most pronounced among students during the first semester of the first year at university (Vos et al., 2015).

In order to contribute to a healthier lifestyle for college students, many studies have researched interventions such as digital storytelling and/or the use of technology to create a positive impact in students' health and wellness. One research study looked at the motivational effect Instagram may play on the adherence to physical activity among female college students (Al-Eisa et al., 2016). In this study 58 female college students were divided into two groups, one group being the "Instagram group" and the second being the "control group." Participants in the Instagram group were asked to post pictures of the "adherence to exercise" sheet that was provided, and over the course of the study the Instagram group had 17% more participation in physical activity programs compared to the control group (Al-Eisa et al., 2016).

Another study focused on the implementation of digital storytelling in immigrants with type II diabetes in order to educate and help them manage their medication, monitor glucose levels, monitor physical activity, and nutrition (Njeru et al., 2015). The participants completed a story development workshop. Near the end of the study participants had created powerful digital stories that informed and educated each participant in the study as well as others who viewed the

digital story (Njeru et al., 2015). Testimonials at the conclusion of this study included terms such as togetherness, common purpose, and motivation from others (Njeru et al., 2015).

The following research study implemented digital storytelling as an intervention within a physical fitness and wellness classroom setting at a small liberal arts institution. The purpose of this study was to promote outcomes of increased physical activity among college students. Digital storytelling allowed research participants to track and share their fitness journey in a unique way at the end of the 8-week research study. It was my goal to address the problem of practice concerning health and well-being for college students enrolled in a freshman level personal fitness and wellness course. Upon collecting and analyzing the results of this study, other practitioners and institutions may be able to utilize the findings in order to create an opportunity for students to become healthier individuals.

Background of the Problem

Research conducted by the CDC indicates that the state of North Carolina has a 31.3% rate of obesity among adults. Youth transitioning from middle school to high school are seen as a public health concern with statistics showing that United States youth fall below the recommended activity levels and these levels decrease steeply in children and youths between ages 9 and 15 years (Dishman et al., 2018). These public health concerns continue into college. Findings identify college students as a susceptible demographic in becoming obese due to the environmental changes that occur when transitioning from high school to college (Price et al., 2016). These environmental changes are perceived by students as intimidating and also include the pressure of academic performance and the social networks that surround the student (Keller, et al., 2007; Robert et al., 2014). The National College Health Assessment II survey classified

31.3% of females and 34.6% of males enrolled in college as either overweight or obese (Price et al., 2016).

Research has shown that college students, specifically in the age range of 18-24, are generally the population that experiences weight gain and a decline in physical activity (Karabulut et al., 2018). Price et al. (2016) state that in addition to racial and gender disparities, college students are a demographic group especially at risk for developing obesity. Multiple studies have recorded increases in college students' body weight throughout a four-year period while enrolled in higher education; however, a significant portion of the weight gained by students occurs during their first year enrolled at the institution of higher education (Price et al., 2016). The focus of this study was to utilize a Kinesiology 1100 Personal Fitness and Wellness class to implement a digital story intervention which led to increased participation in physical activity creating an overall healthier college student.

The institution where this study was conducted reflects very similar national and state statistics as mentioned in the text above. Students at the institution are asked to self-report height and weight to the director of student health. For the incoming class of 2019, 108 students reported height and weight to the Office of Health Services. Height and weight can be used to calculate body mass index (BMI = weight in. kg/height in m^2), and of the 108 students who self-reported, 43% were shown to be either overweight or obese. One of the goals of the institution is to develop healthy students from a holistic approach. A recent study showed that the World Health Organization defined health as the state of well-being mentally, physically, and socially, not just simply the absence of disease or illness (De-Mateo-Silleras et al., 2018). However, achieving this optimal state of health is complicated (De-Mateo-Silleras et al., 2018).

Engaging in the recommended amount of physical activity for adults has been documented and shows well-established health benefits for the human body (Plotnikoff et al., 2015). Yet, achieving the recommended amount of physical activity declines rapidly between the ages of 18 and 24, the typical age of a traditional undergraduate college student enrolled in an institution of higher education (Plotnikoff et al., 2015). The majority of college students fall short of the target for adequate amounts of physical activity (Gordon-Larsen et al., 2004; Roberts et al., 2014). Other health issues, such as increased risk of chronic diseases, type II diabetes, coronary heart disease, and deteriorated mental health are correlated with obesity and physical inactivity.

Results from the 2008 National College Health Assessment showed that a substantial number of students have health conditions that negatively affected their academic performance (Miller et al., 2015). Some of the health conditions included the following: stress, cold and flu, sleep difficulties, and depression/anxiety (Miller et al., 2015). Conversely, adequate amounts of physical activity have been found to have positive health effects, such as maintaining physical function of the human body, improvement of well-being, and increased attention span/attention levels, which can possibly affect the learning environment and cognitive functioning among students (Aaltonen et al., 2013). These positive effects to students' health and well-being can, in return, lead to increased rates of student retention and academic success at the higher education institution (Miller et al., 2015). A digital story intervention promoting health and well-being has become an increasingly important tool when working with "at risk" or vulnerable populations (Botfield et al., 2018).

Setting of the Study

The institution where the study was conducted is a small liberal arts institution located in the southeast region of the United States. Methodist-affiliated, the institution was chartered in 1838 as a college for women (Stoesen, n.d.). The first students who attended in 1846 entered a building that stood on what is now considered the main building at the college. In 1913 the college conferred the first bachelor's degrees (Stoesen, n.d.) and by 1954, the college began to admit men. During the early 2000s, the institution had an enrollment of more than 1,250 students, served by approximately 105 faculty members, with majors in 22 areas, and housed a fully-accredited teacher training institution (Stoesen, n.d.).

The college remains a vibrant part of the community and encourages a liberal arts education for the modern student. Currently, its enrollment is approximately 1,000 undergraduate students from 20 states and territories, the District of Columbia, and seven foreign countries (History, Tradition, and Mission, n.d.). Approximately 38 majors and 1,000 different courses are taught directly to students (History, Traditions, and Mission, n.d.). The pride of the college comes from being able to utilize this small environment to provide one-on-one attention between faculty and students. Additionally, the college is a part of the NCAA Division III athletic program and a member of the USA South Athletic conference offering 17 intercollegiate sports.

The vision and mission of the college are important parts of the identity of the institution. The vision is to stay grounded in the traditions of the Methodist church and aspire to provide all students with a transformative, universally-designed, educational experience that positively affects their lives in order to reach their full potential (History, Tradition, and Mission, n.d.). The mission of the college is founded upon three pillars: (1) a liberal arts college, (2) affiliated with

the United Methodist Church, and (3) a universal design for the learning environment at the institutional level. Each pillar plays an integral role in the college's strategic plan.

One of the most recent emphases of the institution is student development. Student development can be categorized as co-curricular development, which demonstrates that students attending this institution will acquire the skills to succeed academically to meet short and long term goals and to function in and contribute to a diverse community while living healthy lives (History, Traditions, and Mission, n.d.). This research contributes to the mission and vision of the institution focusing on successful student development and encouraging students to live healthy lives.

Statement of the Problem

Some students attending colleges and universities may be characterized as living an unhealthy lifestyle (De-Mateo-Silleras et al., 2018). On average individuals in their first year of college gain approximately 3.2 pounds due to excessive consumption of fatty foods, alcohol, and minimal exercise participation (Yan & Harrington, 2019). At the institution where the research study was conducted, approximately 43% of new students were categorized as either overweight or obese. As previously discussed, this percentage was calculated based on the 108 incoming students in the Fall semester of 2019 who self-reported height and weight.

The problem of practice identified involves the absence of any intervention program that enables and encourages students to participate in adequate amounts of physical activity. Potential positive results of this problem of practice study for the organization as a whole include an increase in student retention, academic achievement, and overall better quality of health for the students attending the institution. This research study may potentially assist the institution in combatting the number of overweight and obese students. As a result, the digital storytelling

intervention could be utilized campus-wide in following years, rather than in a singular personal fitness and wellness class. Examples of campus-wide involvement based on the potential results of this study include the following: other faculty members being influenced to embed this 21st century style of learning (digital storytelling) into other areas, such as arts, humanities, social sciences, behavioral sciences, and natural sciences. In addition, this intervention could influence curriculum change among the freshman seminar classes in which all traditional incoming freshman are required to enroll.

Purpose Statement

The purpose of this mixed methods study was to examine the relationship between a digital story intervention and the affect it will have on physical activity participation among college students enrolled in a Kinesiology 1100 Personal Fitness and Wellness course. Participating in adequate amounts of physical activity can be strongly correlated with positive health and wellness. I conducted semi-structured interviews with five participants at the conclusion of this study in order to obtain a better understanding of how the digital storytelling intervention affected their participation in physical activity. The semi-structured interviews allowed for the collection of the qualitative data in this study. Quantitative data was collected by recording performance on specific fitness testing in week 1 of the study and again during the final week of the study. The information obtained from this study can potentially create organizational change by implementing digital storytelling into the curriculum of freshman seminar classes and provide an innovative method of teaching for other kinesiology classes within the kinesiology department, as well as help students who may not otherwise participate in physical activity become healthier students.

Research Questions

This study will address the following research questions and sub-questions:

1. How does the implementation of the digital storytelling intervention affect the BMI, muscular strength endurance, and cardio-endurance measurements over the course of 8-weeks?
2. What are the students' perceptions related to the implementation of a digital storytelling intervention as an effort to increase their participation in physical activity?
    a. Will implementing the digital story intervention affect physical activity participation among college students enrolled in a Kinesiology 1100 Personal Fitness and Wellness course?
    b. What effect did the digital story intervention have on creating or eliminating barriers related to participation in physical activity?

Theoretical Foundation

This study is using a theoretical framework based primarily on achievement goal theory to provide the contextual background related to the literature. However, other relevant theories also will be highlighted within this study. Achievement goal theory plays a crucial role within the research study being conducted. This theory indicates that an individual defines success and failure in different ways and sets goals according to those definitions (Mitchell & Walton-Fisette, 2016). In achievement goal theory, there are two different goal orientations. The first goal orientation can be described as task goal-oriented and the second goal orientation can be described as ego-oriented. Task goal-oriented individuals will define success based on how well they complete a task (Mitchell & Walton-Fisette, 2016). Ego–oriented individuals will base their

success off of their performance relative to others (Mitchell & Walton-Fisette, 2016). Due to the visual nature of this study, which allows other participants to see the physical activities completed by their peers, ego-orientated individuals may achieve physical activity participation based on the ego orientation definition within achievement goal theory. Conversely, task goal-oriented individuals may participate in physical activity simply to "complete the task" based on the definition above within achievement goal theory. Achievement goal theory will be described in further detail in Chapter 2, along with a brief description of the other theories that play a role within this research.

Definition of Key Terms

The following key terms and definitions are included to ensure clarity of the study:

Anthropometric Measures – series of quantitative measurements of the muscle, bone, and adipose tissue used to assess the composition of the body; core elements of anthropometry are height, weight, and body mass index (Casadei & Kiel, n.d.).

Body Mass Index (BMI) – a description of body weight relative to height that is highly correlated with total body fat, calculated by dividing body weight in kilograms by height in meters squared (Donatelle, 2019).

Digital Storytelling – a mode of 21st century learning where individuals design, create, and produce stories utilizing multiple mediums of digital technology, which may include video, audio, pictures, and creative art (Niemi & Multisilta, 2015).

Exercise – the 2018 Physical Activity Guidelines Advisory Committee Scientific Report defines exercise as physical activity that is planned, structured, repetitive, and designed to improve and/or maintain fitness, performance, and/or physical health.

Extrinsic Motivation – behaviors that are performed in order to get rewards or results that are separate from the behavior itself (Al-Eisa et al., 2016; Ryan et al., 1997).

Healthy Weight – a BMI between 18.5 and 24.9 kg/m^2 is designated as representative of a healthy weight (Donatelle, 2019).

Intrinsic Motivation – in relation to physical activity, intrinsic motivation entails engaging in physical activity for the immediate internal experiences of joy, satisfaction, pleasure, accomplishment, and/or absorption in the task (Cox et al., 2019).

Obesity – refers to having body weight more than 20% above healthy levels equaling a BMI above 30 kg/m^2 (Donatelle, 2018).

Overweight – refers to having body weight more than 10% above healthy levels equal to a BMI of 25 to 29.9 kg/m^2 (Donatelle, 2018).

PACER – Progressive Aerobic Cardiovascular Endurance Run (PACER) is a multi-stage shuttle run designed to measure aerobic capacity (Plowman & Meredith, 2013).

Physical Activity – based on the definition given by the 2018 Physical Activity Guidelines Advisory Committee Scientific Report, physical activity can be defined as any bodily movement produced by the skeletal muscles that translates to expending energy.

Assumptions

There were a few assumptions relative to this study that I identified. One assumption involved the instructor of the course and myself maintaining good communication throughout the semester. This enabled participants to have a continuous point of contact if any issues with digital technology and/or recommended amount of physical activity occurred. Other assumptions were related to the digital storytelling creation.

In today's society, research indicates that the majority of students are familiar with using technology. Results from a 2013 survey showed more students interacting with their mobile devices, with approximately 64% of them using smartphone applications (Miller et al., 2015). Therefore, one can assume there would be no issues transferring pictures, videos, and images into a creative digital story. When viewing the stories, it was assumed that the technology within the classroom would be in operating order so that other participants can view the digital stories created.

Another assumption related to this study took into account the size of the setting, indicating that the study had the potential to foster relationships that organically created a mentor/mentee relationship between participants. This encouraged participants to take part in physical activity if they were able to participate together or created a bond in which accountability was upheld between participants.

Limitations

As previously stated I had good communication and a positive relationship with the class, institution, and instructor of the course; however, this could also be considered a limitation due to the fact that I was not the actual instructor of the course and does not see the students regularly. Interactions between myself and the participants were limited due to this reason. Additionally, in order for students to gain assistance creating their digital stories, they would be guided to the global communication resource center at the college. The global communication resource center is a new service and was implemented within the last year. The college has hired qualified individuals in the global communication resource center to provide students with help when creating technology assignments; however, I have no control over what an individual working in this center may say to a participant creating a digital story during their own personal

time. In an effort to mitigate this potential limitation I explained the intervention and the purpose of this study to the individuals working in the global communications center at the institution.

When discussing the limitations of the fitness testing and body composition calculation, the instructor utilized very basic tests for convenience and as a result of limited resources at the institution where the study was conducted. An example of this would be the muscular strength endurance test. The push-up test used in this study for muscular strength endurance provides a good baseline and gives participants an idea of the upper body strength they have; however, it does not predict overall body strength endurance. BMI, which was used as a proxy for body composition due to its convenience and accessibility, is also a test that varies in margin of error. For this study BMI was calculated based on height and weight of the individual (see Appendix E). As with the muscular strength endurance test, BMI is a good test to provide the participant an idea as to where they are on the spectrum of healthy weight, overweight, or obesity, but this test does not take into consideration muscle mass and the bone density of a human being.

Additionally, socio-economic status of the participants could have been considered a limitation to this research study due to the fact that this variable was not taken into account in the data. Research shows that both physical activity and academic success can be relative to socio-economic structure (Iri et al., 2017; Von Hippel & Lynch, 2014); therefore, relating academic success directly to physical activity may not be completely accurate.

Scope and Delimitations

The institution where the study was conducted is a small, private, liberal arts institution with a relatively small student to faculty ratio. A small number like this allows instructors and students to get to know each other well and create a relationship that may be limited in a larger public institution. The focus of this study was to provide an intervention that increased

participation in physical activity among college students enrolled in a freshman-level kinesiology course. Information gained from this study can be utilized in a broader aspect to create a healthier student body population as a whole.

Quantitative data was gathered based on anthropometric data and fitness testing at the beginning of the study (August) in order to determine a baseline for the students' fitness levels and BMI prior to the implementation of the intervention. The anthropometric and fitness testing data was collected again at the end of the study (October), in order to see if a change occurred following the implementation of the digital story intervention. For convenience of the participants, fitness testing and body mass calculations were collected at the college, using the college's facilities and resources.

Qualitative data was collected based on a sample of five students that I had purposefully selected. Semi-structured interviews were conducted using an interview protocol. Interviews took place at the end of the 8-week study in my office, after quantitative data was analyzed.

Significance of the Study

The significance of this study can be linked to academic achievement, retention, motivation, and future fitness/healthy behaviors that can continue into later stages of adulthood after college. Findings of a recent literature review show support for physical activity promotion interventions focusing on the period of emerging adulthood (Downes, 2015).

Many times, it is the assumption that one must have multiple resources and facilities in order to participate in physical activity and become healthier individuals, (i.e. gym memberships, weight training programs, personal trainers, dieticians, and health clubs). However, this is not the case, as a brisk walk outside or taking the stairs in a building can increase physical activity levels. In order to address the overarching theme of educational equity for the problem of

practice identified, this study may provide insight related to how individuals of multiple socio-economic statuses can increase their physical activity without the use of expensive equipment or gym memberships. Additionally, this study can help other institutions, physical education classes, kinesiology departments, student activity development, and student life personnel positively increase the health of their student population by increasing physical activity participation through the use of digital storytelling. Findings from this research could also be transferred to the K-12 public and private school sector, providing additional pedagogical techniques among physical educators at that level.

Findings from this study helped to fill a gap in the literature based on utilizing digital storytelling in a physical education and curriculum development setting. There are many fitness applications being used in today's society that focus on health and wellness; however, it is difficult to locate any that are being used to tell a fitness story to others through the use of a digital platform.

Within a small setting, such as the one where the research was being conducted, this study could have a significant positive outcome on the student's health as a whole. Another potential added benefit was related to academic achievement and retention at the institution due to the cohesive value digital storytelling entailed. Additionally, the findings of this study were discussed with administration in order to consider implementing this digital storytelling practice across a variety of curriculum content to provide instructors with new and innovative ways to improve methods of instruction. Also, this intervention could be implemented within the freshman seminar curriculum in an effort to educate students on the potential lasting effect resulting from the choices they make concerning health and wellness.

Summary

The current chapter provided an introduction to the research study conducted. A statement of the problem of practice was described, along with a brief description of the theoretical framework I intend to utilize within this study. Additional information included assumptions and limitations of the study, research questions the study would address, the significance of the study, key terms of the study, and how the study could be applicable to future practice. Lastly, this chapter addressed the gaps in the literature this study could fill and how the findings could be utilized in current practice at the institution.

In the following chapter, I will begin an in-depth description of the literature pertaining to the problem of practice being researched. A further explanation will be given concerning the theoretical framework of the study and will provide information as to why there is a need for an intervention that increases activity among college students.

CHAPTER 2: REVIEW OF LITERATURE

Physical activity has been shown to correlate with health, and new strategies must be created in order to promote physical activity in the college student population in an attempt to change sedentary behavior (Clemente et al., 2016). Given the fact that 43% of 108 incoming students in the fall of 2019 who self-reported height and weight at the current institution were categorized as either overweight or obese, I was able to identify this as a problem of practice at the current institution. The purpose of this mixed methods study was to create an intervention that can promote a change among college students related to their health and fitness. I hope that incorporating the type of change being recommended in the study will result in a healthier lifestyle and a positive perception of digital storytelling in relation to physical activity.

This study can assist many different departments and educational settings due to the fact that obesity and sedentary lifestyles tend to be a global trend (Dishman et al., 2018). Findings from this study could be transferred to student activities development among institutions of higher education. Also, K-12 public and private schools could potentially benefit from implementing an intervention, such as the one described within this study. Creating healthy habits early in life and during transitional times can help students make better choices as they continue into older adulthood.

The review of the literature establishes well-described facts about physical activity, classification of weight, and motives and barriers, and provides an in-depth description of the theoretical framework. Multiple theories are applicable to this study and will be described in the following paragraphs; however, achievement goal theory will be the primary theory utilized within this study.

Physical activity and exercise are commonly used interchangeably; however, when conducting research, one needs to be fully aware of the differences between the two terms. The components of fitness, which include muscular strength, cardiovascular endurance, and body composition, are also important aspects to understand relative to this study.

The review of the relevant literature will conclude with a description of digital storytelling and how it can be implemented in the health sciences and physical activity field. Digital storytelling is a relatively new 21st century mode of learning. Although storytelling has been used for many years, creating digital stories using multiple forms of digital mediums, including picture photography, video, music, transitions, and descriptions, still reflects gaps within the research when pertaining to health and physical education.

Theoretical Foundation

Achievement Goal Theory

Achievement goal theory (AGT) can be separated into two different categories, task oriented and ego-oriented. In the field of physical education and fitness, instructors try to motivate students in many different ways; although figuring out how to motivate that student can present a challenge. Task oriented individuals within AGT can be described as students who complete a task due to an intrinsic motivational desire (Todorovich & Model, 2005). Students who hold this perception of being task oriented are said to have a better understanding of effort and ability (Todorovich & Model, 2005). They also measure their success and failure in terms of how well they completed a task. As a result of this perception, students who are task oriented are less likely to drop out of a fitness or physical activity when faced with challenges (Mitchell & Walton-Fisette, 2016).

Conversely, students who may be more ego-oriented will complete a task based on the perception of his or her performance in comparison to others (Mitchell & Walton-Fisette, 2016). Students who perceive themselves relative to others tend to dropout of physical activity and fitness challenges if they find they cannot complete an activity as well as another person; their motivation decreases (Mitchell & Walton-Fisette, 2016).

Social psychology and physical education research within achievement goal theory indicate that individuals typically have both ego orientation and task orientation (Mitchell & Walton-Fisette, 2016). Understanding this enables myself to meet both spectrums of individuals when implementing the digital storytelling intervention by having participants post weekly physical activities to a discussion forum utilizing the learning management system, "Moodle."

Motivating students can be a daunting task; however, if an instructor can instill a belief within the student, then one could expect the student to be more likely to accomplish their goal (Ennis, 2017). In accordance with AGT, learners who engage in a task or learning goal for mastery purposes are invested in the task for the sake of completing the task (Ennis, 2017). Students who utilize an achievement goal approach are more likely to compare their current performances to past performances, rather than their performance to the performance of others (Ennis, 2017). This leads the student to attempt to accomplish goals based on an intrinsic factor (Ennis, 2017). This mastery approach, in contrast to the approach focusing on the performance of others, allows students to perceive their failures and challenges as lessons learned enabling them to continue with the accomplishment of their goal (Furness, 2018).

This theory can also be described as the attempt to achieve a "personal best." Personal best goals may make it clear to students what they need to strive for to outperform their previous best attempt (Martin & Elliot, 2016). Personal best goals have been described as allowing a

student to direct attention and effort toward the goal–relevant tasks that are important to attain in educational outcomes (Martin & Elliot, 2016).

