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Technology in University Physical Activity Courses: A Mini-Ethnographic Case Study

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Abstract

As younger generations become increasingly reliant on technology, higher educational institutions must continually attempt to stay with or ahead of the curve to foster 21st century teaching and learning. College and university physical activity courses (PACs) are encouraged to incorporate technology for effective pedagogical practices. No qualitative research has specifically examined the culture of PACs instructors' attitudes and experiences with technology as a pedagogical tool. A mini-ethnographic case study explored the use of technology among seven graduate teaching assistants who shared their pedagogical experiences, teaching practices, and perceptions of technology within PACs. Using an interpretive phenomenological analysis, composite narrative accounts were presented to highlight unique characteristics of PAC instructors and develop meaning from their lived experiences. The findings revealed that PAC instructors use varying forms of technology, but all instructors rely on learning management systems as a pedagogical tool, which can be influenced by campus environment, pedagogical experiences, and social support. This pilot study contributes to the current gap in research related to technology in PACs and addresses the need to properly prepare instructors to teach in the digital age.

Keywords

Technology, Physical Activity Courses, Graduate Teaching Assistants, Mini-Ethnographic Case Study, Professional Development

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A Mini-Ethnographic Case Study

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As younger generations become increasingly reliant on technology, higher educational institutions must continually attempt to stay with or ahead of the curve to foster 21st century teaching and learning. College and university physical activity courses (PACs) are encouraged to incorporate technology for effective pedagogical practices. No qualitative research has specifically examined the culture of PACs instructors' attitudes and experiences with technology as a pedagogical tool. A mini-ethnographic case study explored the use of technology among seven graduate teaching assistants who shared their pedagogical experiences, teaching practices, and perceptions of technology within PACs. Using an interpretive phenomenological analysis, composite narrative accounts were presented to highlight unique characteristics of PAC instructors and develop meaning from their lived experiences. The findings revealed that PAC instructors use varying forms of technology, but all instructors rely on learning management systems as a pedagogical tool, which can be influenced by campus environment, pedagogical experiences, and social support. This pilot study contributes to the current gap in research related to technology in PACs and addresses the need to properly prepare instructors to teach in the digital age. Keywords: Technology, Physical Activity Courses, Graduate Teaching Assistants, Mini-Ethnographic Case Study, Professional Development

Technology's role in education is deeply embedded within our culture. As early as kindergarten, digital pedagogical practices are used to enhance student learning (Ottenbreit-Leftwich et al., 2010). However, higher educational institutions and educators continue to struggle, and sometimes resist, the implementation of pedagogical technologies due to the constant updates and exhaustive learning curves that are required to adequately implement contemporary practices (Casey, Goodyear, & Armour, 2017; Melton et al., 2015; Melton & Burdette, 2011). College and university physical activity programs are among the lesser-known areas of research on technology's role as a pedagogical tool (Goldstein, Forman, Butryn, & Herbert, 2017; Stapleton Taliaferro, & Bulger, 2017). From bowling, to hiking, to online fitness courses, there is a gap in literature about technology that investigates to the culture of physical activity courses (PAC) offered in higher educational institutions (Charles & Charles, 2016; Stapleton et al., 2017). A mini-ethnographic case study was used to investigate a group of PAC instructors at a single university to understand the culture of a physical activity program and their respective technologies.

The significance of this study pertains to colleges and university stakeholders as higher educational institutions continue to play "catch up" with technological pedagogies and adhere to the younger generation's digital learning preferences (Gourlay, Hamilton, & Lea, 2013). Although many physical activity programs have applied innovative techniques that address contemporary pedagogies (Melton, Bland, Harris, & Kelly, 2015; Melton, Moore, & Hoffman,

2016), literature on the culture of PACs remain relatively unknown among university programs with limited resources such as staffing. This mini-ethnographic case study addresses the gap between technology and PAC instructors in a culture where limited staffing and technology exist by exploring the cultural and operational links between PAC instructors and technology in physical activity programs without full-time coordinators. The intended audience are administrators and educators affiliated with PACs in higher education institutions.

Seven PAC instructors (volleyball, soccer, hiking, bowling, basketball, walking and jogging, online conditioning) were studied at a medium-sized university. The seven PAC instructors varied in experience, age, and career aspirations, but were all graduate teaching assistants (GTAs) in the same kinesiology program. Investigating the small group of PAC instructors was part of a pilot study intended to evaluate physical activity programs with limited resources including but not limited to equipment, support and staff, and training, all of which are imperative to effectively using technology in PACs (Melton et al., 2016; NASPE, 2009). Although using technology is recommended to be used in PACs (Charles & Charles, 2016; Melton et al., 2016; NASPE, 2009; Stapleton et al., 2017), there is no documentation of the benefits, barriers, and practical approaches to implementing digital technology for GTAs in programs that lack a full-time coordinator. A mini-ethnographic case study will contribute to the increasing need to document and understand physical activity programs as a cultural phenomenon by examining technology's role as a pedagogical tool.