In the this study the ultimate educational outcome is for participants to become healthier students and develop good habits involving regular physical activity. By utilizing the achievement goal theory as a component of this program, I was able to see outcomes related to personal bests from the participants. Having a specific goal (in this case a weekly physical activity) and identifying a plan where a student can become intrinsically motivated, as well as observe positive appropriate behavior from others, can aid in accomplishing that personal best goal of becoming a healthier individual. If positive behavior and personal best goal setting can be reinforced, rather than a competitive performance-based perception, one could expect adverse situations, potential failures, and challenges to be overcome and to continue to strive for personal best.

Mentoring Theory

Mentoring theory has been identified as another framework relative to the proposed study and previously has been found to have a positive impact on numerous student outcomes (Crisp, 2010). These outcomes can include: student performance, intellectual and critical thinking skills, student self-confidence, students' latent abilities, self-actualization, expectations and future aspirations, grade point average, and persistence or retention rates (Crisp, 2010). Despite these findings, when reviewing previous literature, it can be difficult to identify a valid theoretical approach to mentoring. In an attempt to provide this information, Nora and Crisp (2007) created a conceptual framework, despite the absence of a comprehensive theory. This framework focused on four major domains identified in previous comprising literature. The framework identified by Nora and Crisp (2007) is specific to undergraduate college students and based on a

review of mentoring theory from multiple disciplines including psychology, business, and PK-12 education (Crisp, 2010).

The four latent constructs included in this theoretical approach are as follows: (1) psychological or emotional support, (2) support for setting goals and choosing a career path, (3) academic subject knowledge support aimed at advancing a student's knowledge relevant to their chosen field, and (4) specification of a role model (Nora & Crisp, 2007). Crisp (2010) further utilized this theoretical framework in a study conducted among community college students but suggested that more research should be completed with a variety of populations, for example, four-year college students. The research study focused on two specific constructs of mentoring in relation to participating in physical activity. These two constructs are (1) psychological and emotional support, and (2) support for setting goals.

As previously indicated, utilizing the conceptual/theoretical framework researched by Nora and Crisp (2007), I was able to utilize two of the four latent constructs within the framework, which will include, (1) psychological and emotional support, and (2) support for setting goals. Through the use of digital storytelling and weekly posts, participants may organically create a peer to peer mentor/mentee relationship. This relationship could develop over the course of the semester as one participant may see the other participant consistently posting activities and meeting adequate physical activity levels. Relationships may form where participants begin to participate in activities with each other, set goals for/against each other, and/or hold each other accountable during the course of the 8-week study.

Social Cognitive Theory

Social cognitive theory (SCT) is applicable to specific elements of physical activity participation. Much work has been presented on Bandura's theory, specifically focusing on self-

efficacy, a person's belief that they have the ability to achieve, perform, and accomplish certain behaviors and tasks (Burns et al., 2018). SCT can be identified as the process of learning by observation, as well as focusing on the theoretical approach that learning occurs in a social context (Connolly, 2017). Observation and socialization can be an integral dynamic of how individuals gain knowledge and apply their learning (Connolly, 2017).

Additionally, Bandura's research identified self–efficacy as a person's beliefs that they have the capabilities to achieve a goal and to perform certain behaviors. This particular description can also be a focal point when examining task-oriented behavior. In SCT individuals learn through observation and imitation (Connolly, 2017). Similar to a physical education teacher demonstrating locomotor movements to a class of third grade students or a coach showing a student athlete how to make a layup, behavior in the cognitive, psychomotor, and affective domain can be learned and acquired through the use of observation. In order for these behaviors to be learned, one must have the opportunity for cognitive processes to occur while observing someone model a certain behavior. The individual observing has to see the behavior as a stimulus, which is learned and then implemented.

Behaviors are typically learned from interactions with the following: friends, parents, teammates, coaches, and teachers. When observing the individuals mentioned above, four processes occur within the observer. The four processes include: (1) attention, (2) retention, (3) reproduction, and (4) motivation. One study found that the most important process in observational learning in relation to SCT is the motivational process. In a mentor/mentee approach, when the mentor shows a lack of motivation, it can be assumed that the mentee is unlikely to imitate the behavior (Connolly, 2017). As the mentee pays close attention to the mentor, the mentor must model enough emotional appeal to motivate the participant to pay

attention (Connolly, 2017). The student/participant (mentee) must further be motivated to arrange and cognitively remember the information and replicate the information to practice and implement the desired behavior.

Applying SCT components within a program designed to use digital storytelling and weekly activity posts to enhance participation in physical activity, as well as the creation of foster mentor/mentee relationships, will hopefully create an encouraging, motivating, and positive atmosphere for all participants. Positive role models and an abundant source of reinforcement are important components of a successful program (Burns et al., 2018). Bandura's research on SCT, in correlation with self-efficacy to achieve a task, has the potential to play a critical role in the relationship between students, teachers, and higher education institutions (Connolly, 2017).

Literature Review

Physical Activity

In a society where there are multiple sources of information related to physical activity, exercise, and dietary habits, it can be difficult to distinguish between evidence-based recommendations and amateur suggestions. In order to have a clear understanding of the evidence-based research, one must fully understand the difference between physical activity and exercise. Based on the definition by the 2018 Physical Activity Guidelines Advisory Committee Scientific Report, physical activity can be defined as any bodily movement produced by the skeletal muscles that translate to expending energy.

The 2018 Physical Activity Guidelines Advisory Committee Scientific Report defines exercise as physical activity that is planned, structured, repetitive, and designed to improve and/or maintain fitness, performance, and/or physical health. Other terms to be familiar with that

are important when understanding physical activity include aerobic physical activity, anaerobic physical activity, muscle strengthening activities, and resistance training. Aerobic physical activities are intense enough and performed long enough to maintain and improve the cardiorespiratory fitness of an individual (Physical Activity Guidelines Advisory Committee, 2018). Examples of aerobic physical activity could include biking, swimming, walking, running, jogging, and dancing.

The Physical Activity Guidelines Advisory Committee Scientific Report of 2018 defines anaerobic physical activity as high intensity activities that surpass the capacity of the cardiovascular system to provide oxygen to muscle cells for the usual oxygen consuming metabolic pathways. Examples include powerlifting and sprinting (Physical Activity Guidelines Advisory Committee, 2018). Muscle strengthening activities are defined as physical activities that maintain or improve muscular strength, endurance, or power and examples of muscular strength include carrying heavy objects, lifting weights, utilizing exercise bands, and climbing stairs (Physical Activity Guidelines Advisory Committee, 2018). Finally, resistance training can be defined as a method of muscle strengthening activities that involves a progressive action of resistance to increase one's ability to exert or resist force (Physical Activity Guidelines Advisory Committee Scientific Report, 2018).

Physical Activity Guidelines

The Office of Disease Prevention and Health Promotion (ODPHP) has set forth guidelines for Americans to gain health benefits or maintain their current health status. Adhering to these guidelines on a weekly basis provides adults the best opportunity to gain the overall health benefit of participating in physical activity. The U.S. Department of Health and Human Services (ODPHP) (2018) suggests that adults should move more and sit less throughout the day.

In order to gain substantial health benefits, it is suggested that adults participate in at least 150 to 300 minutes a week of moderate-intensity, 75 to 150 minutes a week of vigorous intensity aerobic activity, or an equivalent combination of moderate and vigorous intensity aerobic activity. Ideally this activity should be spread out throughout the week (Physical Activity Guidelines Advisory Committee, 2018). Adults should also participate in muscle strengthening activities of moderate or greater intensity that involve all major muscle groups on two or more days a week (Physical Activity Guidelines Advisory Committee, 2018). Along with positive physical health benefits the human brain benefits from adequate amounts of physical activity as well. The ODPHP uses a term called "brain health," which describes the optimal or maximal functioning of behavioral and biological measures of the brain and the subjective experiences arising from the brain function (Physical Activity Guidelines Advisory Committee, 2018).

According to the Center for Disease Control and Prevention (CDC), the state of North Carolina is in the second lowest category in the nation of adults meeting adequate aerobic and muscle strengthening guidelines. At the current moment the CDC shows 18.8% of adults achieve at least 150 minutes a week of moderate-intensity aerobic physical activity or 75 minutes a week of vigorous-intensity aerobic physical activity and engage in muscle-strengthening activities on 2 or more days a week (Clemente et al., 2016). Furthermore, only 22.3% of students in grades 9-12 achieved one hour or more of moderate-and/or vigorous – intensity physical activity daily. This once again places North Carolina in the second lowest category in the nation.

Weight Status/Categorization

When viewing weight status and categorization, specifically as it pertains to obesity, overweight individuals, and the use of the body mass index (BMI), it is important to have a clear

definition of each term. Obesity refers to a body weight that is 20% above recommended levels for health (Donatelle, 2019). Body mass index (BMI) is a number calculated from a person's weight and height that is used to assess risk for possible, present, or future health problems (Donatelle, 2019). Overweight is defined as having a body weight more than 10% above healthy recommended levels for health. When looking at the BMI index, an individual classified as obese based on height and weight calculations would have to fall at 30 or above (Donatelle, 2019). An adult classified as overweight based on height and weight calculations would be in the range of 25-29.9 on the BMI index (Donatelle, 2019).

According to the Center for Disease Control, North Carolina has 32.1% of adults age 18 years and older who are classified as obese and 34.8% who are classified as overweight. When researching statistical data on adolescents specifically, the CDC shows 15.4% of students in 9th-12th grade are classified as obese and 15.5% are classified as overweight within the state of North Carolina. These percentages are very similar to the national averages as well. The CDC conducted research and gathered information showing that the prevalence of obesity was 39.8% and affected about 93.3 million U.S. adults in 2015-2016. When analyzing the data further, numbers show that adults ages 18-24 make up 15.6% of the individuals categorized as obese within the state of North Carolina and 25.2% of 18-24 year olds are classified as overweight within the state of North Carolina. This age range is commonly associated with college students enrolled in undergraduate studies. Research shows an at-risk demographic for being overweight and obesity are prevalent among college students age 18-24 (Karbulet et al., 2018).

College Students and Weight Gain

Data gathered from the National Health and Nutrition Examination Survey show that in 2015-2016 obesity was prevalent among 39.8% of adults and 18.5% of youth (Hales et al.,

2017). Statistical data also show the prevalence of obesity among adults aged 20-39 was 35.7%; however, when taking 12-19 year old's into account, the prevalence of obesity was 20.6%. This is higher than any other childhood age group (Hales et al., 2017). Taking into consideration that ages 18-24 seem to be a common age for undergraduate students, the obesity epidemic is challenging our colleges and universities.

The "freshman 15" is a common phenomenon that is described as existing at colleges and universities in the United States. This description refers to first year college student who gain approximately 15 pounds during their first year in college. Although the freshman 15 and gaining 15 pounds of body weight is considered a myth, multiple studies do show that there are weight gains among first year college students (Downes, 2015; Vos et al., 2015; Yan & Harrington, 2019). In fact, one study goes as far to say that undergraduate students gain more weight within their first year of college than at any other point in their lives (Yan & Harrington, 2019).

Currently research and the available evidence are inconclusive, when determining specifically how much weight is gained; however, one study following students from their freshman year of college to the end of their sophomore year of college showed that 70% of the students gained an average of nine pounds (Downes, 2015; Hoffman et al., 2006; Kasparek et al., 2008; Mihalopoulos et al., 2008). Weight during the college years may fluctuate, but there is supporting evidence that college students do gain weight on average and this has the potential to affect long term health outcomes and wellness (Downes, 2015). Additionally, research does indicate that weight gain is most pronounced in the first semester of college (Vos et al., 2015).

Determinants of college students' health behaviors are multi-faceted; however, personal, social, cognitive, and environmental factors are just a few that pertain to the overall health of a

student (Downes, 2015; Keating et al., 2005). Adjustments must be made among first year college students due to these individuals attempting to adjust to new academic rigors, social, and personal environments (Denovan & Macaskill, 2016; Yan & Harrington, 2019). This identifies college as an important turning point in creating a healthy lifestyle for young adults (Yan & Harrington, 2019). In the United States, college students often live in dorms on campus and eat in the cafeteria, which typically offers incoming freshman an "all you can eat" plan (Levitsky et al., 2006; Levitsky et al., 2004; Vos et al., 2015).

In order to have a better understanding of why this weight gain occurs, studies have been conducted focusing on the variables that may be causing this phenomenon. One correlational longitudinal study explored factors associated with the weight change among the college population. Findings from this study indicated that behavioral practices regarding physical activity and diet and stress management did not predict weight change; however, attitude toward physical activity did show indication of weight change (Yan & Harrington, 2019). A major predictor of weight gain among college students has been identified as the perception of barriers, claiming more participants who gained weight perceived more personal barriers to undertaking physical activity and eating healthy (Yan & Harrington, 2019). Another study conducted internationally showed that similar to the US significant risk factors for gaining weight included living independently and alcohol consumption (Vos et al., 2015). This research also indicated that males and females may need to be addressed differently when being approached concerning weight gain (Vos et al., 2015).

College Students and Physical Activity

In a recent survey provided by the American College Health Association National College Health Assessment during the fall of 2018, 49% of college students categorized their

health as either very good or excellent. This study also surveyed college students concerning their physical activity and exercise. According to this study, 55.3% of male and 55.6% of female students participated in moderate intensity cardiovascular aerobic exercise for at least 30 minutes one to four days per week. Considering the current physical activity guidelines for Americans recommend adults attaining 150-300 minutes moderate-intensity aerobic cardio per week, or 75-150 minutes of vigorous intensity activity per week creates an alarming statistic for today's college students. This number means that over half of the college student population in America are not receiving adequate levels of aerobic activity in an effort to obtain health benefits. To further put this in perspective, only 22.8% of male and 18.8% of female students are participating in aerobic cardio exercise 5-7 days per week (American College Health Association, 2018). When looking at vigorous intensity activity, the statistics show similar results. Survey results show only 32.6% of males and 23.0% of females participate in vigorous-intensity cardio for 3 or more days during the week.

This lack of participation in physical activity has become a global issue and is recognized as necessary to promote health and well-being through obtaining adequate levels of physical activity that benefits health (Clemente et al., 2016; Haskell et al., 2007; World Health Organization, 2010). In considering the reasoning behind this global issue and why it needs to be addressed among college students, research indicated low physical activity plays a role in maintaining positive mental health in college students. Additionally, results of a cross-sectional study, which took a sample of 4,747 students, 41.6% male and 58.4% female, found that low physical activity and high screen time were independently and interactively associated with increased risks of mental health problems and poor sleep quality (Wu et al., 2015). Conversely, high physical activity levels showed a negative interaction with anxiety, depression,

psychopathological symptoms, and poor sleep quality, indicating that individuals with higher physical activity levels experienced better health. Furthermore, participants with high physical activity levels and low screen time had the lowest risks of psychopathological symptoms and poor sleep quality when compared with other groups in this study (Wu et al., 2015).

College years for students can be challenging; the transitions and changes of "emerging adulthood" place this demographic at risk for developing obesity and a habit of declining physical activity participation (Downes, 2015). Due to the findings of the National College Health Assessment, college students can be characterized as living an unhealthy lifestyle, although their perception of their state of health seems to be skewed (De-Mateo-Silleras et al., 2018). Although physical activity (or lack thereof) is not the only component that contributes to obesity, depression, anxiety, and other forms of illnesses and diseases, it is an underlying and contributing factor (Young et al., 2015). Using this knowledge, institutions of higher education can combat the lack of activity and look to create change within their student body. College campus resources and facilities promoting physical activity among college students, along with other healthy habits, is a well-controlled variable that can lead to long-term healthier lives for the student (Opoku-Acheampong et al., 2018).

Fitness Testing

In order to gain a measurement of where participants were within the study, quantitative data was collected based on fitness testing that composed an assessment using BMI as a proxy for body composition, muscular strength, and cardiovascular endurance. There are multiple ways to conduct fitness testing, however one convenient way that is utilized at many public schools is the "Fitnessgram." The Fitnessgram was developed by "The Cooper Institute" in Dallas, Texas with a primary mission and goal to promote lifelong physical activity (Meredith & Welk, 2010).

Specific program goals of the "Fitnessgram" include promoting enjoyable physical activity and providing assessments of physical fitness and activity (Meredith & Welk, 2010). The "Fitnessgram" can be self-administered or conducted as an institution assessment.

For this study, I was present during the administering of the fitness tests. Tests that were administered included the following: body mass index as a proxy to determine body composition, push-up test to identify muscular strength endurance, and the PACER test for cardiovascular endurance. The BMI was calculated based on the participant's height and weight. The body mass index is typically correlated with the percent of body fat; however, some variables cannot be taken into consideration that may have an impact on the results, for example bone density or muscle mass (Meredith & Welk, 2010). When assessing muscular strength, the 90-degree push-up at a cadence of one repetition every three seconds was utilized (Plowman & Meredith, 2013). The last test that was administered to measure cardiovascular endurance is the PACER. The PACER test can be defined as a progressive, multistage maximal exercise test that utilizes a graded, speed incremented treadmill test (Plowman & Meredith, 2013). The combination of the aforementioned fitness tests assisted with achieving an accurate overall measure of fitness as possible.

Digital Storytelling

There have been many studies conducted relating digital storytelling to health (Gray et al., 2010; Lal et al., 2014), social justice (Jernigan et al., 2012; Lal et al., 2014), and education (Lal et al., 2014; Wexler et al., 2013). Digital stories have been created as interventions to bring awareness and organization in helping individuals who suffer with type II diabetes manage medications, monitor physical activity, and nutrition (Njeru et al., 2015). Although storytelling is not new, digital storytelling is an emerging method, centered around technology, that has

greater reach and dissipation potential to address a variety of concepts (Gubrium, 2009; Njeru et al., 2015). Research shows that in 2013, 21.8 million students were enrolled in American colleges and universities, and this number is expected to rise by 14% by the year 2022 (Miller et al., 2015). Approximately 64% of these students are using smart phones with digital applications (Miller et al., 2015). As aforementioned data shows 39.8% of adults and 18.5% of youth had a prevalence for obesity (Hales et al., 2017). Access to the digital applications via smartphones and other technology devices in order to improve health among individuals statistically seem to be a capable concept. However, there seems to be a gap in the literature when researching the implementation of digital storytelling to increase physical activity among college students.

Digital storytelling can be utilized as a powerful vehicle for reflection, recovery, and therapeutic action (Lal et al., 2014). It is a method of using collaborative learning (Niemi & Multisilta, 2015), modern technology, and storytelling to create 2-3 minute multimedia video clips that allow viewers to interpret personal and/or community stories (Lal et al., 2014). When creating multimedia video clips, modern technology has taken the digital story phenomena to new heights due to the wide range and accessibility of opportunities and tools to create, learn, teach, and share knowledge in an innovative format that keeps the viewers engaged (Lal et al., 2014). Keeping viewers and participants engaged has motivational qualities that include positive emotional experiences such as fun, aspiration and inspiration, enthusiasm and commitment, or the ability to devote persistent work to a task (Niemi & Multisilta, 2015). With nearly 98% of individuals in North America between the ages of 18-29 now using the internet (Lal et al., 2014; Pew Research Center, 2013), this 21st century mode of learning allows the participant to design, create, and evaluate their videos and gain a deeper knowledge of the topic chosen for the digital story (Niemi & Multisilta, 2015). In this study that topic consisted of participating in an adequate

amount of physical activity. Due to digital storytelling having layers of depth by combining multimedia art forms into one product, it increases the potential for an emotional and sensorial experience for the audience (Lal et al., 2014). The short format of digital storytelling is beneficial to sharing one's story in multiple forms, allowing numerous opportunities for file sharing, repetitive viewing, and audience distribution (Lal et al., 2014; Meadows, 2003).

Digital storytelling has been adapted into a different approach by Dupain and Maguire (2007) with the creation of a digital story book in order to teach health concepts to students (Lal et al., 2014). Findings within this study concluded that students participating in this collection of artifacts experienced a deeper and more active engagement in the process of obtaining knowledge concerning health related concepts (Lal et al., 2014). Digital storytelling can be used to promote health and wellness (Castro & Levesque, 2017).

Another research study viewed the impact of using digital storytelling as a key component of a cancer education course based on the perception of 67 community health workers in Alaska. Outcomes showed that respondents expressed digital storytelling to be supportive to learning and respectful of their culture when providing health information. A three year follow up was then conducted and 23 of the respondents noted that they had changed their behavior due to participating in the digital storytelling experience (Cueva et al., 2013; Lal et al., 2014).

According to Lal and colleagues (2014), as digital story telling is increasingly applied to health-related settings, it is important to consider incorporating evaluation methods to this modern form of instruction. By having evaluation methods within digital storytelling, it allows myself to focus on barriers and facilitators to implementing this experience in practice, education, research, and knowledge translation. Lal et al. (2014) stated that it would be of value

to assess the outcomes of using this instrument, for example in relation to community change and health-related outcomes among participants. Additionally, it could be vital to view the feasibility and utility of digital storytelling for use in a variety of populations, including youth (Lal et al., 2014).

Motives and Barriers

There are a plethora of benefits to exercise and physical activity, including optimal physical function of the human body, mental health and well-being, and the reduction of risk for chronic diseases (Aaltonen et al., 2013). As these benefits are widely known, individuals consistently struggle to complete and/or increase the adequate recommendation of physical activity on a consistent basis (Aaltonen et al., 2013). Research also states that students benefit from higher physical activity levels by having increased attention levels and better development related to the cognitive domain of learning (Iri et al., 2017). This is important to note given the disparity of academic outcomes among college students (Eisenberg et al., 2009; Melnyk et al., 2014). A research study followed 2,800 undergraduate and graduate students over a 24-month period, where findings identified that depression was a significant predictor of a lower grade point average and correlated with a higher dropout rate (Eisenberg et al., 2009; Melnyk et al., 2014).

Given these statistics motivators for participation in an adequate amount of physical activity are still being researched. One motivating factor that seems to be a consensus for all individuals seems to be health. Studies show that among all age groups participating in physical activity for health is a common theme (Aaltonen et al., 2013). Other themes that have been identified as motivating factors for individuals to participate in physical activity were to be physically fit, improved psychological state, enjoyment, self-discipline, values and norms,

beliefs, and time management (Aaltonen et al., 2013; Deliens et al., 2015). Self-control was also mentioned as a determining motivator for physical activity. However, this could also be perceived as a barrier for some individuals (Stork et al., 2016).

Stork et al. (2016) conducted a research project based on students' self–control. In this particular study findings included that self-control had an impact among college students' success within an academic setting and a correlation related to participating in an adequate amount of physical activity (Stork et al., 2016). It was found that students can utilize self-control in order to manage their daily lives. One may use self-control to study versus go out with friends, therefore that same individual may be able to utilize self-control when faced with the challenge of going out with friends or participating in health-related activities (Stork et al., 2016). Conversely, this can be dependent upon a person's amount of self-control. For example, if a person has depleted all of their self-control by choosing to study rather than participate in extra-curricular activities, one may not be able to utilize that same self-control later in the day (Stork et al., 2016).

Intrinsic Motivation

This type of motivation relates back to the primary theoretical framework of achievement goal theory. Intrinsic motivation can be defined as an autonomous form of motivation, a motivation that entails participating in physical activity for the internal experiences of joy, satisfaction, pleasure, and accomplishment (Cox et al., 2019; Al-Eisa et al., 2016). Empirical evidence strongly supports intrinsic motivation as the strongest motivational factor (Cox et al., 2019). Cumulative studies show that lasting choices to be physically active are contingent upon intrinsic motivating factors (Dishman et al., 2018). If an intervention can instill a sense of

intrinsic motivation to participate in physical activity within a student, that student will be more likely to continue the physical activity throughout life.

Extrinsic Motivation

Extrinsic motivation can be described as a motivating factor that leads to performing a physical activity or exercise in order to obtain outcomes or rewards that are separate from the behavior itself (Aaltonen et al., 2013). Relative to achievement goal theory, ego-oriented individuals tend to be more extrinsically motivated; however, this type of individual may be more likely to quit something than the intrinsically motivated. This is due to competition and the perception of the measure of success. Little is known about the motivational differences among active and inactive people (Aaltonen et al., 2013). However, the qualitative portion of this study addressed this question and provided further insight.

Summary and Conclusions

As previously discussed it can be difficult to locate research concerning the motivational differences between inactive individuals and active individuals. However, there seems to be a common theme that physical activity is important and contributes to the overall health and wellness of a student. Finding out what motivates a person, as well as how a person perceives physical activity, can help researchers create interventions. These interventions can lead to participating in physical activity and fostering that motivation could potentially create a much healthier person who is enthused about health.

Digital storytelling has been used in a variety of fields; however, implementing it as an intervention to participation in physical activity among college students has not been studied or utilized widely. Storytelling has been used for many years but with the advances in new technology and the ease and convenience of mobile phones and applications, a new era of

storytelling has emerged. Taking this knowledge and implementing an intervention to help people create and develop healthier lives provided a sense of why this study was significant.

With the information provided, the following chapter will discuss the methodology of the study and give all relevant information as to how the study was conducted. Procedure, design and rationale, sample, and research questions will all be described within the next chapter. Qualitative and quantitative data will also be described in order to address the research questions and provide a sound reasoning for why a mixed methods approach was utilized.

CHAPTER 3: METHODOLOGY

The purpose of this mixed methods study was to increase physical activity participation among freshman and sophomore college students enrolled at a small liberal arts college by implementing digital storytelling within a Kinesiology 1100 Personal Fitness and Wellness course. According to the literature, obesity has risen to be a national and international problem (Warren & Brin, 2017). College students transitioning into a different stage of their lives have been identified as an "at risk" demographic for gaining weight, as well as declining in the amount of physical activity the individual participated in, with the steepest decline occurring at the time of entering a university (Fagaras, Radu, & Vanvu, 2015).

The institution where this study was conducted is no exception. Data available from the Office of Health Services includes incoming students' self-reported height and weight. The number of new students in 2019 who self-reported height and weight was 108. This information was used to calculate body mass index (BMI). Of the 108 students who self-reported height and weight, 43% could be categorized as either obese or in the overweight category. Research indicates that physical activity can increase health benefits in a variety of ways (Plotnikoff et al., 2015), including maintenance of overall function of the body, mental well-being, and reduction of risks for chronic diseases (Aaltonen et al., 2013).

Digital storytelling is used in a variety of settings and has been recognized as a powerful vehicle for reflection, recovery, and therapeutic action (Lal et al., 2014). Research defines digital storytelling as a project where participants create short, personal narratives that incorporate multiple communication modes and can be viewed on a computer or digital device (Prins, 2016). Examples of multiple communication codes include: photos, graphics, video clips, written text, oral narrations, music, and sound effects (Prins, 2016). Implementing digital story telling in

a physical activity setting could potentially have a positive outcome on student participation and motivation towards physical activity. A research study conducted evaluating engagement in a digital story telling project among students in three different locations, Finland, Greece, and California, showed that engagement was very high in Greece and California and moderate among students in Finland (Niemi & Multisilta, 2015).

Introduction

The participants for this study were students enrolled in a course titled, KIN 1100 Personal Fitness and Wellness. The course is a freshman level course taught regularly at the institution, however not all students enrolled are classified as "freshman." The I addressed this issue by having access to participants' "classification" by the college. I will only utilize data provided by students classified as freshmen and sophomores. The course is designed to assist students in the understanding of and planning for a lifelong healthful lifestyle. Course content includes information which aids the student in developing optimal physical soundness, as well as identifying health related factors which positively and negatively affect personal health. Various teaching methods are employed in the course and students are required to participate in directed laboratory activities. Students also are required to complete related assignments outside of class.

Participants in the qualitative phase of this study were purposefully selected based on an evaluation of body mass index (BMI). Five participants were selected to interview from across the spectrum of BMI categories. In order to determine the outcome of implementing the digital storytelling intervention, I collected and analyzed anthropometric and fitness data from the participants at the beginning of the study (August) and the end of the study (October). The anthropometric and fitness data included height, weight, calculated BMI, push-up test, and PACER test. Each test satisfied a measurement for a component of fitness: strength,

cardiovascular endurance, and body composition. BMI was used in the study as a proxy for body composition.

I sought to gain a more in-depth understanding of how college students perceived physical activity participation by using a digital platform and documenting their activity over the course of 8 weeks. I also hoped to gain insight related to the perception of using this digital story telling concept to increase participation, motivation, and accountability. It was my goal to see a positive outcome among anthropometric measurements and fitness measurements at the end of the 8-week study.

This chapter includes information in regard to the design and rationale for the research method chosen, the participants, the instruments used in the study, how data was collected and analyzed, and methodological assumptions and limitations. The purpose, instrumentation, sample and population (how participants were chosen), along with the procedures, and the role of the scholarly practitioner will also be discussed.

Research Questions

In order to understand the phenomenon described and to determine whether or not the implementation of the intervention had any effect on the participants, I identified the following research questions to guide the study:

1. How does the implementation of the digital storytelling intervention affect the BMI, muscular strength endurance, and cardio-endurance measurements over the course of 8 week study?
2. What are the students' perceptions related to the implementation of a digital storytelling intervention as an effort to increase their participation in physical activity?

a. Will implementing a digital story intervention affect physical activity participation among college students enrolled in a Kinesiology 1100 Personal Fitness and Wellness course?
b. What effect did the digital story intervention have on creating or eliminating barriers related to participation in physical activity?

Research Design and Rationale

A mixed methods study was appropriate for conducting this research as I sought a positive outcome among pre- and post-anthropometric and fitness measurements over the course of the 8-week study. The quantitative data included the collection and analysis of the anthropometric and fitness measurements over the course of the 8-week study. This data provided myself with information required to focus on Research Question 1. The qualitative data collection involved conducting semi-structured interviews at the end of the 8-week study. The collection of the interview data allowed myself to focus on Research Question 2 and sub-questions related to the participants' perceptions. A mixed methods study allowed myself to collect both quantitative and qualitative data that provided specific information related to anthropometric and fitness measures, as well as participation and perception of physical activity.

Quantitative research involves the collection of data via closed-ended efforts and would not provide the rich descriptive experiences of the participants generated by qualitative research (Creswell and Creswell, 2018). Although, the qualitative data allowed me to collect deeper, more personal statements regarding the participants' perceptions related to taking part in the study, it was still important to collect the quantitative data related to participation and outcomes of the intervention. As previously mentioned, this mixed methods study design allowed the myself to collect both the specific quantitative data related to physical changes, as well as the qualitative

data via semi-structured interviews allowing more flexibility during the conversation (Creswell and Creswell, 2018). Table 1 shows how I obtained the quantitative and qualitative data and how the data will be used to answer the research questions.

Population and Setting

The participants for this research study were students enrolled in a Kinesiology 1100 Personal Fitness and Wellness course at a small liberal arts institution, located in the southeastern region of the United States. The institution where the research was being conducted has approximately 1,000 students enrolled (History, Tradition, and Mission, n.d.). It is an institution focused on liberal arts that teaches students to process information efficiently, think critically, and communicate effectively in order to become informed citizens of the world (History, Tradition, and Mission, n.d.). The institution is dedicated to developing leaders and concentrates on developing the student as a whole through personalized learning and support (History, Tradition, and Mission, n.d.).

This particular institution is classified as a Universal Design for Learning (UDL) institution. This enables the college to adapt every aspect of the educational experience to the needs of each individual learner (History, Tradition, and Mission, n.d.). The overall intention at the institution is to provide all students with a transformative education with a positive outcome that affects their lives and helps them reach their full potential (History, Tradition, and Mission, n.d.).

Kinesiology 1100 Personal Fitness and Wellness is a freshman-level course and students are advised to take this course early in their college career. The course is geared toward freshmen; however, other classifications of students are allowed to enroll in the course. The class consisted of three different sections, offered at various times and on various days, has a

Table 1

Corresponding Data Source by Research Question

Research Question	Data Source
1. How does the implementation of the digital storytelling intervention affect the BMI, muscular strength endurance, and cardio-endurance measurements over the course of an 8-week study?	Fitness testing and anthropometric measurements collected at the beginning of the 8 week study (August) and end of the 8 week study (October)
2. What are students' perceptions related to the implementation of a digital storytelling intervention as an effort to increase their participation in physical activity?	Interview Questions 1, 2, 3, 5, 6
a. Will implementing the digital story intervention affect physical activity participation among college students enrolled in a Kinesiology 1100 Personal Fitness and Wellness course?	Interview Questions 4, 6, 7
b. What effect did the digital story intervention have on creating or eliminating barriers related to participation in physical activity?	Interview Questions 8, 9, 10

maximum cap of 20 students per section, and is offered both fall and spring semester. Although the course contains a kinesiology prefix, students enrolled in this course come from a variety of majors and do not have to declare kinesiology as a major. Students enrolled in this course may utilize it to satisfy a general education category within the social sciences at the liberal arts institution.

Sample and Sampling Procedures

Research studies collecting both quantitative and qualitative data may have a smaller sample size as a result of the complexity of data collection and analysis (Creswell & Poth, 2018). In order to collect information related to each research question, I utilized multiple sampling techniques to determine the participants for this mixed methods study. In a mixed methods study, both quantitative and qualitative data are collected, therefore I identified two groups of participants: those who participated in the collection of quantitative data and those who were interviewed and provided the qualitative data. Therefore, the two different types of sampling procedures used will be identified in the following paragraphs.

Quantitative Data Collection

In this particular study, all participants were students enrolled in the Kinesiology 1100 Personal Fitness and Wellness course. As previously mentioned, the quantitative data collected and analyzed included anthropomorphic testing and fitness testing results from measurements at the beginning and end of the study. Only one of the three sections of the Kinesiology 1100 course took part in the use of the digital storytelling intervention; although, all sections provided the same pre- and post-anthropometric and fitness measurements

I utilized single stage sampling to select the Kinesiology 1100 course and collect the quantitative data. Single stage sampling, according to Creswell and Creswell (2018), is a

procedure in which I had direct access to names of the population and additional elements, including classification. Only freshman and sophomore classified students was selected for this study. Therefore, single stage sampling procedure was appropriate as I had direct access and names of the specific individuals from the Kinesiology 1100 Personal Fitness and Wellness course. Since all freshman and sophomore students in the courses, approximately 30 total, were participants in the collection of the quantitative data, I recognized that the initial participants were identified through convenience sampling. Participants identified using convenience sampling reinforces that they were selected because of their convenience and availability (Creswell & Poth, 2018). In order to increase participation, students were offered extra credit within the Kinesiology 1100 course, however the amount of physical activity participants completed did not affect their overall grade.

Qualitative Data Collection

Following a review of the quantitative data collected, the qualitative data was gathered by selecting a sample of five students from those who completed the study based on BMI measurements identified from the anthropometric data and fitness testing data of the research study. I conducted semi–structured, one-on-one interviews with the five participants selected. The interviews took place in my office at the institution to ensure confidentiality among participants. Advantages of conducting interviews in this format were related to the fact that it allows me control over the line of questioning (Creswell & Creswell, 2018). I also conducted interviews utilizing an interview protocol. An interview protocol allowed me to record information from interviews by handwriting notes, audio-recording, or by videotaping (Creswell & Creswell, 2018). According to Creswell and Creswell (2018), the interview protocol also has a

series of steps that should be followed, including the collection of basic information, an introduction, opening questions, content questions, using probes, and giving closing instructions.

Because this particular study involved participants taking part in a physical activity program throughout the course of the semester and the results will provide a significant amount of data, I utilized purposeful selection based on participants' BMI calculations to identify the participants for the qualitative phase of the study. A smaller sample size allowed myself to better manage the large amount of data collected during the study, both quantitative and qualitative (Creswell & Creswell, 2018).

Purposeful selection was used to achieve a representative sample of the selected participants and ensured that the range of variation is covered in regard to the selection of the participants (Creswell & Creswell, 2018). Purposeful selection ensured that those selected for the interview component of the study were able to provide information that assisted the myself in answering the previously identified research questions.

Purposeful selection also allowed me to identify themes and make comparisons between participants, if applicable (Creswell & Creswell, 2018). I assumed that the identified comparisons would reflect similarities and/or differences between participants and their experiences could lead to future research.

Ethical Considerations and Informed Consent

Ethical considerations are important when conducting a research study involving human participants. Prior to conducting the study, I attained approval from the Institutional Review Board (see Appendix A). At the beginning of the study, it was necessary to provide the participants with all relevant information in regard to the study and their individual participation. I also needed to gain consent from the subjects to participate in the study and an additional

consent to audio tape the semi-structured interviews, when collecting the qualitative data. The informed consent form utilized in the study can be found in Appendix B. There are a variety of items and details that should be included in a consent form to ensure that the individual has all the information before making a decision to participate. The form included the identification and contact information of myself in case the participant had any questions or concerns or would like to contact me. The informed consent form also included information regarding the purpose of the research, any possible risks and/or benefits involved, where the data collected was stored, and how the data collected was utilized.

Participants were assured that names and identities would be kept confidential in regard to pre- and post-anthropometric measurements for this research. Reporting of any collected data used pseudonyms to ensure anonymity. Height, weight, and body mass index calculations were not be associated with the legal names of the participants. A second consent form (see Appendix C) was also issued to the participants who were selected for the interview conducted at the end of the study. This consent form allowed me to audio record the interview process. Institutional IRB approvals were obtained from the institution.

Instrumentation

Quantitative data was collected at the beginning of the 8-week study via measurements identified during fitness testing and anthropometric measurements. Instrumentation used for the anthropometric data included a “TAYLOR” digital scale and height chart located in the gymnasium at the institution where the study was conducted. Height and weight were entered into a standard BMI calculator to calculate a body mass index (BMI) for the participant (Calculate Your BMI - Standard BMI Calculator, n.d.). Instrumentation used to collect data for fitness testing included a series of tests previously developed by “The Cooper Institute” referred

to as the “Fitnessgram.” For the muscular strength endurance test, the instrumentation used was the 90-degree push-up test. The 90-degree push-up test requires no equipment, is favorable among students, and the majority of individuals can perform this task (Plowman & Meredith, 2013). The endurance test instrumentation included an evaluation of aerobic capacity called the PACER test. The PACER test was chosen due to its high quality of validity (Plowman & Meredith, 2013). It is relatively easy to score and simulates a test on a graded, speed incremented treadmill (Plowman & Meredith, 2013).

Data was collected and stored utilizing Microsoft Excel. All collected data was kept on a password-protected flash drive that remained in my locked office to ensure security of the information. At the end of the study, the same instrumentation and assessments were administered, and the data was collected from the participants. At this point, I had collected both the initial data from the beginning of the study, as well as the data collected during the final week of the study. Microsoft Excel and SPSS were used to perform analyses of the information to assist me in conducting a comparison of the two data sets. Comparisons included data on muscular strength, cardio-respiratory endurance, and BMI from the beginning of the semester to the end of the semester. This comparison allowed me to answer Research Question 1.

Qualitative data was gathered based on the one-on-one, semi-structured interviews with five purposefully selected participants. The participants were selected based on a range of BMI scores. When conducting qualitative research, semi-structured interviews with participants should involve the use of open-ended questions to elicit the views and opinions of the participants concerning their experience with and perception of the intervention that has taken place (Creswell & Creswell, 2018). The one-on-one, semi-structured interviews were conducted during the last week of the 8-week study. Interviews were set to a one-hour time limit and I

asked a series of pre-determined questions. According to Creswell and Creswell (2018), the total number of interview questions should be between 5-10 and planned prior to conducting the interview with the participant (see Appendix D). Although the questions were modified, the primary foundation for the interview questions was guided by the Youth Risk Behavior Survey. The Youth Risk Behavior Survey was developed to monitor health behaviors that contribute to causes of social problems, disability, and death among adults and youth. The Youth Risk Behavior Survey also monitors the prevalence of obesity and inadequate physical activity (Overview, n.d.)

During the interview I took notes and recorded audio via an audio recording device. Qualitative observation field notes and responses to open-ended questions allow myself to gain an understanding of the participant's point of view (Creswell & Creswell, 2018). Therefore, it was important to collect observational notes during the semi-structured interviews, as well as the recording of the interview through the use of the audio recording device.

Once interviews were completed, I transcribed and coded the information collected. Transcribing and coding the information allowed me to reflect upon the material obtained to develop themes pertaining to the study. This allowed for the development of a better understanding of the data necessary to answer Research Question 2.

Procedures

A mixed methods approach was used when conducting this research study. Data collected from this methodology allowed myself the opportunity to collect information that addressed Research Question 1 and Research Question 2. Within this study I had the opportunity to communicate with the instructor of the Kinesiology 1100 course selected for the study. The instructor of the course and myself communicated frequently throughout the study. In order to

gain interest in participating in the study, I asked the instructor of the course to offer extra credit for the students who participated in the study. The instructor willingly agreed to offer the extra credit to the class. Based on the enrollment of the course selected for the digital story intervention, I anticipated that approximately 25-30 students (depending on course enrollment), classified as freshmen or sophomores, will participate in the study. As aforementioned only data collected from students classified as freshmen and sophomores was used to record and analyze data.

Phase 1: Initial Quantitative Data Collection

At the beginning of the study, I met with the classes and provided a statement of purpose for the study, discussed ethical considerations for the study, explained that anyone participating in the study would remain anonymous, and provided a brief description of the study (see Table 2). Students were provided with an informed consent document that included the information presented, along with my contact information (see Appendix B). I then provided a brief definition of digital storytelling and explained how it was connected to physical activity.

Quantitative data was collected based on certain tests, which include three components of fitness. Components of fitness that were tested included the following: muscular strength endurance, cardiovascular endurance, and body mass index (BMI), which was used as a proxy for body composition. The initial testing took place in August of the fall 2020 semester. The muscular strength endurance test involved the student performing push-ups. Participants completing the muscular strength endurance test were required to stay on rhythm to a cadence that was played via the Fitnessgram audio recording. Students started in a basic push-up position, with hands flat on the ground, fingers pointing forward, stomach facing the ground/surface, and balls of the feet on the ground/surface with a slight bend in the toe area. When the audio

Table 2

Timeline of Research Study-Phase 1

Quantitative Data-Beginning of Study	Instrumentation
Measurements Include the following:	
1. Height (Needed for BMI Calculation)	Height Chart on wall in exercise physiology lab of the college.
2. Weight (Needed for BMI Calculation)	Digital Scale in exercise physiology lab of the college.
3. BMI	Calculated as weight in kg/height in m^2
4. PACER Test (Cardio-endurance)	Fitnessgram assessment utilized in the Reynolds Center gymnasium.
5. Push-Up Test (Muscular strength/muscular endurance)	Fitnessgram assessment utilized in the Reynolds Center gymnasium.

recording said “down,” the students lowered themselves from the “start position” toward the ground until there was an approximate 90-degree bend at the elbow. As the audio recording says “up,” the students raised themselves back to the original starting position. Students performed as many push-ups as possible.

Cardiovascular endurance was measured based on a fitness test called the PACER. Participants performed this measurement in a basketball gymnasium at the institution. Cones were placed side by side at one end of the gym and participants were instructed to stand at the cones. Another series of cones was placed a specific distance, precisely 20 meters, directly across from the first set of cones. Similar to the push-up test, participants began the test based on a “beep” sound that was played via an audio recording device. Each sound signaled the participants to run to the end of the cones and stop until the next sound is heard. Participants ran to the cone directly in front of them at the sound of each beep. A point was scored each time the participant ran to a cone before the sound of the next beep. The test progressively begins to increase in difficulty as the duration between beeps decreases.

BMI, as a proxy for body composition, was assessed using height and weight. Participants’ height and weight were collected when students gathered in the gymnasium, where there was a “TAYLOR” brand digital scale for weight and a height measurement on the wall. In order to account for individual privacy, one participant at a time was called to step on the scale. The scale was cleared before the next participant was weighed. A body mass index (BMI) was calculated based on the height and weight information collected above. Once BMI was calculated, the participants could be identified in categories reflecting the results: underweight, normal, overweight, or obese.

Phase 2: Implementing the Intervention

After quantitative data had been collected in Phase 1, Phase 2 of the study began (see Table 3). I enrolled all students in "Moodle," the digital online platform the college uses for classes and assignments. I also created a discussion forum in Moodle titled "Active Announcements." Starting in week 1 immediately following anthropometric measurements and fitness testing and throughout the study, the participants were encouraged to participate in the recommended amount of physical activity per week according to the physical activity guidelines provided in the literature review. The participants were asked to utilize still photos and/or short videos of themselves participating in and describing their experiences with physical activity weekly. Each photo and/or video was uploaded to the discussion forum titled "Active Announcements" created by myself utilizing the digital platform, Moodle. Each time a post was made to the "Active Announcement" forum, the instructor was notified via email by the Moodle platform. Participants were able to view each other's "Active Announcement" activity if desired. As mentioned previously, beginning with week 1 participants were encouraged to post weekly until the end of the study, week 8.