The following literature review shares current information and research involving the culture around technology as a pedagogical tool in PACs. The literature will discuss technology in education, physical activity programming, PAC instructors, and professional development initiatives. First, technology in education will focus on the need to continuously develop contemporary practices in higher education. Second, physical activity programming will explain the history and current trends relating to technology. Third, PAC instructors will examine the role of GTAs that teach PACs. Lastly, professional development will discuss the need to promote pedagogical practices for instructors such as GTAs.

Technology in Education

Technology in education can come in a variety of formats (Koc & Barut, 2016). Technological formats in technology can be but are not limited to the use of photographs, videos, podcasts, learning management systems, projectors, mobile devices, and apps (Heo, 2009; Melton & Burdette, 2011; Ottenbreit-Leftwich et al., 2010; Ungerer, 2016; Yousef, Chatti, & Schroeder, 2014). Using technological formats are continuously changing how educational institutions design curricula, standards, learning outcomes, and student engagement (Casey et al., 2017; Prensky, 2010; Reynolds, 2016; Tiernan, 2015; Trust, 2018). In fact, the International Society for Technology in Education (ISTE) recommended educators to implement student-centered environments which involve learners to use technology that can solve contextual problems while encouraging critical thinking, promoting collaboration, and practicing responsible uses of technology (Baek, Keath, & Elliott, 2018; ISTE, 2017; Trust, 2018).

Younger generations, also known as digital natives, are being increasingly immersed in the complex varieties of technology (Bodsworth & Goodyear, 2017; Kretschmann, 2015; Prensky, 2010). In response to digital native's dependency on technology in higher education, institutions are continuously adopting digital pedagogies with online courses and programs, learning management systems, and mobile apps (Goldstein et al., 2017; Melton et al., 2015). Consequently, programs in higher education struggle to keep up with contemporary practices used by younger generations, which can come from the lack of technological knowledge or personal beliefs (Ottenbreit-Leftwich et al., 2010; Casey et al., 2017; Melton et al., 2016).

Physical Activity Programming

Originally developed for military-readiness, physical activity programs have evolved into credit-based courses that promote healthy-behaviors for college and university students (Hensley, 2000; Longmuir & Tremblay, 2016; NASPE, 2009; Stapleton et al., 2017). Over the years, policy changes, cultural trends, and budget cuts have negatively impacted the quality and size of physical activity programs across the United States (Brock, Russell, Cosgrove, & Richards, 2018; Cardinal, 2017; Charles & Charles, 2016; Melton, Hansen, & Gross, 2010). Consequently, there has been a gradual decline over the past three decades in physical activity programs in higher education (Hensley, 2000; Casey, 2017; Charles & Charles, 2016). Hensley (2000) found programs that adopted a 'wellness approaches' to PACs positively impacted enrollment. Current literature encourages similar holistic approaches to increasing PAC quality and enrollment, which includes rebranding PACs, using evidence-based practices, and encouraging the use of technology (Beaudoin, Parker, Tiemersma, & Lewis, 2018; Cardinal, 2017; Stapleton et al., 2017). Overall, physical activity programs have come a long way from military-readiness culture while developing pedagogical hubris by not keeping up with contemporary practices for physical activity in higher education.

Physical activity programs vary by institution. PACs include various aspects of health and human performance such as but not limited to: dance (e.g., ballet), fitness (e.g., jogging and conditioning), lifetime sports (e.g., bowling), mind-body (e.g., stress management activities), outdoor activities (e.g., hiking), and team sports (e.g., soccer). The various types of PACs can provide undergraduate students the opportunity to enroll in a course while earning credit towards graduation (Kim & Cardinal., 2017). Hybrid and online courses have recently introduced a greater variety of PACs, which allow a greater reach for student enrollment as students can partake in physical activities either on or off campus (Brock et al., 2018; Goldstein et al., 2017; Stapleton et al., 2017). Since hybrid and online courses are relatively new to education, researchers are just beginning to empirically study digital PAC formats and practices (Goldstein et al., 2017; Melton et al., 2015).

Due to the diversity in PACs, guidelines and standards should be recognized and implemented by physical activity programs and PAC instructors if quality instructional strategies are used to still achieve student learning outcomes (Melton et al., 2016; NASPE, 2009). Meeting quality standards and instructional practices through innovative practices can hopefully of reducing possible budgetary pressure from administration (Cardinal, 2017; Charles & Charles, 2016; Goldstein et al., 2017; Melton & Burdette, 2011; NASPE, 2009; Stapleton et al., 2017). Although a decade old, the National Association of Sport and Physical Education NASPE (2009), now known as the Society of Health and Physical Educators (SHAPE) America, remains the most relevant instructional guideline for quality physical activity programming (Annesi, Porter, Hill, & Goldfine, 2017; Cardinal, 2017; Charles & Charles, 2016; Stapleton et al., 2017). The guidelines provide standards for university physical activity programs in seven areas: administration/support, assessment, instructional strategies, professionalism, learning environment, program staffing, and curriculum. The *instructional strategies* section suggests appropriate practices for physical activity instructors, which includes instructional design, student-centered teaching styles, and the use of technology. As previously mentioned, technology use in PACs have become an increasingly popular topic in literature as cost-effective measures can potentially increase student enrollment (Charles & Charles, 2016; Goldstein et al., 2017; Gourlay et al., 2013; Melton & Burdette, 2011; NASPE, 2009; Stapleton et al., 2017). For example, learning management systems (e.g., Canvas or Blackboard) have become the standard communication and course delivery mechanism among teachers and students (Brock et al., 2018; Goldstein et al., 2017; Melton et al., 2016), which allow more PACs to be offered in hybrid or online formats. Using technology such as videos