In week 2, I utilized the institution's global communication center in order to educate students on how to create digital stories using a plethora of media platforms, for example Imovie. The global communication center at the college provides students with tutors who are literate in technology and creation of digital media utilizing still and motion photography. At the beginning of week 7 in the study, I provided a second meeting with the global communication center in order to assist research participants in creating their digital story. Additionally, during week 8, participants created and finalized their short 3-4 minute digital story utilizing the pictures and/or videos they had recorded and posted to the "Active Announcements" discussion provided via the

Table 3

Timeline of Research Study-Phase 2

Implementation of Intervention	Related Resources
Intervention will include the following:	
1. Weekly posts to "Active Announcements." Week 1	Digital platform "Moodle" discussion board.
2. Introduction of digital storytelling Week 2	Explanation of digital storytelling. Utilization of the Global Communication Center at the college.
3. Finalization of Digital Story Week 8	Global Communication Center at the college

Moodle digital platform throughout the study. The participants then had the opportunity to view each other's digital stories in a class session utilizing a classroom, media projector, and computer at the institution.

Phase 3: Final Quantitative Data Collection

During week 8 of the study, I collected the final set of quantitative data (see Table 4). The final set of quantitative data was collected from all sections of the class as a whole. Participants were asked to participate in the same series of anthropometric measurements and fitness testing as they did in Phase one. The components of the fitness testing took place in the same location, the institution's gymnasium, as in Phase 1. Anthropometric measurements, including height and weight, were also taken again in the gymnasium. Based on the height and weight data of each participant, I calculated a body mass index (BMI) for the participant.

Phase 4: Semi-Structured Interviews

In week 8 of the study, once all individuals had participated in the final quantitative data collection phase, I purposefully selected, as a sample, five participants with various BMIs who were agreeable to participating in the interview component of the study (see Table 5). The individuals were provided with the Informed Consent form that included all relevant details of the study and their participation. I asked each participant to complete the Informed Consent form indicating that they understood the information and I provided the participant with a copy of the form. Following the completion of the consent forms, I interviewed the identified participants using the interview questions (see Appendix D). Interviews were one-on-one, semi-structured, and limited to one hour in length. The interviews were conducted on the college campus in my office. Participants' responses were recorded utilizing an audio recording device and field notes were taken during the interview following the interview protocol. Once all interviews were

Table 4

Timeline of Research Study-Phase 3

Quantitative Data Collection-End of Study	Instrumentation
Measurements Include the following:	
1. Height	Height Chart on wall in exercise physiology lab of the college.
2. Weight	Digital Scale in exercise physiology lab of the college.
3. BMI	Calculated based on height and weight.
4. PACER Test	Fitnessgram assessment utilized in the Reynolds Center gymnasium.
5. Push-Up Test	Fitnessgram assessment utilized in the Reynolds Center gymnasium.

Table 5

Timeline of Research Study-Phase 4

Qualitative Data Collection	Instrumentation
Measurements Include the following:	
1. Semi-structured interviews with 5 participants using Purposeful Sampling	Interview questions (see Appendix D)

completed, I transcribed the audio recordings of each interview.

Phase 5: Data Analysis

Phase 5 included analyzing the data collected throughout the study (see Table 6). Quantitative data was analyzed using Microsoft Excel. Comparisons were made based on BMI calculations and fitness scores from week 1 to week 8 to see if there were any changes in the data. Conducting this analysis allowed me to gain a better understanding of the data required to provide an answer to Research Question 1. It was my goal to see a positive outcome in both the anthropometric data and the fitness testing data at the conclusion of the intervention. For example, if someone had a relative low PACER score, I hoped to see an improvement of that score in week 8. This could indicate that the digital story intervention had a positive effect on participants or that other variables potentially impacted the change.

Qualitative data was collected utilizing the one-on-one, semi-structured interviews with the purposely selected sample. In order to add validity to the qualitative data collected, an interview protocol with specific interview questions was used. Interviews were recorded and transcribed utilizing a smart phone app, Otter. This app allowed for quicker transcription of the interview. The transcription allowed me the ability to analyze the interviews to develop codes for reference and determine common themes based on the findings of the study. Collecting and analyzing this data helped me gain a better understanding of Research Question 2. It was my desire to see the digital storytelling intervention create positive perceptions related to motivation among participants related to participation in physical activity.

Methodological Assumptions and Limitations

Due to the requirement that participants were encouraged to post about physical activity each week to the Moodle platform, I assumed physical activity participation would increase.

Table 6

Timeline of Research Study-Phase 5

Quantitative and Qualitative Analysis	Instrumentation and Resources
Quantitative Analysis:	
1. Comparisons of anthropometric measures and fitness testing.	Data comparison in Microsoft excel.
Qualitative Analysis:	
1. Interviews with selected participants	Recorded interview, interview protocol/questions (see Appendix D), OTTER, transcription, coding, and themes.

When increased physical activity is obtained, it may be assumed that other measurements, such as strength and endurance, would increase as well, resulting in an improved body mass index score. However, this may not be the case. According to the literature, in order to gain maximum benefits from physical activity, one must participate more than one time a week (Downes, 2015). If the participant only takes part in physical activity once per week to fulfill the course requirement and create a picture and/or video for the post, they may not show statistical differences in strength, endurance, and body mass index. I also assumed that having a cohort of individuals participating together would create and foster a mentoring environment that organically and naturally occurred. This relationship can be assumed to increase motivation and participation among participants.

Limitations within the study could relate to the specific measurements used to collect the quantitative data. Strength can be tested in other forms rather than with push-ups; although this is a widely used test to complete an assessment, it may not specifically measure overall strength of the participant. When looking at body composition, this study used the determination of the body mass index calculated from height and weight. BMI is a quick way to assess whether an individual is in a healthy weight range; however, it does not take into account the bone density, lean mass, or fat mass of the individual. Other assessments for body composition can be more accurate but based on the equipment and facilities available, the BMI calculation was the most appropriate method for this particular study.

Role of the Scholarly Practitioner

I am employed at the institution as an instructor within the Kinesiology Department and a coordinator of the Health and Physical Education teacher licensure program. There are several adjunct instructors at the institution with whom I collaborate daily. The instructors of the

Kinesiology 1100 Personal Fitness and Wellness course are classified as adjunct instructors and communicated and collaborated with me daily. My additional roles regarding this study was to meet with the participants during Phase 1 at the beginning of the 8-week study, as well as implement the intervention described in Phase 2 through the creation of discussion forums in Moodle, allowing the participants to post their weekly physical activity. Additionally, my role involved conducting the interviews for Phase 3, the qualitative data collection component of the study. My involvement also allowed for collection, recording, analyzing, and interpreting of the data in Phase 5 to attempt to answer the research questions for this study.

Data Processing and Analysis

Review of anthropometric measurements took place during Phase 1 and Phase 3 to allow myself to analyze the data collected. The information gathered based on the quantitative data allowed me to answer Research Question 1. Using this data and inputting the information into Microsoft Excel allowed me to analyze the data. It was my goal to see if changes in anthropometric measurements and fitness testing occurred over time with the implementation of the digital story telling intervention.

In order to analyze the qualitative data collected during Phase 4, I completed the semi-structured interviews and used a series of steps to analyze the data gathered from these interviews. First, I transcribed the interview using audio recordings via a smartphone app called Otter. Second, after I had reviewed and analyzed all the data, information was then coded. Creswell and Creswell (2018) defined coding as the process of organizing the data by bracketing chunks, writing a word representing a category, segmenting sentences, and labeling data with a term that is often based on the language of the participant. Utilizing these steps helped me develop themes based on the findings of the interviews in order to bring an understanding of the

data related to Research Question 2. It was my goal to analyze these findings so there would be a more impactful understanding of the perception of physical activity in relation to motivation and other internal and external factors that may or may not include ethnicity, socio-economic status, and preconceived perceptions of physical activity. The themes that developed aided the me in understanding the findings relative to barriers and/or facilitators of physical activity participation. These findings can help the program potentially take this intervention further and/or develop additional programs that may create a conducive environment to help students become healthier individuals.

Summary

This study utilized a mixed methods design in order to allow me the opportunity to collect the appropriate data necessary to answer the research questions. The mixed methods approach allowed me the ability to collect and analyze both quantitative data, which enabled a better understanding of Research Question 1, and qualitative data, which also provided a better understanding of Research Question 2. The research study took place over an 8-week time frame and involved collecting anthropometric measurements from participants, including height, weight, muscular strength endurance, cardio-endurance, and body composition, along with qualitative information gathered from semi-structured interviews. It was my goal to have a positive effect on physical activity participation by implementing the digital story intervention and also conclude if the digital story had any effect on the perception of physical activity among the participants.

Chapter 4 will present the data and relevant analysis collected from the fitness assessments and the interview. Chapter 5 will include the discussion of the results of the data analysis, along with recommendations related to the purpose of this study and for future studies.

CHAPTER 4: RESULTS

This chapter provides an explanation of the data analysis techniques and describes the results of the study from a quantitative and qualitative framework. This study was conducted amid unusual circumstances due to the global pandemic, COVID-19. The study helped inform me about the perception students had toward physical activity through the use of a digital storytelling intervention, the effect of implementing digital storytelling on students' participation in physical activity, and their perception of physical activity following the addition of storytelling. Chapter 4 includes a brief description of the global pandemic involving COVID-19, a description of the participants, qualitative data analysis, and quantitative data analysis. Qualitative data were collected through semi-structured interviews limited to a one-hour time limit. Quantitative data were collected through administering pre- and post-fitness testing, as well as collecting participant's height and weight at the beginning of the study and the end of the study. The height and weight were collected in order to obtain a BMI score for the participants. BMI was used as a proxy for body composition during this study.

Coronavirus Pandemic

The Coronavirus, also known as COVID-19, is a contagious respiratory infection (Symptoms of Corona Virus, 2021). The Coronavirus, COVID-19, is caused due to a new infection called SARS-CoV-2; this virus seems to spread more rapidly and easier than the common influenza virus and can cause serious illness in some people (Symptoms of Corona Virus, 2021). This research study took place during a global pandemic, involving COVID-19; although, fortunately the institution where the study was performed was able to maintain face-to-face courses for the fall 2020 semester. The institution took measures to test all students for this

virus upon returning to campus from summer break of 2020. If a student were to experience symptoms or test positive for COVID-19, they were quarantined for a 14-day period.

Introduction

The purpose of this mixed methods study was to implement a digital storytelling intervention into a Kinesiology 1100 Personal Fitness and Wellness course. Current literature suggests college students transitioning to different stages of their lives are identified as an "at risk" population with increasing weight and a decline in physical activity participation, specifically at the time of entering college (Fagaras et al., 2015).

The study was conducted over an 8-week period during the fall 2020 semester. The study began in August, classified as week 1 and ended in October, classified as week 8. This research was guided by and sought to provide information for the following research questions:

1. How does the implementation of the digital storytelling intervention affect the anthropometric measurements which include height, weight, and BMI, and muscular strength endurance, and cardio-endurance measurements over the course of 8 weeks?
2. What are the students' perceptions related to the implementation of a digital storytelling intervention as an effort to increase their participation in physical activity?
    a. Will implementing a digital story intervention affect physical activity participation among college students enrolled in a kinesiology 1100 Personal Fitness and Wellness course?
    b. What effect did the digital story intervention have on creating or eliminating barriers related to participation in physical activity?

Participant Demographics

The participants who took part in this study were students attending a small liberal arts college. All participants were also enrolled in a Kinesiology 1100 course titled Personal Fitness and Wellness for the fall 2020 semester. Participants within this study were also only classified as either freshmen or sophomores academically. Three sections of Kinesiology 1100 Personal Fitness and Wellness were used. One section was classified as the "Intervention Group" and the other sections were classified as the "Non-Intervention Group." There were 10 students in the Intervention Group and 12 students in the Non-Intervention Group. This equaled a total of 22 participants within the study. In the Non-Intervention Group, there were seven students categorized as freshmen and five students categorized as sophomores. Additionally, in the Non-Intervention Group, there were eight males and four females. In the Intervention Group, there were seven students classified as freshmen and three students classified as sophomores. Gender demographics for the Intervention Group were eight male students and two female students (see Tables 7 and 8).

Participants in Quantitative Data Collection Phase

Participants who took part in the quantitative data collection portion of the study were current students in three sections of the Kinesiology 1100 Personal Fitness and Wellness class. Convenience sampling was used due to access to the participants. Two sections of the Kinesiology 1100 Personal Fitness and Wellness course were used as a comparison group, labeled Non-Intervention Group. One section of the course received the digital story intervention. This section was labeled the Intervention Group. A total number of participants who initially began in this study consisted of 32 participants. Among those 32 participants, 20 were categorized in the comparison group and 12 were categorized in the Intervention Group.

Table 7

Demographic Information for Non-Intervention Group

Participants	Gender	Class	Age
Student 1	Female	Sophomore	19
Student 2	Male	Freshman	18
Student 3	Male	Freshman	18
Student 4	Male	Freshman	18
Student 5	Male	Freshman	18
Student 6	Female	Freshman	18
Student 7	Male	Freshman	18
Student 8	Male	Freshman	18
Student 9	Female	Sophomore	19
Student 10	Female	Sophomore	19
Student 11	Male	Sophomore	19
Student 12	Male	Sophomore	19

Table 8

Demographic Information for Intervention Group

Participants	Gender	Class	Age
I-Student 1	Male	Freshman	18
I-Student 2	Female	Freshman	18
I-Student 3	Female	Sophomore	19
I-Student 4	Male	Sophomore	19
I-Student 5	Male	Freshman	18
I-Student 6	Male	Sophomore	19
I-Student 7	Male	Freshman	18
I-Student 8	Male	Freshman	18
I-Student 9	Male	Freshman	18
I-Student 10	Male	Freshman	18

However, the number of students whose data were analyzed and calculated were slightly different as the study continued from week 1 to week 8. Two main things that contributed to the altering of these numbers were injury and the COVID-19 virus. The COVID-19 virus placed several students who initially participated in the study in quarantine; therefore, the students were unable to complete the study and I was not able to obtain post-study data. Also, injuries affected two participants, which prohibited from them participating in exercise consistently throughout the 8 weeks. As a result of the aforementioned situations, this initial data was extracted from the final data being analyzed as a result of not being able to participate in post collection of fitness and anthropometric measurements.

Overall, 12 participants were able to participate in pre- and post-assessment data within the Non-Intervention Group and 10 participants were able to participate in pre- and post-assessment data within the Intervention Group. In order to keep anonymity among student participants within the Non-Intervention Group, participants were identified as follows: student 1, student 2, student 3, student 4, student 5, student 6, student 7, student 8, student 9, student 10, student 11, student 12. Students within the intervention group were indicated as follows: I-student 1, I-student 2, I-student 3, I-student 4, I-student 5, I-student 6, I-student 7, I-student 8, I-student 9, and I-student 10.

Participants in Qualitative Data Collection Phase

Qualitative data was collected through the use of face-to-face, semi-structured interviews. Purposeful selection was then utilized in order to choose five participants with various BMI scores within the Intervention Group to obtain the qualitative data via semi-structured, one-on-one interviews as previously described. Interview participants were both male and female students, ranged between 18-19 years of age, and were classified as freshmen or sophomores.

Participants chosen for the interview process had BMI scores ranging from 19.8 to 39.9 (see Table 9). In order to maintain privacy and anonymity of the participants, individuals participating in the interview will be referred to as John J., Jane J., Leah L., Travis T., and Dan D.

Participant 1

John J. is male, classified as a freshman, and 18 years of age. The participant's week 1 BMI score was 25.5 and the participant's week 8 BMI score was 25.8

Participant 2

Jane J. is female, classified as a freshman, and 18 years of age. The participant's week 1 BMI score was 19.8 and the participant's week 8 BMI score was 19.8.

Participant 3

Leah L. is female, classified as a sophomore, and 19 years of age. The participant's week 1 BMI score was 25.7 and the participant's week 8 BMI score was 26.4.

Participant 4

Travis T. is male, classified as a sophomore, and 19 years of age. The participant's week 1 BMI score was 39.4 and the participant's week 8 BMI score was 39.9.

Participant 5

Dan D. is male, classified as a freshman, and 18 years of age. The participant's week 1 BMI score was 25.6 and the participant's week 8 BMI score was 25.4.

Data Collection

Quantitative and qualitative data was collected for analysis in this research study. Quantitative data was collected from the participants identified in the three sections of the

Table 9

Participants – Semi-Structured Interview

Participant #	Gender	Year	Age	BMI – Wk 1	BMI – Wk 8
1	M	FR	18	25.5	25.8
2	F	FR	18	19.8	19.8
3	F	SO	19	25.7	26.4
4	M	SO	19	39.4	39.9
5	M	FR	18	25.6	25.4

institution's Kinesiology 1100 Personal Fitness and Wellness course. A height and weight for each student was assessed and recorded in week 1 and week 8, the height and weight was used to calculate a BMI score for each participant in week 1 and week 8. The 90 degree push up test was given during week 1 for each participant and repeated during week 8 for each participant. The PACER test also was given during week 1 for each participant and repeated during week 8 for each participant. The scores for each of the assessments were recorded and saved in a Microsoft Excel spreadsheet.

Qualitative data was collected via semi-structured interviews with five participants from the initial study. Once participants within the intervention group had completed the quantitative portion of the study, all participants within the intervention group were required to visually display their digital stories with each other in a classroom via the use of a media projector and desktop computer during week 8. In order to provide a better undersanding of the digital storytelling process I have included "screenshots" of some of the participants' digital stories (see Appendix G).

Participants had various BMI scores. During each interview I colleceted handwritten notes, recorded the conversation via the use of the Otter application, and transcribed each interview using Otter.

Due to COVID-19, the institution implemented a policy that if any student tested positive for the virus, they would be quarantined for 10 days before being allowed to return to class. Also, if a student was considered to be in close contact with an individual who tested positive for the virus, the person considered to have close contact also would have to be quarantined for 14 days before being allowed to return to class. Data from any participant required to quarantine or those

who suffered any injuries affecting their participation in physical activity within the 8-week study were disregarded and omitted from the study.

Quantitative Data Collection – Measurements (Anthropometric and Fitness Assessment)

Quantitative data was collected based on a series of measurements. Students were asked to meet in the institution's gymnasium for a brief overview of the study and to sign a consent form. Two copies of the consent form were given to each student in order to sign. I suggested that the participants keep the first signed copy for their own records and the second copy was collected and kept for my records (see Appendix B). In order to keep groups small, I only accepted one group at a time. Each section of Kinesiology 1100 had their own separate time to participate in the fitness and anthropometric measurements. Section 1 and 2 of the Kinesiology 1100 Personal Fitness and Wellness course, classified as the Non-Intervention Group, were asked to participate in anthropometric measurements and fitness assessments on Monday and Friday morning of week 1 and week 8. Section 3 was classified as the Intervention Group and was asked to participate in anthropometric measurements and fitness testing on Wednesday afternoon of week 1 and week 8.

Height, Weight, and BMI Collection

For weight measurements students were asked to step on a "TAYLOR" brand scale during week 1 and the same "TAYLOR" brand scale in week 8 in order to record the student's weight. The student's weight was then recorded and documented in an Excel spreadsheet as week 1 weight and week 8 weight. Students were then asked to stand with shoulders against the gymnasium wall next to a height chart in order to record the participant's height. Height of the participants were recorded in week 1 in an Excel spreadsheet and week 8 in the same Excel spreadsheet. BMI was calculated based on the participants height and weight in week 1 and then

calculated again in week 8. BMI scores were recorded in an Excel spreadsheet for week 1 and for week 8.

Fitness Data Collection (90-degree push-up and PACER Test)

Additional fitness data was gathered by administering the 90-degree push-up muscular strength endurance test and the PACER test to simulate an incline treadmill aerobic endurance/capacity test. These tests were administered to the participants at the beginning of the semester, August (classified as week 1), and near the end of the semester, October (classified as week 8). Similar to height and weight collection, the three sections of the Kinesiology 1100 Personal Fitness and Wellness course were divided into smaller, manageable groups in order to decrease the number of individuals participating in the assessments at one time and to maintain required Covid protocols. Section 1 and 2, categorized as the Non-Intervention Group, were given the PACER and 90-degree push-up test on Monday morning and Friday morning of week 1 and week 8. Section 3, categorized as the Intervention Group, was given the PACER and 90-degree push-up test on Wednesday afternoon of week 1 and week 8. Scores for each participant were recorded and documented in the Excel spreadsheet.

Qualitative Data Collection – Semi-Structured Interviews

The qualitative data collection for this study consisted of semi-structured interviews with each selected participant. Participants were selected from within the Intervention Group and had varying BMI scores. Interviews were limited to one hour, occurred in my office with only the participant present, and were recorded using the application, Otter. Before the actual recording of the interview via the use of Otter, I provided an additional consent form and gave the participant two copies (see Appendix C). Similarly, to the initial consent form for initial participation in the

study, the participant was required to sign each copy of the consent form. I suggested for the participant to keep one copy for their own personal records and I collected the second copy.

The interview followed the predetermined interview questions (see Appendix D); although, participants were allowed to discuss relevant topics freely. Participants were greeted and a brief discussion occurred before the acutal recordings took place. A general introduction of myself as well as what the interview entailed helped participants become acclimated to the environment and provided a sense of comfortability. During the recordings I also collected handwritten notes. Once the interview was completed, I asked participants if there was anything else they wished to include before ending the interview. I used the Otter application to record and transcribe the interview. Once the transcriptions were completed, I exported the transcriptions to a PDF file and printed out the transcriptions from each interview. The transcriptions were read and re-read in order to provide a better sense of familiarity with the participants' responses. Additionally, I created a chart within a Microsoft word document (see Appendix E) to help organize the coding process and develeop themes based on the responses of the participants. The themes were then mainstreamed into easy readable headings for this study.

Participant 1

The interview with John J. took place on October 15th, 2020 and took 18 minutes and 26 seconds. It was held in my office at the institution. The interview was transcribed and the I printed a copy of the transcription for analysis. The transcription was 10 pages long. John J. previously played baseball in high school. He was hoping to play in college contingent upon COVID-19 regulations.

Participant 2

The interview with Jane J. took place on October 15th, 2020 and took 11 minutes and 14 seconds. The interview was held in my office and was transcribed via Otter. The printed version of the transcript was 8 pages long. Jane J. played softball for multiple travel teams in the past and for her high school. She was hoping to play in college contingent upon COVID-19 guidelines.

Participant 3

The interview with Leah L. took place on October 16th, 2020 and was 19 minutes and 27 seconds. The interview took place in my office during week 8 of the study. The interview was recorded and transcribed by Otter. The printed version of the transcript was 13 pages long. Leah L. was a member of the varsity soccer team in high school and hoping to continue her playing career in college contingent upon COVID-19 guidelines.

Participant 4

The interview with Travis T. was 11 minutes and 41 seconds and took place on October 16th, 2020. The interview was conducted in my office at the institution and the interview was recorded. The recording was transcribed by Otter and the transcription was 9 pages long. Travis T. was a member of the varsity football team in high school and hoping to pursue football in college pending COVID-19 restrictions.

Participant 5

The interview with Dan D. was 20 minutes and 3 seconds and took place on October 20th 2020 in my office at the institution. The interview was recorded and transcribed via Otter. The printed version of the transcription was 11 pages long. Dan D. wrestled in high school and planned to wrestle in college pending COVID-19 guidelines.

Data Analysis

Data collected for this study was analyzed to assist in providing answers to the previously mentioned research questions guiding the study. Quantitative data was evaluated and analyzed in a variety of ways, including any difference between the data collected at the start and at the end of the study, as well as based on a comparison between the Intervention Group and the Non-Intervention Group. Pre- and post-assessments were gathered based on three different types of criteria, height and weight, 90-degree push-up test for muscular strength endurance, and PACER for cardiovascular endurance. Height and weight were collected and then used to calculate a BMI score, and this BMI score was used as a proxy for body composition due to convenience and accessibility. Pre-calculations of each category were collected in week 1 and post-calculations were collected in week 8. Pre- and post-calculations of the categories above provided information that assisted in answering Research Question 1.

Qualitative data analysis was conducted by evaluating the recordings and transcriptions from the interviews, and then coding the transcripts from the interviews. I also had access to recorded handwritten notes, along with the recorded audio of the interview and the transcripts of each interview. Once the transcriptions were completed, I used a common method of analysis by coding and then creating common themes that frequently occurred within the transcriptions.

Quantitative Data Analysis - Fitness Measurements

When analyzing the quantitative data obtained from week 1 to week 8 in push-up assessment scores and PACER assessment scores, there was a variance between the Intervention Group and the Non-Intervention Group. Quantitative analysis shows that on the PACER test each student within the Intervention Group increased their score. However, within the Non-Intervention Group, only seven of the 12 students showed an increase in PACER scores. The

Intervention Group also had more substantial increases in their fitness endurance PACER scores than the Non-Intervention Group. Additionally, analysis shows that 9 out of 10 students increased their push-up scores from week 1 to week 8 in the Intervention Group. In the Non-Intervention Group, only 5 out of 12 students increased their push-up scores, with two students decreasing their push-up score and five remaining the same from week 1 to week 8. When looking at the average of the Non-Intervention Group in comparison to the Intervention Group in PACER scores, the Intervention Group scored an average of 37.5 on the pre-assessment PACER test and the Non-Intervention Group scored a 43. On the post assessment PACER test, the Non-Intervention Group scored a 42.6 and the Intervention Group scored a 48.6.

When examining the averages of the two groups, the Intervention Group improved their score from week 1 to week 8 by 11.1. The Non-Intervention Group decreased their average score on the PACER assessment from week 1 to week 8 by 0.4. When looking at the average score for push-ups, the Intervention Group scored 23.5 during week 1 and 27.6 during week 8, resulting in a 4.1 increase. The Non-Intervention Group average score for the push-up test during week 1 was 19.6 and 20.4 in week 8, resulting in a 0.8 increase over the course of the study.

Quantitative Data Analysis - Anthropometric Measurements

Analysis of anthropometric measurements did not show as much variance as the fitness measurements. Height for each student in the Intervention Group and the Non-Intervention Group did not change from week 1 to week 8, although it was important to collect this information in order to determine the BMI. Weight, however, did fluctuate in both groups from week 1 to week 8. As previously noted, height and weight were used to calculate BMI, and BMI was used as a proxy for body composition for this study. With a change in weight, the BMI score fluctuated in correlation with the change in weight. Data for each group was analyzed by

considering the average weight and average BMI in week 1 compared to week 8 in the Intervention Group. The same analysis was conducted with the data from the Non-Intervention Group. The average weight and BMI scores can then be compared between the Intervention Group and the Non-Intervention Group in week 1 and week 8 (see Figure 1). The average weight for the Intervention group in week 1 was 173.5 pounds. In week 8 the average weight for the Intervention group was 176.2 pounds. This data shows a 2.7-pound increase from week 1 to week 8 in the Intervention group. The average weight for the Non-Intervention Group in week 1 was 179.2 pounds. In week 8 the average weight for the non-intervention group was 183.7. This data shows a 4.5-pound increase from week 1 to week 8 in the Non-Intervention Group.

The difference in weight correlated to the following statistical differences in the BMI scores (see Figure 2). The average Non-Intervention Group BMI score in week 1 was 25.9, and in week 8 the average score was 26.5. This showed a 0.6 increase in BMI score when looking at the Non-Intervention Group's average from week 1 to week 8. The Intervention Group BMI score in week 1 was 26.2, and in week 8 the average score was 26.6. This showed a 0.4 increase in BMI score when examining the Intervention Group's average from week 1 to week 8.

Qualitative Data Analysis – Semi-Structured Interviews

Basic qualitative research analysis was used when analyzing data collected during the one-on-one, semi-structured interviews. According to Saldaña (2016), when analyzing qualitative data, it is recommended to utilize concepts and thematic coding in order to view a bigger picture based on the ideas suggested and derived from the data at hand. I utilized the audio digital recordings and transcriptions from the interviews; and, to become familiar with the data listened to the digital audio recordings multiple times while reviewing the transcripts. The transcriptions were then transferred to a Microsoft Word document and broken down into a

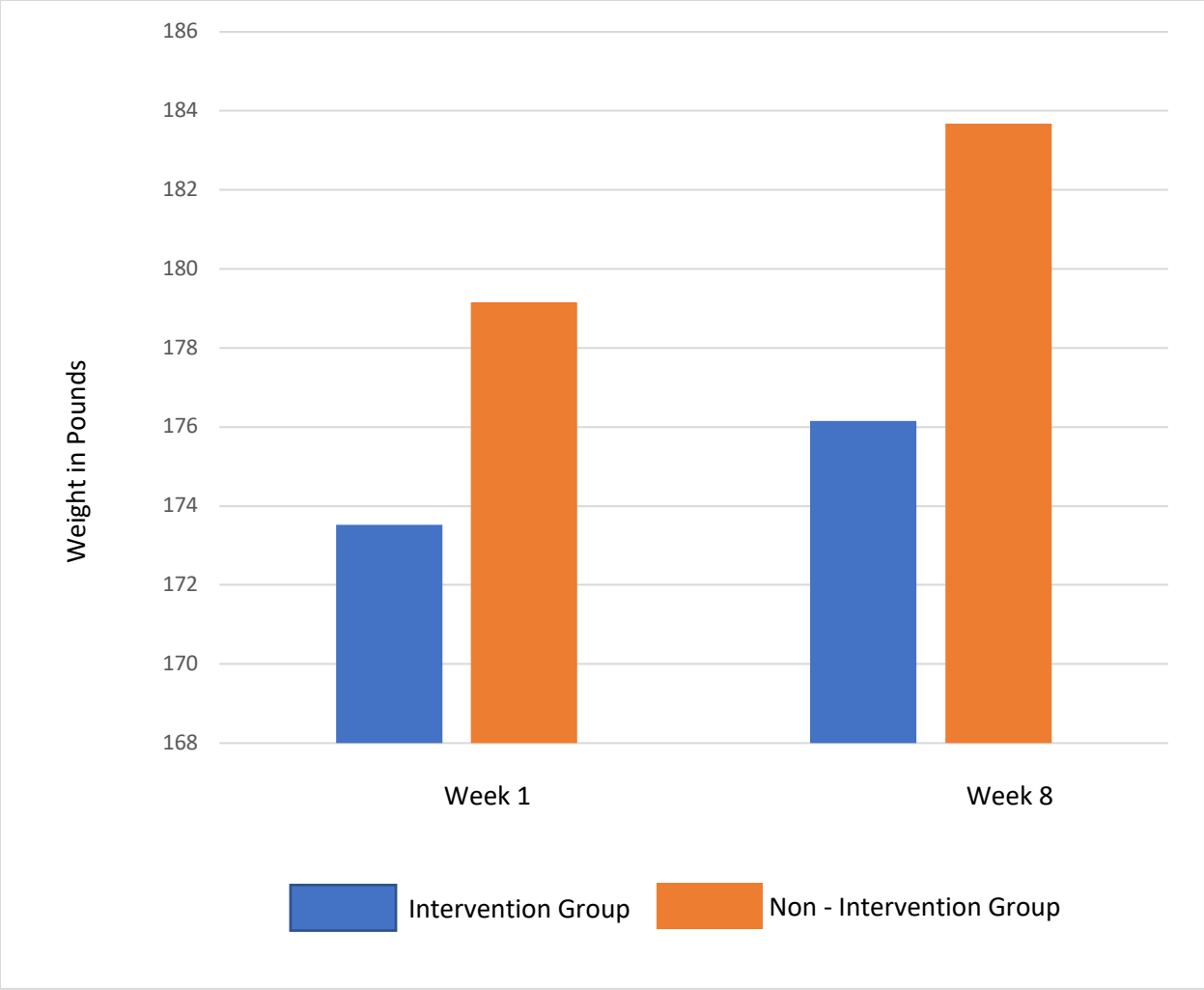

Figure 1. Groups' average weight in pounds – week 1 and week 8.

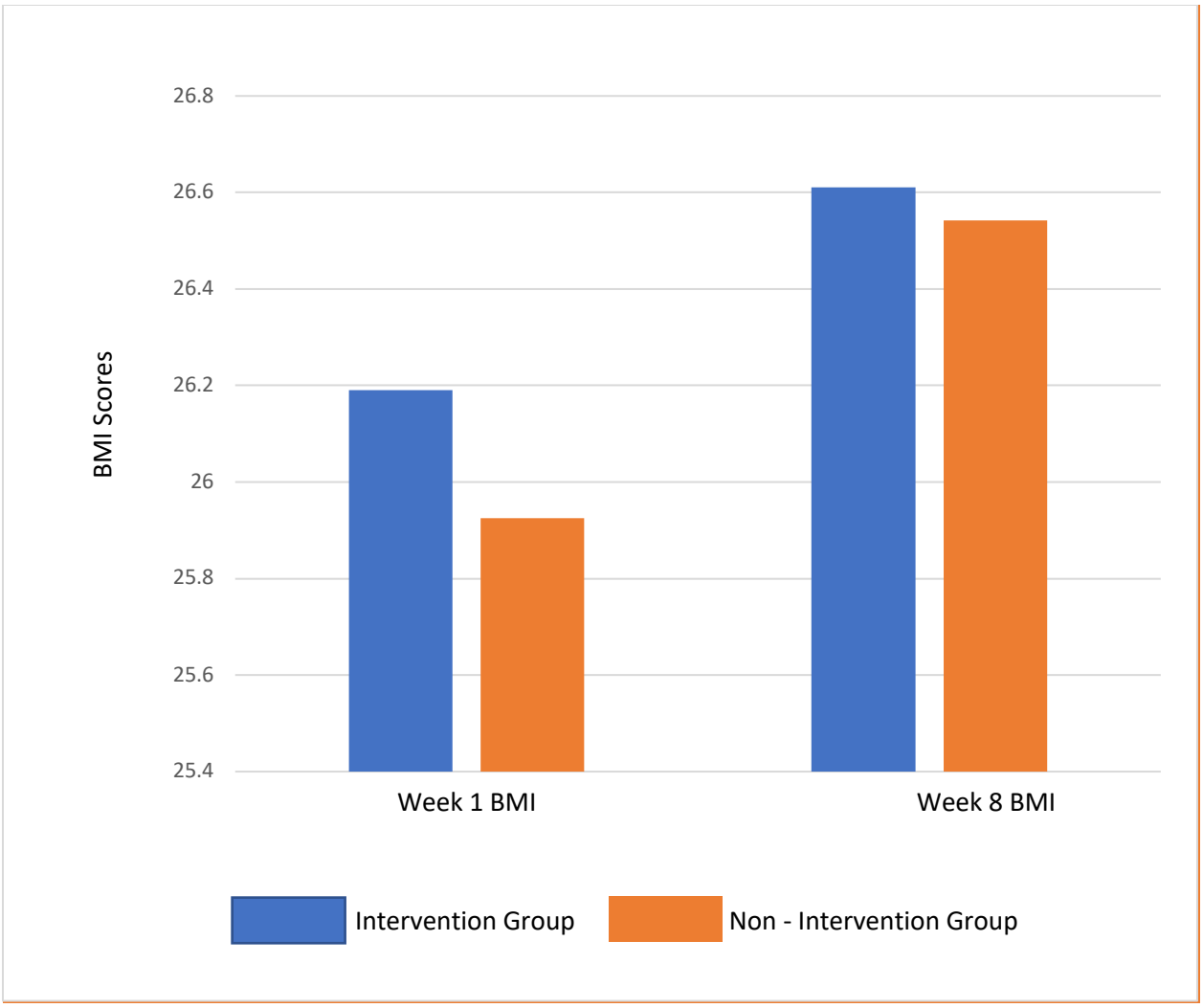

Figure 2. Groups' average BMI score – week 1 and week 8

2-column table (see Table 10). One column was utilized for the transcriptions and the other column was utilized for initial coding.

After the process of initial coding was complete, common themes were generated to gain further insight into the data. The coding was cross-referenced with the interview data, the research questions, and back to the themes created. The identified themes were then used to help facilitate answers to Research question 2, Research question 2(a), and Research question 2(b). Table 11 displays the themes that were identified based on the analysis of the qualitative data.

Theme 1 – New Concept

The theme, "New Concept" was identified as a result of similar responses to a question that was asked to the participants during the interview process. Participants were asked to explain their overall experience in the digital storytelling process and how familiar they were with the concept of digital storytelling. When coding the transcription, the data showed multiple students expressed that this was a new concept and they never had experience in creating a digital story. Travis T. described participation as, "**…** my first time doing something like this. It was similar to snapchat, like taking pictures and putting them together." Furthermore, it was also mentioned that some had never heard of digital storytelling, as indicated by Leah L., "I've never heard of the digital storytelling. I've just heard of a log." Ultimately, the perception of digital storytelling was a fun and enjoyable experience that participants might implement into a physical activity program in the future. Participant 2 stated, "I was actually not familiar with digital storytelling. But I did think it was an interesting view of how to show progression."

Based on the results of the interviews, the participants indicated that utilizing digital storytelling in a fitness setting was a new concept. As John J. stated:

Table 10

Qualitative Data Analysis Procedure

Steps for Analysis	Procedure Utilized in Analysis
Step 1: Listening, Reading, Familiarity	Listen, Transcribe, read, listen, and become familiar with all interview data
Step 2: Generation of Table	Generate Microsoft word document to transfer transcription and create an easy to read table for coding the transcription
Step 3: Coding and Labeling	Code initial transcriptions, label, organize data.
Step 4: Utilization of Codes	Utilize codes to create themes.
Step 5: Review and Linkage of Data	Review and link themes back to the data and the original research questions within the study.

Table 11

Themes Identified Based on Semi-Structured Interviews

Theme #	Theme Label
Theme 1	New Concept
Theme 2	Mindset
Theme 3	The Positive Impact & Self-Reflection
Theme 4	Relationships
Theme 5	Maintain/Increase in Physical Activity Level
Theme 6	Digital Storytelling in Freshman Seminar

It was kind of like a foreign concept to me I didn't really understand, I had never really like put together like pictures and videos and tried to make a digital story. I've never really done that before. It was something new to me, but it was something cool to learn how to do and definitely something I might use in the future.

Theme 2 – Mindset

"Mindset" was identified as a theme based on the participants' responses toward the overall experience they had with digital storytelling. Although using digital storytelling was a new concept to the participants, it served an important role in their mindset towards physical activity. As Travis T. indicated, "I mean, it was kind of hard at first to create a digital story, but I feel like it made me want to get better." Jane J. stated, "I like to work out a lot but now, since I was videoing it and showing my progression it was really just focusing on making sure that I did improve."

The codes identified based on the transcriptions displayed a strong trend towards students developing goals, thinking about their activities, and their focus when creating the digital story. The students felt that their digital story needed to tell a story over an 8-week time frame. Therefore, participants were very conscientious when taking pictures and videos that would be implemented into their digital story presentation. As John J. stated:

I had in mind trying to create something that you could see some improvement. So, like I started out, took a picture of the scale, and my goal was to gain weight and get stronger. So, I took pictures of scale and I took pictures of different exercises that I was doing that had the mindset of gaining weight, getting stronger, and doing that over the eight-week period.

When considering the change in mindset that occurred as a result of implementing the digital storytelling intervention, Jane J. also indicated, “I really enjoyed it because it held me accountable for making sure I keep working out and trying to improve from where I started at.”

Theme 3 – The Positive Impact and Self-Reflection

The positive impact and self-reflection that took place via the digital storytelling process was identified as a theme due to the consistency in language among participants concerning how the digital story impacted their positivity toward physical activity. The process seemed to give a sense of positivity toward actions, attitudes, self, and the sense of building good habits towards physical activity. Dan D. described their experience stating, “digital storytelling had a positive impact because it just like gives me that motivation just to like do something bigger than myself.”

Additionally, self-reflection was included due to the fact that pictures and videos within a digital story give an individual immediate visual feedback about their physical activity, as well as a continuum of visual feedback, based on their workouts and physical activity levels. Regarding continual visual feedback, John J. indicated:

> The digital story was a way for me to document what I was doing, so that I could kind of like, get into a habit of doing certain things instead of just working out, you know, over a period of time, like I saw maybe last week I did this particular exercise like I did push-ups and I was able to do, for example like 10 sets of 8 or something like that then maybe the next week I have a goal of looking at that video and improving and getting better in my push-ups.

Travis T. also discussed the benefit of continual visual feedback that was created via the digital stories: “I just like seeing the way I progress over the time, like over a couple of weeks, and so then I want to get better at what I do.”

Theme 4 - Relationships

The idea of relationships and relationship building was identified by many of the participants when discussing their experience with digital stories and physical activity requirements. As Jane J. stated:

> I created new relationships, especially because we were doing a lot of the same workouts and lifting the same weights and we were pushing each other, just to get better. It was a positive influence, because it made me feel healthier as an individual, and the fact that I could push that onto somebody else to help them feel healthier.

Relationships tended to be a reoccurring code based on participants. Travis T. indicated that they, “got closer to I mean, one of my classmates. I feel like we got to know each other better, because we were spending more time together, and it was something that we could do outside of just the classroom.” Although the study did not require a physical activity partner, natural relationships organically occurred over the period of the 8-week study. Participants identified the ability to depend on each other and see what one another was doing throughout the process, as this enabled them to push each other and encourage participation and progress within physical activity, workouts, and exercises. As indicated by Dan D., “I feel like we were just accomplishing more than going and working out by ourselves.” Additionally, John J. stated, “everybody's able to, you know, improve and get better together and it's definitely a positive thing.”

Theme 5 - Maintain/Increase in Physical Activity Levels

Maintenance or an increase in physical activity levels was identified as a theme based on the multiple mentions by participants during the interviews. Physical activity was a significant focus within this research, specifically since previous research shows that this demographic is considered to be an "at risk" population. The digital storytelling intervention sought to determine if this experience may have positive effects on physical activity participation. After conducting interviews with the five participants, this theme continuously reoccurred. Travis T. described their activity level prior to and following their participation in the study:

> My fitness level was kind of basic. I was a little out of shape and everything but making the video and working out with my friends and stuff kind of got me more fit. During the intervention I was trying to do some type of physical activity about every day.

Participants shared that through the use of digital storytelling they were able to reduce the barriers, such as TV, gaming systems, and other distractions, that may prevent them from being able to focus on physical activity participation. Leah L. discussed their involvement with video gaming and its effect on their activity level stating, "I feel like sometimes I'll get so stuck into a video game … it's like two hours later and I'm like, wow, I wasted time and didn't do what I was wanting to do." Regarding distractions, John J. indicated:

> When it comes to video games, you know, it's the school day and it's not the weekend so maybe an hour a day or something like that but you do get in a situation sometimes where you're playing video games or something and it becomes a five-six hour time period where you're just sitting there doing absolutely nothing and that's not healthy for you when you're not getting any sort of physical activity but I think definitely digital storytelling can help with that.

Theme 6 – Digital Storytelling for Freshman Seminar

This emerging theme was brought to my attention at the end of the interview. During the interview I briefly asked if the participants had anything else to add about digital storytelling. Several participants mentioned utilizing the digital storytelling method within other academic areas, specifically freshman seminar classes. John J. described using digital storytelling in this course:

> I think digital storytelling would be a good thing for freshmen to do because a lot of times when you're going into college, it can be scary. There's a lot of things coming at you, a bunch of new experiences, and stuff like that. So, to sit down and maybe just simplify things and have just one goal that you want to set up and having something like a digital story that allows you to see what you're able to do and keep you on track and being able to see your progress throughout is I think a good tool for freshmen.

This idea continuously was brought up by participants. Participants discussed the way digital storytelling was able to show their progress in physical activity efforts and could serve in a similar way for freshmen students. Dan D. indicated that "digital storytelling creates a good atmosphere and stuff to see your progress … Looking back and seeing what you did like wrong or how far you've come to doing something right." The focus on digital storytelling and its impact on physical activity brought up other ways for digital storytelling to impact an organization in other content areas.

Results

Data collected and analyzed from both the quantitative and the qualitative portions of the study can be evaluated and correlated to provide an answer to each research question listed within the research study. The quantitative data which consists of the comparative analysis

between the Intervention Group and the Non-Intervention Group in the categories of anthropometric measurements and fitness testing will be utilized to provide analysis of Research Question 1. The qualitative data collected from transcriptions of semi-structured interviews, the codes derived from those transcriptions, and themes identified based on the codes will be analyzed in order to provide information to answer Research question 2 and Sub-questions 2(a) and 2(b).

Analysis of Research Question 1

Research question 1 in this study addressed how the digital storytelling intervention affected fitness scores and BMI measurements. Research question 1 states: How does the implementation of the digital storytelling intervention affect the BMI, muscular strength endurance, and cardio-endurance measurements over the course of an 8-weeks?

Based on analysis of the data, fitness measurements varied between the Intervention Group and the Non-Intervention Group; however, there was very little difference between anthropometric measurements between the Intervention Group and the Non-Intervention Group over the course of the 8-weeks. When analyzing the implementation of the digital storytelling intervention and its possible effect on anthropometric measurement, I utilized height and weight to calculate a BMI, which was used as a proxy for body composition, due to convenience and accessibility. A descriptive statistical analysis for the mean BMI score was calculated for the Intervention Group and for the Non-Intervention Group in week 1 (see Figure 2). The results of this calculation consisted of the Intervention Group in week 1 having a mean BMI score of 26.2 and the Non-Intervention Group in week 1 having a mean BMI score of 25.9. The mean BMI score for the Intervention Group in week 8 was 26.6 and the mean BMI score for the Non-

Intervention Group in week 8 was 26.5. The Intervention Group had a 0.4 increase in mean BMI score, whereas the Non-Intervention Group had a 0.6 increase in BMI score.

Statistical analysis via Microsoft Excel related to the mean scores of the fitness testing showed that the digital storytelling process may have had a greater impact than it did with the BMI measurement in the Intervention Group and Non-Intervention Group (see Figure 3). A mean score was statistically calculated for the push-up test and the PACER test in week 1 and week 8 in the Intervention Group. Additionally, a mean score was calculated for the push-up test and the PACER test in the Non-Intervention Group during week 1 and again during week 8. The Intervention Group mean score for the push-up test in week 1 was 23.5. In week 8 the mean score was 27.6, which reflected a 4.1 score increase for the Intervention Group. The Non-Intervention Group had a mean score on the push-up test in week 1 of 19.6. In week 8 the Non-Intervention Group had a mean score of 20.4. This equates to a 0.8 increase. When comparing the statistical data results of the mean scores for the push-up test in the Intervention Group versus the Non-Intervention Group, the Intervention Group had a more significant increase in average push-up scores than the Non-Intervention Group.

Analysis of the PACER test shows the mean score for the Intervention Group in week 1 was 37.5, and in week 8, the mean score was 48.6. This resulted in a 11.1 increase in score for the Intervention Group. The Non-Intervention Group in week 1 had a mean score of 43, and in week 8, the mean score was 42.6. This resulted in a decrease in score by 0.4 for the Non-Intervention Group, as seen in Figure 3. When examining the quantitative data collected for each individual participant, one can surmise that the addition of the intervention had an effect on the resulting scores and showed improvement in more participants overall than the Non-Intervention

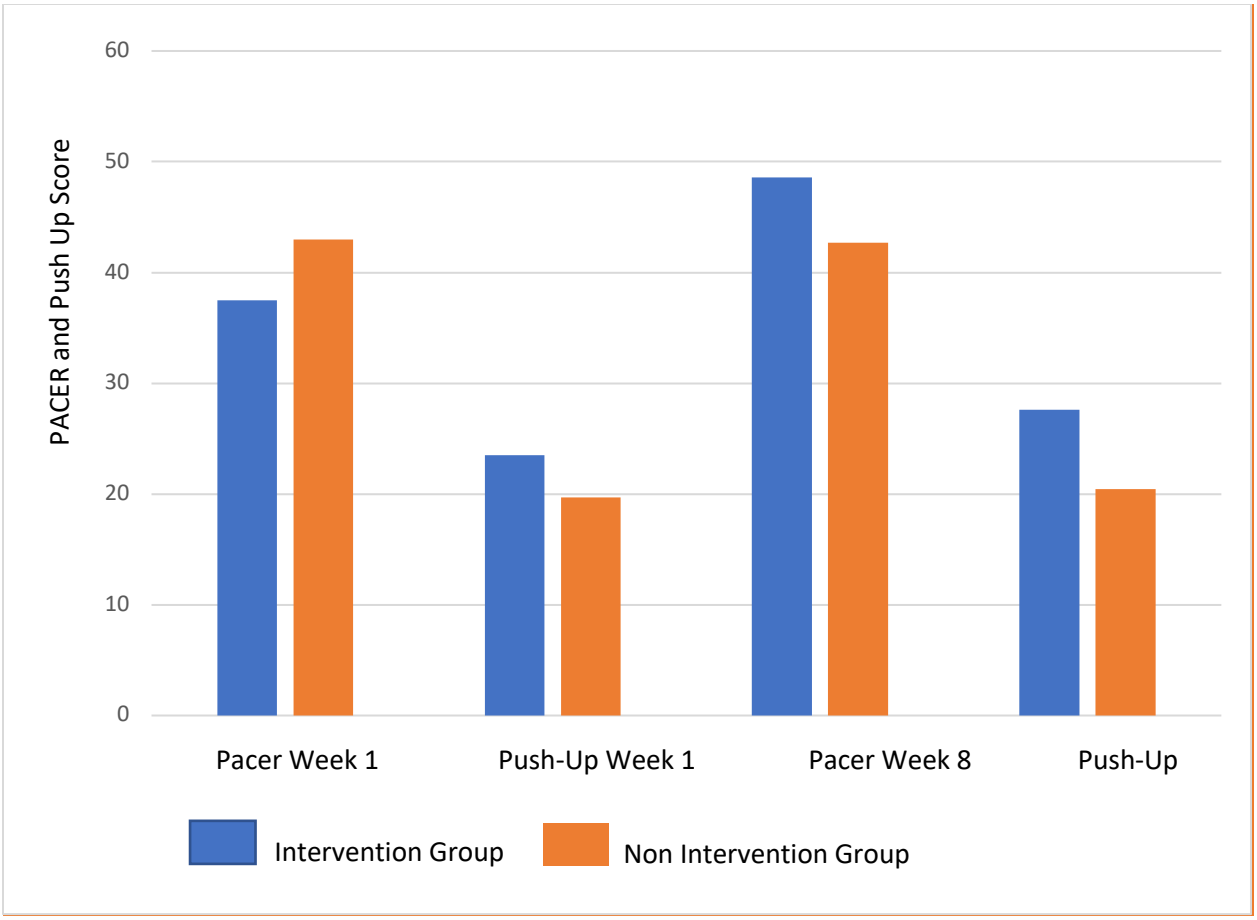

Figure 3. Groups' average push-up/PACER scores – week 1 and week 8.

Group in both push-up test and PACER test. Figures 4 – 7 provide a visual representation of the data collected for each participant in each of the identified assessments.

Analysis of Research Question 2

Research question 2 within this study seeks to identify student perceptions in relation to the implementation of creating digital stories as it pertains to their participation within physical activity. Research question 2 specifically asks, What are students' perceptions related to the implementation of a digital storytelling intervention as an effort to increase participation in physical activity? Participants were asked specific questions during the interviews to help address this question. In an effort to collect data relevant to answering this question, participants were asked to describe their overall experience creating a digital story. John J. described their experience: "I definitely think it has a positive impact like I said a little bit earlier, I think it was a good way for me to document what I was doing." Additionally Leah L. indicated, "it was probably one of the best things that I could have done because it just taught me a lot about myself and how recording what I did actually, mentally and physically works."

Another question asked participants if creating a digital story may have influenced their participation in physical activity. Jane J. described their participation:

> So by creating it I do think it influenced my participation and physical activity, because like I said I was being held accountable to make sure that I had progressed from the beginning stage to the end which I felt like I showed throughout the video.

Leah L. added, "I feel like you're committed to something and if you're required to take pictures of what you're doing or just you working out, it's kind of motivating and it makes you feel like you have to do it." Participants were asked to elaborate here in an effort to collect rich data that could be analyzed to provide answers to the research questions guiding the study. John J. added:

Figure 4. Intervention Group – push-up score – week 1 and week 8 – by participant.

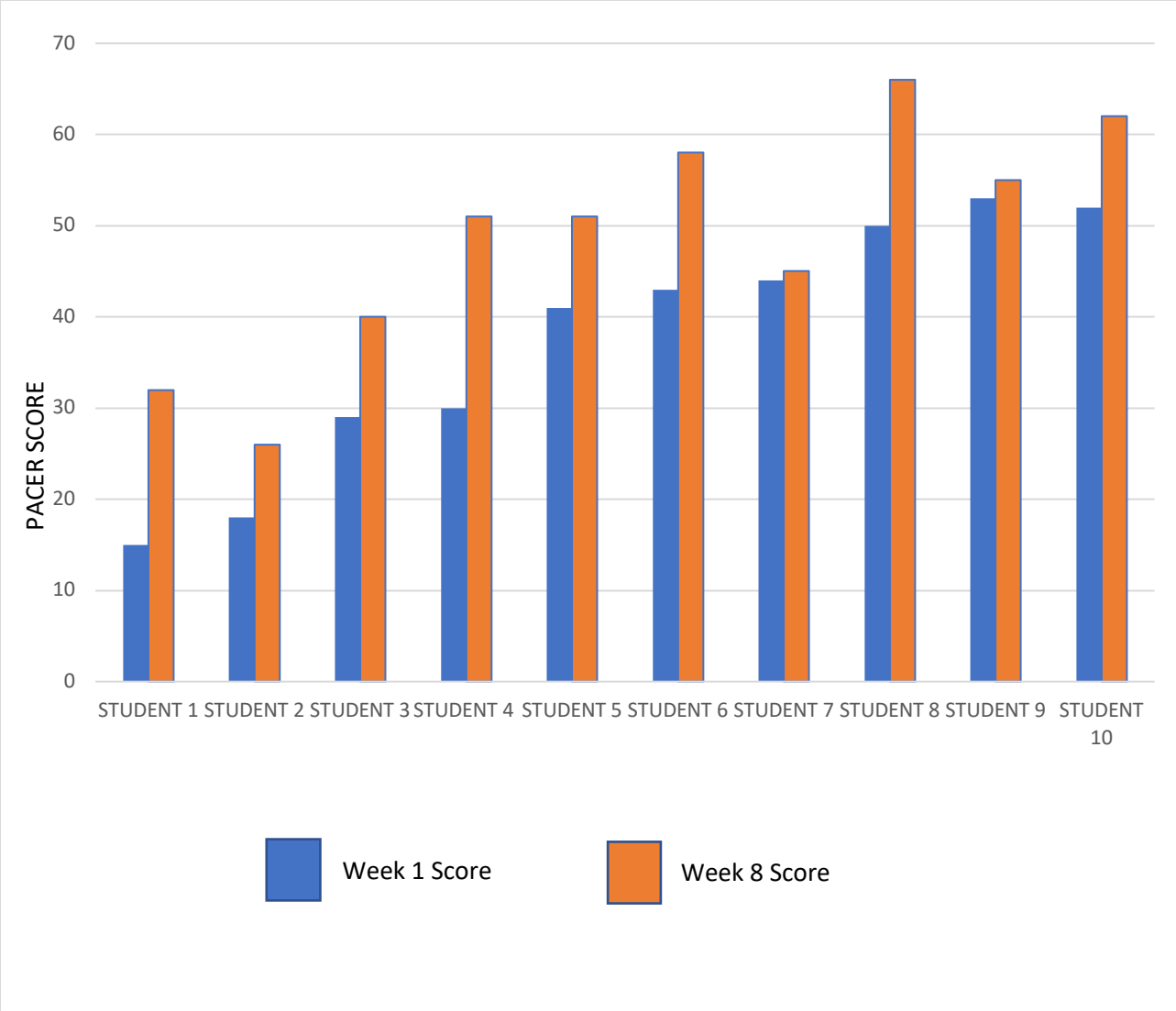

Figure 5. Intervention Group - PACER score – week 1 and week 8 – by participant.

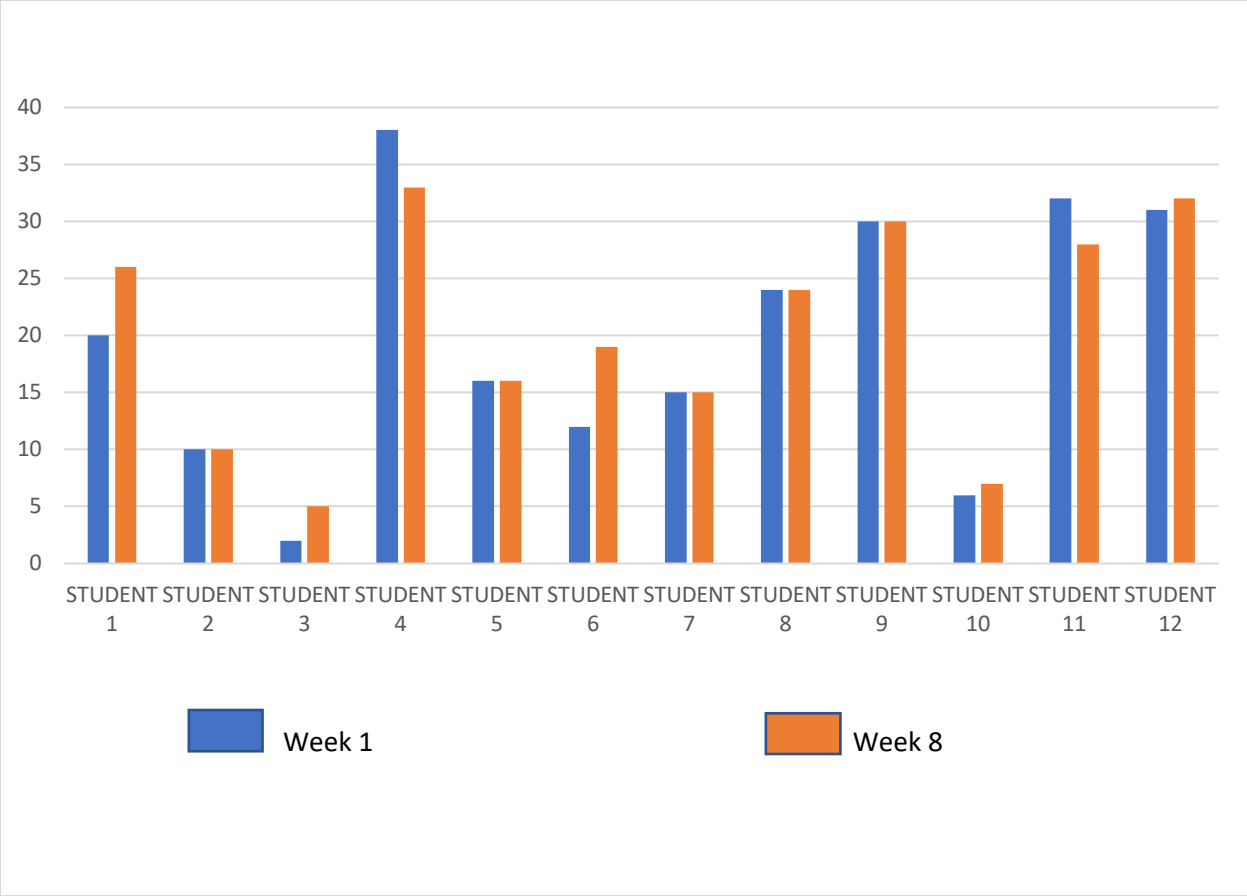

Figure 6. Non-Intervention Group – push-up score – week 1 and week 8 – by participant.

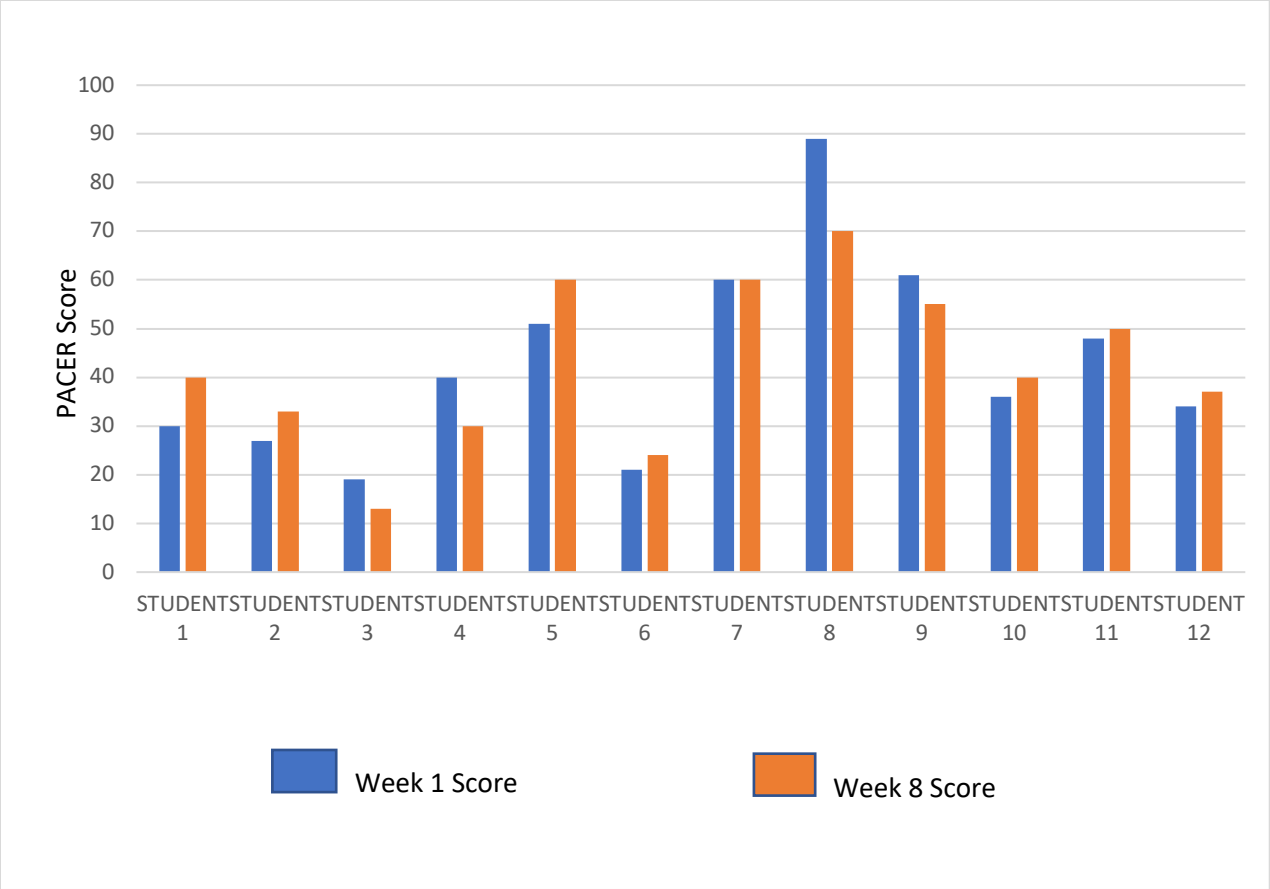

Figure 7. Non-Intervention Group - PACER scores – week 1 and week 8 – by participant.

> It's definitely a great tool to use to improve and get better throughout, your process of working out and everything, because you can see, 8, 9, 10 weeks ago, what you were, what situation you were in and then you can see, you know, your progress throughout.

The results of this study could impact the use of digital stories as an intervention in future physical activity courses. Dan D. described their experience with digital storytelling:

> My experience creating a digital story was like a good and fun experience that I had. I got to record my workouts and the experience kept me in shape and everything. … Yeah, digital storytelling had a positive impact because it just like gives me that motivation just to like do something bigger than myself.

Based on the participant responses and analysis of the relevant interview questions, I was able to identify the following themes related to answering Research question 2: Theme 1- New Concept, Theme 2- Mindset, and Theme 3 - Positive Impact and Self-Reflection

The responses above and analysis of the qualitative data code words, such as new concept, positive impact, increase in physical activity, and mindset frequently were mentioned among the participants within the study. This contributed to how they perceived the digital storytelling intervention. Through thorough analysis of the qualitative data, the digital storytelling intervention was a new concept that helped participants focus, have a different mindset towards their workouts and physical activity, and overall had a positive impact towards the participation in physical activity.

Analysis of Research Question 2(a)

Research question 2 includes sub-questions that relate to the effect implementation of the intervention may have on participation within the Kinesiology 1100 course from the students who participated in the intervention. Specifically, sub-question 2(a) states: will implementing the

digital story intervention affect physical activity participation among college students enrolled in a Kinesiology 1100 Personal Fitness and Wellness course? The qualitative data collected helped provide an answer to this question. Two specific interview questions were focused on gathering data to address this question. Firstly, participants were asked to describe their physical activity level before taking the class. Secondly, participants were asked to consider the number of days they were physically active for 60 minutes or more while participating in this intervention.

Participants provided various descriptions and answers regarding their physical activity. Regarding activity level, John J. stated:

> I had a pretty high physical activity level, you know I was working out a lot, but I definitely think that during the class, during the little period that we were doing this, I think my physical activity level actually saw an increase.

Whereas Leah L. indicated the following regarding their activity level, "I would say it was okay, I wouldn't say that it was great, but it was here and there."

Based on the responses, it appeared that regardless of whether students were at a sporadic physical activity level or a high physical activity level, the digital story intervention did have some type of effect on their participation. Travis T. described the change in their activity level after implementation: "[Activity level] was kind of basic. I was a little out of shape, but making the video and working out got me more fit." Additionally, Daniel D. shared, "I would say during the intervention I was able to have more fun so that was pretty good, so, I was participating in physical activity about 6-7 days a week."

The descriptions give insight as to whether the participants either increased their physical activity level, attempted to gain strength, or simply had more fun and began to get more involved as a result of the addition of the digital storytelling intervention.

Analysis of Research Question 2(b)

Research question 2(b) sought to find information relative to barriers that prevent students from participation in physical activity. Research question 2(b) states: what effect did the digital story intervention have on creating or eliminating barriers related to participation in physical activity? In order to address this specific question, I asked participants about their time spent on technological devices, such as computers, video games, and television. John J. acknowledged the following:

> You do get in a situation sometimes where you're playing video games or something and it becomes a five-six hour time period where you're just sitting there doing absolutely nothing and that's not healthy for you when you're not getting any sort of physical activity…

A follow-up to that question was in regard to how this might impact their level of participation in physical activity. Jane J. described their screen time:

> Well, by watching more TV it felt like I got lazier. I watch about 3 hours a day. During the study is when it impacted me a lot because I was able to turn it off and just get out and be active.

Additionally, participants were asked to consider how digital storytelling had impacted their level of participation. Leah L. stated, "when you have to take pictures every week, it's a motivation to work hard. My activity level was up and down but now I am active about 5-6 days a week."

When analyzing the qualitative data, the overall response was positive regarding the implementation of digital storytelling and its impact on participation in physical activity. This overall response contributed to theme 5, Maintain/Increase levels of Physical Activity.

Summary

Chapter 4 presented the results from the mixed methods study using quantitative data collected via pre- and post-assessments in anthropometric measurements and fitness testing. Qualitative data was collected in one-on-one, semi-structured interviews, and the results were analyzed using recordings and transcriptions to determine relevant codes and develop applicable themes. The quantitative data was recorded into a Microsoft Excel spreadsheet and a descriptive statistical analysis comparison was used to look at the mean average between week 1 scores and week 8 scores in the Intervention Group and the Non-Intervention Group. Data comparison showed that there was a positive effect on fitness scores within the Intervention Group. This data resulted in a response to Research question 1 focusing on the impact of the implementation of the digital storytelling intervention.

Dialogue and answers to open-ended interview questions helped create a clearer picture of the perception, participation, and impact that digital storytelling has on physical activity participation. Participants elaborated on the impact digital storytelling had when it comes to participation, barriers that may prevent participation, and the overall perception toward physical activity participation and digital storytelling. The six themes that emerged through the analysis of the qualitative data in this chapter resulted in responses to Research question 2 and sub-questions 2(a) and 2(b).

Chapter 5 will discuss in more detail the quantitative findings and the six themes that emerged from the qualitative data analysis. Additionally, Chapter 5 will include a summary, implications, limitations, and future research.

CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter 5 includes a summary and discussion of the findings, as well as a discussion and a correlation to the previous literature in Chapter 2. Chapter 5 also includes a discussion of the limitations of the study. I will describe the implications of the findings for practice and recommendations for future research.

The purpose of this mixed methods study was to gain insight into how digital storytelling used as an intervention may affect participation in physical activity among freshman and sophomore college students. Additionally, I sought to collect data that would give further insight to the perception students had towards digital storytelling as it pertained to participating in physical activity.

In this study I collected quantitative data via the assessment of anthropometric measurements and fitness testing in week 1 and week 8 of the study. Qualitative data was also collected in this study and included information pertaining to the perception of digital storytelling toward physical activity participation. Five students were selected based on BMI scores. Semi-structured one-on-one interviews, with open-ended questions were used in order to collect data geared towards students' perception toward a digital storytelling intervention in conjunction with physical activity, the effect digital storytelling had on physical activity participation, and whether digital storytelling could eliminate barriers that students sometimes face when participating in physical activity.

Specifically, the research study was conducted to seek information pertaining to two research questions. Two additional questions were used to support research question 2, sub-questions 2(a) and 2(b). Research question 1 focused on the quantitative outcome a digital storytelling intervention may have on physical activity participation by analyzing pre and post

fitness measurements. Research question 2 sought to find information relative to students' perceptions of a digital story telling intervention in relation to participation in physical activity. Research question 2(a) supports research question 2 and focused on the effect the implementation of digital storytelling might have on participation among college students enrolled in a Kinesiology 1100 Personal Fitness and Wellness class. Research question 2(b) also supports research question 2 and examines whether the digital storytelling intervention eliminated barriers related to participation in physical activity.

Summary of the Findings

This mixed methods study was conducted at a small liberal arts institution located in the southeast region of the United States. The participants selected must have been enrolled in a Kinesiology 1100 Personal Fitness and Wellness course, classified as either a freshman and/or sophomore, and 18 years of age or above. The institution offered three different sections of Kinesiology 1100 during the fall 2020 semester. Two of the sections were used as the Non-Intervention Group and one section was labeled as the Intervention Group. There were 12 participants within the Non-Intervention Group and 10 participants within the Intervention Group. The intervention group were required to create a digital story based on their physical activity over the course of an 8-week time frame and then share their story with the other participants in the Intervention Group.

As aforementioned, quantitative data was collected in week 1 and week 8. Week 1 consisted of the collection of anthropometric measurement including height, weight, and BMI of all participants. Height and weight were used to quickly assess a BMI score. BMI in this study was used as a proxy for body composition due to its convenience and accessibility. These same measurements were collected again during week 8. Fitness measurements for muscular strength

and cardiovascular endurance were collected in week 1 and week 8 of the study. Muscular strength endurance was assessed by having participants complete the 90 degree push up test and cardiovascular endurance were assessed by having participants complete the PACER test.

Qualitative data collection utilized one on one, semi-structured interviews which took place within my office on the campus of the institution where the study took place. The interviews were limited to one hour and guided by interview questions prepared prior to the interview. Interview participants were invited via email and a time and date were set based on the availability of myself and the participant. At the time of the interview, participants were invited in the office and an initial discussion took place. This discussion summarized what the study was about and also reviewed the consent form for the interview process. This enabled participants to be acclimated to the interview and provide a sense of comfort. During the interview process, I took handwritten notes and recorded the interview via an application called "otter" on a smartphone device. At the end of the interview, participants were asked if there was anything else they would like to share. As a result of the face to face interaction that took place within the interview setting, it is possible that some paticipants may have continued a longer discussion if not for COVID-19 circumstances.

Qualitative data analysis was conducted using SPSS version 27 and alpha level was set at .05. Data were checked for normality using the Shapiro-Wilk test. Non-normal data was analyzed using non-parametric techniques. There was no difference in BMI between groups. Results from paired t-tests indicate that there was a statistically significant increase in both Pacer and Push-up scores for the intervention group but not the comparison group. The intervention group had a mean increase in Pacer score of 11.1 units ($t=-5.48$, $p=.000$) and a mean increase of 4.1 push-up repetitions ($t=-2.975$, $p=.016$). In the comparison group, there was a non-significant

Pacer mean increase of 0.333 units (t=.137, p=.894) and a non-significant mean decrease of -.75 push-up repetitions (t=-.755, p=.466).

A total of 22 individuals participated in this study, with 12 being in the Non-Intervention Group and 10 being in the Intervention Group. The BMI, PACER, and Push Up test scores were collected and recorded in week 1 and week 8. An average score was cumulated in each test via a Microsoft Excel spreadsheet for the Non-Intervention Group and the Intervention Group. These average scores were then compared based on week 1 and week 8 in each group to see if there had been any change among BMI, which is used as a proxy in this study for body composition due to convenience and accessibility, PACER aerobic cardiovascular endurance test, and push up test, a muscular strength endurance test.

Qualitative data was analyzed by reviewing the recorded transcripts and becoming familiar with all participants responses based on the guided interview conducted. These recorded transcripts were then coded by me who then developed themes based on the codes that emerged when reviewing the recorded transcripts. These themes were then read, reviewed, and identified in order to correlate this with the research questions which guided this study. A total of five participants completed recorded interviews.

There were six main themes that developed after analyzing the data in this study based on the five participants who completed the semi-structured one on one interviews. The six themes identified were digital storytelling as a new concept, the mindset of participants in digital storytelling, positive impact and self-reflection, relationships, increase in physical activity levels, and digital storytelling for freshman seminar. The detailed answers each participant had given in reference to the interview questions I prepared helped to provide a greater understanding of how digital storytelling used as an intervention can affect physical activity among freshman and

sophomore students. As indicated in Chapter 4, in order to maintain anonymity for the individuals who participated in the interview, they were identified by the following psuedonyms: John J., Jane J., Leah L., Travis T., and Dan D.

Analysis of the data collected from the quantitative and qualitative portions of this study helped to provide a better understanding of how a digital storytelling intervention may affect the physical activity participation within the freshman and sophomore age demographic, and categorizing this as a potential new strategy in order to promote physical activity in this population. An increase in physical activity participation through the use of a digital storytelling intervention was evident based on the answers participants gave to the interview questions and the themes that were developed based on those responses. From a quantitative standpoint, data also reflected an increase in physical activity among the intervention group based on the overall average progress made on the 90-degree push-up muscular strength endurance test and the PACER cardiovascular aerobic capacity test.

Discussion of the Findings in Relation to Literature

As discussed in Chapter 2, prior literature identified that college students fall short of the target for adequate amounts of physical activity (Gordon-Larsen et al., 2004; Roberts, Reeves & Ryrie, 2014). Another study classified college students between 18-24 as an "at risk" demographic for overweight and obesity (Karbulet et al., 2018). Determinants of a college students' health behaviors are multi-faceted, however personal, social, cognitive, and environmental factors are just a few components that pertain to the overall health of a student (Downes, 2015; Keating et al., 2005). Changes must be made among first year college students due to the individuals attempting to adjust to new academic rigors, social, and personal environments (Denovan & Macaskill, 2016; Yan & Harrington, 2019). Individuals going to

college are identified as an impactful period in creating a healthy lifestyle for young adults (Yan & Harrington, 2019). When reviewing the literature specifically related to digital story telling there seem to be many studies that related digital storytelling to health (Gray et al., 2010), social justice (Jernigan et al., 2012; Lal et al., 2014), and education (Lal et al., 2014; Wexler et al., 2013), but there was a gap in the literature when utilizing digital storytelling as an intervention related to physical activity participation among freshman and sophomore college students. This mixed methods study addressed this gap in the literature and provided implications for practice in the field of physical activity promotion.

The findings of this research study on how a digital storytelling intervention effects participation in physical activity among college students are correlated with previous research studies discussed in Chapter 2. According to Lal et al. (2014), a study utilized digital story book creation in order to teach health concepts to students. The finding from this study concluded that students participating in this study experienced a deeper and more active engagement in the process of obtaining knowledge concerning health related concepts (Lal et al., 2014). This was evident in the themes and fitness testing that transpired based on the analysis of the qualitative and quantitative data provided by the Intervention Group. Following the analysis and review of the data collected, themes were identified that, in combination with previous research, provided insight into the issues covered in the research questions.

Research Question 1

The quantitative data collected from the fitness testing provided information to assist with answering Research question 1: How does the implementation of the digital storytelling intervention affect the BMI, muscular strength endurance, and cardio-endurance measurements

over the course of an 8-week semester? I sought to determine if the addition of the digital storytelling intervention would have an effect on physical activity participation.

Although there was a small difference recognized in weight and BMI of the Intervention Group compared to the Non-Intervention Group, the fitness measurements showed a much more substantial increase. The Intervention group as a whole had a 4.1 average score increase in Push – Up and an 11.1 average score increase on the PACER. This is compared to a 0.8 increase in Push – Up score for the Non-Intervention Group and a 0.4 decrease on the PACER for the Non-Intervention Group. These findings help answer research question 1 and provide supporting quantitative evidence that the implementation of a digital story did affect physical activity among participants. In correlation with the previous literature these findings support previous literature that stated digital storytelling can be used to promote health and wellness (Castro & Levesque, 2017).

Also, these findings can be connected to the theory that makes up the theoretical framework of this study mentioned in Chapter 2. Achievement goal theory has two goal orientations. The two goal orientations are task goal oriented and ego goal-oriented individuals (Todorovich & Model, 2005). The implementation of the digital storytelling intervention created a task for individuals to complete relative to physical activity. Additionally, viewing of the pictures and videos posted by the students via the identified online platform reached the more ego-oriented individuals due to the fact that they could see if someone was participating in more physical activity for that week or participating at a more intense level. Students who use the achievement goal theory approach are more likely to accomplish their goals (Ennis, 2017).

Lal et al. (2014) stated that it would be of value to assess the outcomes of using this instrument (digital storytelling), for example in relation to community change and health-related

outcomes among participants. Utilizing the pre- and post-assessment fitness data allowed me to identify measurable outcomes in relation to a digital storytelling intervention among participants and conclude that digital storytelling did affect fitness measurements over the course of the 8-week study.

Research Question 2

The qualitative data collected from the semi-structured interviews provided information to assist with answering Research question 2: What are the students' perceptions related to the implementation of a digital storytelling intervention as an effort to increase their participation in physical activity? Additionally, the analyzed data was evaluated to identify themes that would also assist in the response to the following sub-questions: Research Question 2(a): Will implementing the digital story intervention affect physical activity participation among college students enrolled in a Kinesiology 1100 Personal Fitness and Wellness course? and Research Question 2(b): What effect did the digital story intervention have on creating or eliminating barriers related to participation in physical activity?

In conducting this study, I sought to understand the participants' perceptions in response to the addition of the digital storytelling intervention and if the implementation of the intervention would result in changes in participation and views on participation in physical activity. As previously indicated analysis of the data collected via the semi-structured interviews produced themes that provide information related to Research question 2 and sub-questions 2(a) and 2(b).

New Concept

The first theme which emerged was categorized as "New Concept," as based on interviews with the student participants, each mentioned that digital storytelling was a new

concept and experience for them. Some had never heard of a digital story before. John J. said "it was a foreign concept to me," and "I didn't really understand it because I had never put pictures and videos together." Research indicates digital storytelling is a 21st century mode of learning that allows the participant to design, create, and evaluate videos and gain a deeper knowledge of the topic chosen for the digital story (Neimi & Multisilta, 2015). In this study the topic pertained to participation in physical activity.

After completing the digital story, the perception of the student participants was that although digital story telling was new to them, it was something that was fun, held them accountable, and an experience that could be tried again. John J. described the concept: "It was cool, and something I would use in the future." Jane J. said, "I was actually not familiar with digital storytelling … I really enjoyed it because of the accountability." Likewise, Leah L. stated that they "had never heard of digital storytelling but for me it mentally and physically worked." Travis T. described their participation: "This is my first time creating a digital story, it was hard, but I liked how it made me want to get better." These findings supported additional research that concluded although storytelling is not new, digital storytelling is an emerging method, centered around technology, that has greater reach and dissipation potential to address a variety of concepts (Gubrium A., 2009; Njeru et al., 2015).

Mindset

Research indicates that physical activity can increase health benefits in a variety of ways (Plotnikoff et al., 2015). This includes maintenance of overall body function, mental well-being, increased attention span, cognitive functioning among students, and reduction of risk for chronic diseases (Aaltonen et al., 2013). Yet, achieving this optimal state of health is complicated (De-Mateo-Silleras et al., 2018). According to qualitative data analysis from this study, this

intervention could play a significant role in helping students achieve this optimal state of health. Previous research stated that digital storytelling positively impacted health professionals in learning (Moreau et al., 2018). Additionally, multiple studies have confirmed that effectiveness of interventions on physical activity report significant improvement from pre- to post-intervention (Plotnikoff et al., 2015). Findings from this data seem to confirm that digital storytelling utilized as an intervention also positively impacted students mentally and physically relative to physical activity. Participants felt that digital storytelling helped them develop a focused state of mind and gave them guidance as to what they would like to accomplish. John J. stated that they "had in mind of trying to create something that you could see improvement…I had the mindset of getting stronger and doing that over an 8-week time frame." Jane J. said "it made me want to get better…I like to work out but now I'm just really focusing on making sure that I did improve."

Positive Impact and Self-Reflection

Digital story telling has been described as having layers of depth by combining multimedia art forms into one product and increasing the potential for an emotional experience (Lal et al., 2014). In conjunction to that, digital storytelling is beneficial to sharing one's story in multiple forms, allowing numerous opportunities for repetitive viewing (Lal et al., 2014; Meadows, 2003). This lends itself to be the case in this study. Travis T. stated, "I just like seeing the way I progress over the time, like over a couple of weeks, and so then I want to get better at what I do." Jane J. shared something similar, advising, "I was held accountable and seeing that I had progressed from the beginning stage to the end helped with creating my video."

Due to the visuals, the digital story intervention was able to provide the participants, via pictures and videos, with a sense of self. This idea reoccurred throughout the interviews, along

with the phrase “positive impact” and “self.” Participants in the digital storytelling intervention seemed to use the pictures and videos to self-reflect, motivate, and change. This confirmed prior research which emphasized that digital storytelling supports the principles of students actively engaging in reflective practices rather than passively receiving information they have gained (Lal et al., 2014). John J. expressed that “just being able to see the progress and seeing how you feel on certain days is a great tool in the documenting process.” This showed a positive increase within their physical activity levels which resulted in another theme identified within this study, “Maintenance and Increase in Physical Activity.” Leah L. said:

> For me personally, digital storytelling is a great way to track your physical activity. Because, again, it's just like seeing the results instead of like, looking in the mirror, they say people don't really recognize themselves changing until like a month after they start working out, but other people can realize it. So, when you take a picture from two weeks before you started working out two weeks after you can see it, you see the difference.

These findings confirmed research stating digital storytelling can be utilized as a powerful vehicle for reflection, recovery, and therapeutic action (Lal et al., 2014). Each of the statements shared by the participants within this study helped to provide information which led to additional themes within this research and provided information to assist with answers to Research Sub-question 2(a).

Relationships

This theme was identified as participants discussed participation in the study and organic relationship creation, along with the idea of physical activity barrier elimination. Due to the implementation of the digital storytelling intervention, participants described feeling like they had support among one another. The support plays a role as seen in another theory that makes up

another aspect of the theoretical framework of this study. Social cognitive theory, which focuses on self-efficacy, is a person's belief that they have the ability to achieve, perform, and accomplish certain behaviors and tasks (Burns et al., 2018). Additionally, within social cognitive theory, observation and socialization can be an integral dynamic of how individuals gain knowledge and apply their learning (Connolly, 2017). An example of this which is relevant to this study is the mentee/mentor approach that can occur in social cognitive theory. As the mentee pays close attention to the mentor, the mentor must model enough emotional appeal to motivate the participant (Connolly, 2017). Jane J. said:

> I created new relationships, especially because we were doing a lot of the same workouts and lifting the same weights and we were pushing each other. It was a positive influence because it made me feel healthier as an individual.

They also added, "it was interesting because I was able to get my friends involved." Daniel D. said, "I had a friendship with one of my classmates. We've been doing like the same workouts and stuff. So we were just like both on like the same page of like doing a digital story."

As the findings suggest, relationships among participants began to occur organically just by participating in the research study and creating a digital story together. Participants were able to view each other's videos and pictures and use one another for support and motivation during this 8-week intervention. This only further confirms that digital storytelling is an innovative tool that combines group process with modern technology to create and share personal stories (Lal et al., 2014). These findings also support mentoring theory, which also was identified as part of the theoretical framework that makes up this study, in addition to achievement goal theory and social cognitive theory mentioned earlier in the chapter. Mentoring theory has been found to have a

positive impact on numerous student outcomes (Crisp, 2010). Leah L. described their experience and stated:

> I got closer to … one of my classmates. I feel like we got to know each other better, because we were spending more time together, and it was something that we could do outside of just the classroom. So, I would say that it positively affected me.

When viewing the final digital story production in week 8 that each participant had created, participants identified a sense of achievement and accomplishment. Travis T. described working with a couple classmates, "We work out together and things like that so maybe I get a picture of them working out or they get a picture of me working out and it would just benefit each other." Each participant seemed to enjoy and receive additional motivation in viewing other participants' progress supporting mentoring theory further, given that this theoretical approach includes two latent constructs which this research focused on (1) psychological and emotional support and (2) support for setting goals (Nora & Crisp, 2007). John J. also described working with friends in class and discussing what kind of pictures and videos others were taking. He stated by doing this it made him feel like, "I knew others were doing the same thing as me, so it made me want to keep trying and get better." He added, "we're all kind of going toward the same goal."

Research indicates that when creating multimedia clips, modern technology has taken digital storytelling to new heights due to the wide range and accessibility of opportunities and tools to create, learn, teach, and share knowledge in an innovative format (Lal et al., 2014). It was also found that digital story telling is a method of using collaborative learning (Niemi & Multisilta, 2015). Analysis of responses from participants in this study confirms these findings.

Based on the participant responses and the subsequently identified themes, participation provided a sense of community and shared learning via the digital storytelling intervention. This encouraged individuals to participate in physical activity and gave them a sense of motivation to get better. Relationship building as a result of the implementation of this intervention can play a part in eliminating barriers that may otherwise lead to a negative impact in physical activity participation. This theme provided additional information in helping answer Research question 2 and Sub-questions 2(a) and 2(b).

Maintain/Increase Physical Activity

Prior research indicates that there are a multitude of benefits to exercise and physical activity, including optimal physical function of the human body, mental health, and well-being, and the reduction of risk for chronic diseases (Aaltonen et al., 2013). In regard to the use of the digital story in other settings, additional research analyzed the impact of using digital storytelling as a key component of a cancer education course based on the perception of 67 community health workers in Alaska (Cueva et al., 2013). It was shown that respondents expressed digital storytelling to be supportive to learning and respectful of their culture when providing health information. In a 3-year follow-up, 23 of the respondents noted that they had changed their behavior due to participating in the digital storytelling experience (Cueva et al., 2013; Lal et al., 2014). During the 8-week intervention in the study described herein, participants also noticed a change. This change resulted in an increase in physical activity participation. If an increase was not noted, an increase in strength was noted, which still resulted in a positive impact.

John J. expressed that the digital storytelling intervention created a change in behavior because he was trying to do some type of physical activity every day. He stated:

> I was attempting to do something every day during the week for the 8-weeks. It was something that I kept up with pretty much every day at least trying to do something for about an hour, hour and a half, maybe even two hours.

Jane J. described their participation in physical activity, due to the digital storytelling intervention, as maintenance because she was already active at a high level; however, she directed her attention towards getting stronger each day. She stated, "I was already maintaining, and it was just about getting even stronger." Leah L. felt as if her activity level was sporadic but due to the digital story telling intervention it made her be more consistent. She felt as if she had to get it done, meaning participation in physical activity, in order to have a good collection of pictures to submit. She stated, "My activity level was up and down but now I am active about 5-6 days per week." Travis T. responded with a very similar response about physical activity participation in regard to the digital storytelling intervention saying, "During the intervention I was trying to do some type of physical activity about every day." These responses confirm previous research which concluded that digital storytelling can foster high engagement from students (Nieme & Multisilta, 2016).

Participants also discussed and explained barriers that may prevent them from participating in physical activity. Additionally, their responses give insight as to how creating a digital story helped them eliminate these barriers and gave them a focus to complete the task at hand during this 8-week intervention. Screen time consisted of video games and/or television, which was identified within these interviews as a barrier related to participation in physical activity. As indicated by John J., "If you're sitting around and you're just playing video games you begin to realize that you are just sitting around doing nothing and that has a negative impact on your physical activity level." Likewise, Jane J. said, "Watching TV for me is associated with

laziness." Leah L. shared their feelings towards video games saying, "sometimes I feel like I need to win, and then I just waste my time, which negatively impacts my physical activity."

According to study participants, digital storytelling helped them set goals, strive for progression, and focus on what they wanted to accomplish. As described in the interviews, this resulted in a positive impact on the participants' mental states. Additionally, the quantitative data evaluated in regard to Research Question 1 supports the fact that the digital storytelling intervention also made a positive impact on the participants' muscular strength endurance and cardiovascular endurance assessment. John J. said, "I had in mind of trying to create something that you could see improvement. I had the mindset of getting stronger and that over the 8-week time frame." Jane J. shared that "digital storytelling impacted me a lot because I was able to get out and be active instead of watching tv" and "I also organized what I wanted to have in my digital story, and it helped my workouts." Leah L. also shared that "taking pictures for the digital story made you feel like you had to work out and made you committed to something rather than playing a video game."

Research states that many themes have been identified as motivating factors for individuals to participate in physical activity. Some of these themes consisted of the following: being physically fit, improved psychological state, enjoyment, self-discipline, values and norms, beliefs, and time management (Aaltonen et al., 2013; Deliens et al., 2015). Conversely, further research states that low physical activity and high screen time were independently and interactively associated with increased risk of mental health problems and poor sleep quality (Wu et al., 2015).

Prior research found that digital story telling can be used to promote health and wellness (Castro & Levesque, 2017). In addition, college campus resources and facilities promoting

physical activity among college students, along with other healthy habits, can lead to long-term healthier lives for the student (Opoku-Acheampong et al., 2018). In this particular study, the responses given by the participants enrolled in the Kinesiology 1100 Personal Fitness and Wellness course provided a way to determine if the digital storytelling intervention affected participation in physical activity. Overall there was a common trend of increased participation among participants and an increase in strength resulting from the implementation of the digital storytelling intervention.

Limitations of the Study

Although I was able to collect appropriate data to analyze and provide responses to the research questions, limitations and delimitations of the study can be identified. First the results based on this digital story telling intervention, although similar to previous research, can only be correlated with the institution where the research has taken place. Moreover, due to the institution having a smaller number of students in the overall population, only three sections were offered for the general education course titled, "Kinesiology 1100 Personal Fitness and Wellness." Due to narrowing the focus to specifically freshman and sophomore college students, this reduced the sample size for the quantitative data collection to 22 total participants. Convenience sampling was also utilized due to my access to the students and classes.

Additionally, COVID-19 potentially presented some limitations to this study, due to the measures the institution had to implement in order to reduce the spread of infection. First, all students were required to wear a mask while utilizing the institution's fitness facilities. Second, there were limited hours as to when the facilities were open. The limited hours were implemented in order to increase time for deep cleaning of all facilities. The wearing of masks while working out may or may not have affected the intensity levels of the student's workouts

due to difficulty in breathing. Also, the limited hours may have affected students' access to the institution's physical activity facilities.

Another limitation within this study consists of BMI scores used as a proxy for body composition due to its convenience and accessibility. BMI cannot take into account an individual's muscle mass in proportion to their fat mass, nor can bone density be calculated within a BMI score. Other means of body composition assessment, such as hydrostatic weighing and skin fold calibrations, are much more accurate when truly assessing a person's body composition.

Implications of the Findings for Practice

The results of this study may have practical implications in several different aspects of higher education, and more specifically, this college. One specific area that was mentioned multiple times in participant interviews was the freshman seminar curriculum. At the specific institution where the research was conducted, it is a requirement for incoming freshmen students to enroll in a "freshman seminar" course. As the data from the interviews was analyzed, the theme, Digital Storytelling for Freshman Seminar, became apparent. Many of the participants, when asked at the end if they had anything else they would like to add about the digital story telling process, concluded with a suggestion that this should be implemented within a freshman seminar class. There were strong indications that the visual motivation digital storytelling provided could be utilized from an organizational/institutional standpoint. Implementing this suggestion within a freshman seminar curriculum could possibly affect the overall enjoyment, retention, and graduation rate of the students enrolled within the college.

Suggestions from the students included John J. stating, "I think it would be a good tool for freshman because there are a lot of different things coming at you." They continued, saying

that digital storytelling helped them focus on one thing and kept them accountable for their actions. They explained that digital storytelling could help incoming freshman develop one goal and try to accomplish that goal. Jane J. also suggested that this intervention could be crossed over into several other academic areas; however, they did indicate one specific class example, the freshman seminar class. They stated, "If we were to use digital storytelling, we could show at the beginning what we know and then what we have learned." Commitment was a big part for them in digital storytelling. They claimed that digital storytelling could help them stay committed to academics. They suggested:

> Maybe you take a picture of your first assignment and then your first test and maybe you made a 40 but the next test you made an 89 and you take a picture of that and then maybe exam 3 you make a 94 and you take a picture of that. You see your improvement and would motivate you to continue doing good.

Travis T. expressed that implementing digital storytelling could create immediate reflection as to whether a student is dedicated and working hard. They stated, "digital storytelling within a freshman seminar would help them see progress." They also concluded with "if everyone views each other's digital story it motivates and creates a good environment."

Another item to consider related to this study is educational equity. The research question purposefully was created to ask about participation in physical activity rather than exercise. Physical activity allowed students to participate in any bodily movement and did not require expensive gym equipment or a gym membership. This is reflected in student responses in that they were able to simply get outside and go for a walk, or take the stairs rather than the elevator in order to increase physical activity throughout the day. Lastly, BMI was used purposefully as well. Although BMI has its limitations, BMI allowed all students to receive a quick score rating

of where they were within week 1 and where they were within week 8. To obtain the BMI only height and weight are necessary and this eliminated the need for expensive calibration equipment or body composition measurement equipment to which some students may not have access.

After speaking with faculty, staff, and administrative leaders, it also seemed possible that digital storytelling could be utilized with student athletes, in order to help potentially boost academic progress and create team unity. The Student Activities department suggested that it would be a great tool to utilize on campus outside of an academic setting, simply to establish strong relationships and encourage use of the activity facilities at the institution.

Recommendations

Digital storytelling is a concept that can be utilized in multiple areas and research on the use of digital storytelling in conjunction with physical activity has just begun. Replicating this study within the public-school physical education curriculum utilizing similar research questions and methodology could serve as a useful tool to see how children at the K-12 level perceive digital storytelling within physical activity and if there is any effect on the outcome of physical activity promotion. This recommendation is based on the data analyzed from this study and previous literature, which showed 39.8% of adults and 18.5% of youth had a prevalence for obesity (Hales et al., 2017). Additionally, having this study be conducted with a larger sample size could give more information in helping to provide increased validity in the quantitative data in order to help further the discussion for Research question 1. A longer time frame could also be recommended in order to see a greater change in BMI, especially considering the COVID circumstances. In a “non- covid” year, an increased time frame also could allow for a deeper discussion of Research question 1. Conducting this study in a variety of curriculi, including the freshmean seminar, as well as from an organizational standpoint, for example student activities,

may provide higher education institutions with strategies to increase retention rates and graduation rates. Specifically, a study could be conducted looking at retention rates among incoming freshman utilizing the digital storytelling intervention compared to a "non-intervention" group. Other options could involve utilizing the findings of this research to help aid teacher education candidates to successfully pass an evidence-based portfolio assessment, identified as EdTPA. The visual motivation in seeing how one can improve could greatly impact a teacher education program. These recommendations are based on the data of this particular study and the previous literature relating digital storytelling to health (Gray et al., 2010; Lal et al., 2014), social justice (Jernigan et al., 2012; Lal et al., 2014), and education (Lal et al., 2014; Wexler et al., 2013).

Role of the Scholarly Practitioner

As an instructor and program coordinator within the education department at the institution where this study was conducted, I was able to gain a unique perspective through the lens of a scholarly practitioner. The format and role of the scholarly practitioner allowed me to identify a problem and provide an intervention to potentially address this problem. This intervention utilized digital storytelling in combination with physical activity and provided more insight than simply an increase in motivation and fitness scores. The overarching concept of the digital storytelling intervention and prior literature helped me realize that digital storytelling can be utilized in multiple facets of education and can provide leadership development among faculty, staff, and students.

Findings from this study have fostered conversations with faculty, staff, and administrators in a variety of contexts. It has created engaging conversations into how we can use this data at the current institution and implement this intervention as a part of the freshman

seminar curriculum. I have also been able to see the results of this study impact another part of the organization: student activities. After I was able to share my findings, this department is now looking at ways to implement this intervention in order to create a more engaging process between our student body and our student activities center. The increase in the use of the student activities center may increase student cohesion on campus and provide a healthier student mentally and physically. I credit this learning experience to this research study and the design of this program.

The process of this research study helped me grow in analytical and critical thinking. Additionally, it developed my organizational skills in creating a method of obtaining the quantitative data and qualitative data for this study. As a faculty member and leader of a physical education department, I feel I have the confidence and the pedagogical knowledge required to implement 21st-century learning, in order to create a healthier student inside the classroom and outside of the classroom. With additional opportunities to further my leadership role, such as department chair, dean of the school, or dean of faculty, I feel that I am more than adequately prepared to lead in an efficient, equitable, and synergistic way to benefit an institution of higher education.

Conclusion

This mixed methods study was designed to investigate how using digital storytelling as an intervention would affect participation in physical activity among college students. In order to gain an understanding based on the quantitative aspect a pre- and post-test in height, weight, and BMI was given during week 1 and week 8. Fitness testing, specifically the 90 degree push up and the PACER test, was conducted in week 1 and week 8. Through the use of statistical comparative analysis of scores in the categories above, I was able to consider the effects a digital

storytelling intervention may have on physical activity participation. In order to gain a more in-depth knowledge of the perception of digital storytelling in regard to physical activity participation, how it affected physical activity participation, and whether it may create or eliminate barriers to participating in physical activity, qualitative data was collected via semi–structured, one-on-one interviews, with five participants.

The results gained from both a quantitative and qualitative perspective helped to fill a gap within the literature when analyzing how digital storytelling could be used in this context. This study's findings helped develop a deeper understanding of how students perceive digital storytelling in relation to physical activity and how it affects their physical activity levels through the participants' descriptions and responses to the interviews conducted. Understanding that digital storytelling created accountability, commitment, relationships, progress, and motivation in participants provides greater evidence that the use of digital storytelling can make a positive impact in a variety of areas.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
rede.ecu.edu/umcirb/

Notification of Exempt Certification

From: Social/Behavioral IRB
To: Jonathan Pickeral
CC: Heidi Puckett
Date: 8/11/2020
Re: UMCIRB 20-001600
The effects digital storytelling has on participation of physical activity

I am pleased to inform you that your research submission has been certified as exempt on 8/11/2020. This study is eligible for Exempt Certification under category # 3b.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

Document	Description
Informed Consent Form Appendix C Final.docx(0.03)	Consent Forms
Informed Consent Form B final.docx(0.03)	Consent Forms
Interview Questions Final.docx(0.02)	Interview/Focus Group Scripts/Questions
Lance Pickeral Proposal Revised 7-13-20 - hp comments final (1).docx(0.01)	Study Protocol or Grant Application

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: INFORMED CONSENT FORM - STUDY

Informed Consent to Participate in Research
Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: A DIGITAL STORYTELLING INTERVENTION: HOW IT AFFECTS PARTICIPATION IN PHYSICAL ACTIVITY AMONG COLLEGE STUDENTS

Principal Investigator: J. Lance Pickeral
Institution, Department or Division: East Carolina University, College of Education: Department of Educational Leadership
Address: East 5th Street, Greenville, NC 27858
Telephone #: 252-217-2528
Study Coordinator: Dr. Heidi Puckett
Telephone #: 252-328-6131

Participant Full Name: _____

Researchers at East Carolina University (ECU) study issues related to society, health problems, environmental problems, behavior problems and the human condition. To do this, we need the help of volunteers who are willing to take part in research.

Why am I being invited to take part in this research? You are being invited to participate in this study because you have enrolled in Kinesiology 1100 Personal Fitness and Wellness course.

Where is the research going to take place and how long will it last? This research study will take place over a 8-week semester at your current institution of higher education.

What will I be asked to do? You will be asked to provide anthropometric data including height, weight, and BMI. Additionally, you will be asked to participate in a series of fitness testing including strength, endurance, and body composition, hence the body mass index (BMI). You will be asked to do this at the beginning of the 16-week semester and the end of the 16-week semester. At the conclusion of the initial testing you will then be requested to take a picture and/or video of you participating in physical activity along with a brief description of the physical activity and post to the discussion board using the digital platform "Moodle." At the end of the semester you will also be asked to create a digital story of your physical activity utilizing digital mediums such as iMovie and Windows Movie Maker.

Will I be paid for taking part in this research? There will be no compensation for participating in the research study, however, your instructor has granted extra credit for the course if you do participate.

Will it cost me to take part in this research? There will be no cost to the participant to participate in the research study.

Who will know that I took part in this research and learn personal information about me? All personal information including name, height, and weight will be kept confidential and anonymous through the use of aliases.

Who should I contact if I have questions? If you have any additional questions concerning the research study you can contact the principal investigator at pickeralj18@students.ecu.edu or by phone at 336-497-7302

I have decided I want to take part in this research. What should I do now?

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop taking part in this study at any time.
- By signing this informed consent form, I am not giving up any of my rights.
- I have been given a copy of this consent document, and it is mine to keep.

Participant's Name (PRINT)	**Signature**	**Date**

Person Obtaining Informed Consent: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above and answered all of the person's questions about the research.

Person Obtaining Consent (PRINT)	**Signature**	**Date**

Principal Investigator (PRINT)	**Signature**	**Date**

APPENDIX C: INFORMED CONSENT FORM – INTERVIEW

Informed Consent to Participate in Research
Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: A DIGITAL STORYTELLING INTERVENTION: HOW IT AFFECTS PARTICIPATION IN PHYSICAL ACTIVITY AMONG COLLEGE STUDENTS

Principal Investigator: J. Lance Pickeral
Institution, Department or Division: East Carolina University, College of Education: Department of Educational Leadership
Address: East 5th Street, Greenville, NC 27858
Telephone #: 252-217-2528
Study Coordinator: Dr. Heidi Puckett
Telephone #: 252-328-6131

Participant Full Name: _____

Researchers at East Carolina University (ECU) study issues related to society, health problems, environmental problems, behavior problems and the human condition. To do this, we need the help of volunteers who are willing to take part in research.

Why am I being invited to take part in this research? You are being invited to participate in this study because you have enrolled in Kinesiology 1100 Personal Fitness and Wellness course. The principal investigator is interested in collecting quantitative and qualitative data concerning the effects of a digital storytelling intervention has on participation in physical activity.

Where is the research going to take place and how long will it last? This research study will take place over a 8-week semester at your current institution of higher education.

What will I be asked to do? You will be asked to provide anthropometric data including height, weight, and BMI. Additionally, you will be asked to participate in a series of fitness testing including strength, endurance, and body composition, hence the body mass index (BMI). You will be asked to do this at the beginning of the 16-week semester and the end of the 16-week semester. At the conclusion of the initial testing you will then be requested to take a picture and/or video of you participating in physical activity along with a brief description of the physical activity and post to the discussion board using the digital platform "Moodle." At the end of the semester you will also be asked to create a digital story of your physical activity utilizing digital mediums such as iMovie and Windows Movie Maker. Additionally, you will be asked to participate in a semi-structured one on one interview that will be limited to one hour in time.

Will I be paid for taking part in this research? There will be no compensation for participating in the research study, however, your instructor has granted extra credit for the course if you do participate.

Will it cost me to take part in this research? There will be no cost to the participant to participate in the research study.

Who will know that I took part in this research and learn personal information about me? All personal information including name, height, and weight will be kept confidential and anonymous through the use of aliases.

Who should I contact if I have questions? If you have any additional questions concerning the research study you can contact the principal investigator at pickeralj18@students.ecu.edu or by phone at 336-497-7302

I have decided I want to take part in this research. What should I do now?

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop taking part in this study at any time.
- By signing this informed consent form, I am not giving up any of my rights.
- I have been given a copy of this consent document, and it is mine to keep.

_____ _____

Participant's Name (PRINT) **Signature** **Date**

Person Obtaining Informed Consent: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above and answered all of the person's questions about the research.

_____

Person Obtaining Consent (PRINT) **Signature** **Date**

_____

Principal Investigator (PRINT) **Signature** **Date**

APPENDIX D: INTERVIEW QUESTIONS

1. Describe your experience creating a digital story.

2. By creating a digital story, do you feel this influenced your participation in physical activity? If so, how and why?

3. Did you find yourself creating relationships with your classmates participating in the research? How did that positively and/or negatively affect your participation in physical activity?

4. Do you feel the digital storytelling intervention had an overall positive impact when it comes to participating in physical activity? Why or why not?

5. How would you describe your fitness level and/or physical activity level before entering this class?

6. Were you familiar with the concept of digital storytelling before it was introduced in this class? If yes, in what context were you familiar with digital storytelling?

7. During this study how many days were you physically active for a total of at least 60 minutes per day? (You may add up all the time you spent in any kind of physical activity that increased your heart rate).

8. During the past 12 months, on how many sports teams did you play? (Include intercollegiate and/or community/recreational teams.) If the answer is zero, do you feel you would like to participate on a team? Why?

9. On average, during a school day, how many hours do you play video or computer games or use a computer for something that is not schoolwork? Please describe how you feel this impacts your participation in physical activity.

10. On average, during a school day, how many hours do you watch TV? Please describe how you feel this impacts your participation in physical activity.

11. Do you feel the institution has adequate resources for you to participate and gain benefits from physical activity? Why or why not?

APPENDIX E: BMI CHART

Body Mass Index Table

	Normal						Overweight					Obese										Extreme Obesity																
BMI	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**
Height (inches)	**Body Weight (pounds)**																																			
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Source: Adapted from *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report.*

APPENDIX F: QUALITATIVE DATA CHART

Want to work hard Seeing progress over time Get better Self – Reflection Hard work Pics of each other Better relationship with each other Positive Get it done Positive impact Develop a work ethic Self motivation Accountable	Best things I could have done Taught me about myself It worked Body was changing Visual change Committed Motivating- makes you feel you have to do it. Mindset – Eliminate Barriers More effective approach than journal Seeing Recognition/self-reflection Relationships Spending more time Something to do outside of class.	Organizing the pictures and video Held me accountable for working out. Trying to improve DS influenced Progress from beginning to end. Friends involved; they did same thing. Increased PA Focusing on improvement due to videoing. Created new relationships Pushing each other Getting better Feeling healthier; push that onto someone else	Have to think about what you are taking pictures and videos of and what constitutes to good things that would go into a story. – Perceptions Taking the right pictures to show progress over an 8-week time frame. – Perceptions Had in mind of creating something you could see improvement. The digital story was a way to document. Building good habits of doing certain things. Could see yourself getting better by watching the previous week's video.	Good fun experience Just up and moving and stuff. Accountability in everything More likely to stay in shape Both on same page with classmate Same page with DS I feel like we were just accomplishing more together than working out by ourselves. Gives motivation to

Basic Increased fitness New concept Even with no facility they. Would try to do some work. Push ups sit ups Shows a dedication to work Creates a good environment	Positive affect Visually see change This actually works. Motivated to work hard You have to get work in Fitness level here and there Sporadic New concept- Perceive Five to six days every week Call of duty video game Video gaming negative impact TV negative impact Distraction	to make them healthier. Increased PA; accountable for progress. Positive influence. PA already high but helped maintain that level and get stronger. New concept Showed progression 4 days a week of PA Enjoyable activities Watching tv makes you lazy. Able to get out and be active Resources; weights Resources for PA; Getting outside Just about getting active.	Digital story played a role in being consistent and getting better throughout the process. View each others pictures through the process and find out what was relevant. Others doing the same thing as me so I should keep trying. Everyone is going towards the same goal of seeing improvement. Creating these relationships positively affected participation in physical activity. Sometimes by yourself what is the point of doing this. You can push each other and	do something bigger than yourself. It's a positive in people. Fitness level was really good, but ds was a way to get more involved and have fun. Never familiar with DS, first time creating one. 6 days a week with a break on Sunday Good facilities to work out in and benefit my body.

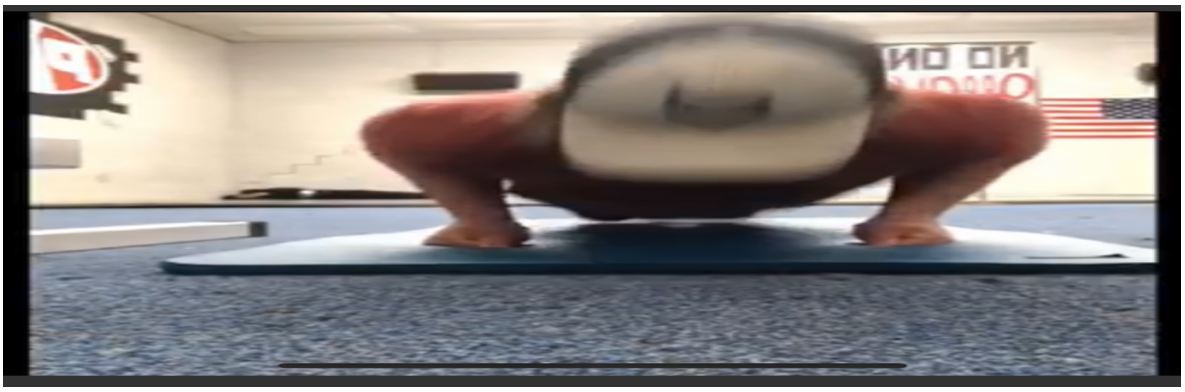
	Adequate resources Being resourceful Go for run Water jug curls Committed to something Freshman progress Distraction from bad habits. State of mind Focus Record something increases commitment.	Freshman seminar Show at beginning what we know and what we learned.	get better together. Positively impacted participation- Visual Motivation to Increase PA Seeing progress and seeing how you what you did on certain days is better than a journal log. – Visual Motivation to Increase PA Seeing your progress visually over the weeks. Physical activity participation during the class saw an increase for period of time. Effect on Participation Going to gym 4 days to now 6 days a week. Effect on Participation DS was a foreign concept, did not understand. – Perception	Increase peoples progress even without gym memberships. People can use ds in a different way, a different positive way. See progress on doing certain things in the classroom. DS could create like a good atmosphere and to see like your progress and stuff and how your doing in there.

			Never put together pictures and videos and tried to make a story. --- Perceive Cool and something may do on his own time. Made an effort everyday to at least do something for about an hour to an hour in a half. – Increase in PA Not being sedentary--- Increase in PA It made me want to get better. – Increase in PA To much tv can have a negative impact Good resources to facilitate working out and fitness. Good variety of equipment	

			DS can help even without gym equipment. There was one individual working out with an app in their living room. Walk in the park, push ups, sit ups, A tool for other academic area's to use. DS was an easier more modern way to see where you were at, at a certain point. Helps people be consistent. Keep yourself accountable and get better at something. – Perceive Good thing for freshman-would help eliminate barriers College is can be scary.	

			Sit down and simplify things with a digital story. – Help Eliminate barriers Tracks your progress.-- Motivation Helps focus on one thing. Perception Accountability for a goal. – Increase in PA due to a cause Perceive	

APPENDIX G: DIGITAL STORY SAMPLES

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