(Dempsey & Van Eck, 2018; NASPE, 2009; Stapleton et al., 2017) and wearable devices have been used to track and analyze fitness patterns and allow students to participate in and learn about physical activity without having to enter a gym or classroom (Charles & Charles, 2016; Dempsey & Van Eck, 2018; Melton et al., 2015; NASPE, 2009; Sacko et al., 2017).

Instructional strategies such as videos and learning management systems can be promising, however there is a learning curve to using technology as a pedagogical tool, and a dedicated amount of time is needed to practice such new methods (Dempsey & Van Eck, 2018; Melton et al., 2016; Weir & Connor, 2009). Somewhat ironically, digital technology as a pedagogical tool is not going away anytime soon and will continue to be a driving force in PACs as institutions increasingly rely on online-based approaches (Litchfield, 2018; Melton et al., 2016; NASPE, 2009; Stapleton et al., 2017; Wilson, 2018). Therefore, a further examination on the PAC instructors' role should be considered if the culture of technology is to be explored.

Graduate Teaching Assistants

Ultimately, Physical activity instructor's serve as a gatekeeper to quality PACs (Charles & Charles, 2016; Lederer, Sherwood-Laughlin, Kearns, & O'Loughlin, 2016; NASPE, 2009). Traditionally, physical activity programs have relied on GTAs to teach PACs (Cardinal, 2017; Charles & Charles, 2016; Melton et al., 2016; Stapleton et al., 2017). Generally housed in a kinesiology-related department, GTA's come from a variety of graduate programs (e.g., sport pedagogy, biomechanics, exercise physiology, sport administration, health education, etc.). Ongoing efforts to train, mentor, and evaluate GTAs is essential to quality physical activity programs (Lund, 2016; Saunders, Evans, & Joshi, 2005; Stapleton et al., 2017; Sweeney et al., 2017). However, proper training can be limited for some physical activity programs based on administrative resources (Charles & Charles, 2016; Melton et al., 2016; Stapleton et al., 2017). Furthermore, GTAs may have the content knowledge and skills regarding a particular PAC but can be unprepared to effectively teach the content due to the lack of pedagogical content knowledge (DeChenne, Koziol, Needham, & Enochs, 2015; Melton et al., 2016; Stapleton et al., 2017). For example, a former basketball player might know how to play basketball but can ineffectively communicate proper techniques and drills for dribbling, shooting or passing to the students. If students are expected to have learned particular skills (e.g. dribbling, passing, shooting) and lifelong well-being behaviors for academic and personal success (e.g. goal setting), a physical activity program should ensure the basketball instructor can effectively communicate both content and knowledge to their students (Casebolt, Chiang, Melton, & Russell, 2017; Charles & Charles, 2016; Longmuir & Tremblay, 2016; NASPE, 2009). Literature encourages sustainable training and support for GTAs as the basic pedagogical knowledge should be continuously addressed (Beaudoin et al., 2018; Langdon, Schlote, Melton, & Tessier, 2017; Melton et al., 2016; NASPE, 2009; Stapleton et al., 2017). Although researchers have begun exploring better teaching practices in PACs (Brock et al., 2018; Goldstein et al., 2017; Langdon et al., 2017, Melton et al., 2015), mentorship and professional development strategies for technology training is still limited for GTAs who teach PACs.

Professional Development

Based on PAC instructional guidelines (NASPE, 2009), physical activity program administration should provide professional development opportunities for GTAs, which can further support instructional strategies such as technology use. There has already been a shift within PAC's towards online courses, which has been shown to promote enrollment among non-physically active college students (Goldstein et al., 2017). Additionally, the use of mobile

apps has resulted in positive experiences among students enrolled in PACs (Melton et al., 2015). Therefore, there is a need to address how PAC instructors, particularly GTAs, can be ready to teach PACs or any other higher education courses.

GTAs who wish to continue a career in higher education should continually participate in professional development opportunities (Park, 2004), as GTAs are expected to have appropriate levels of pedagogical content knowledge when teaching courses (Beaudoin et al., 2018; DeChenne et al., 2015; Parker, Patton, & Tannehill, 2017; NASPE, 2009). Additional consideration towards professional development opportunities that promote student-centered learning and technology use is recommended (NASPE, 2009; Stapleton et al., 2017; Tondeur, van Braak, Ertmer, & Ottenbreit-Leftwich, 2017; Zhang, Koehler, & Lundeberg, 2015). Literature also suggests that instructors should be able to implement basic technological skill sets (e.g. email, learning management, digital media) if quality physical activity programs are expected to meet any standards or guidelines (Beaudoin et al., 2018; Cardinal, 2017; Charles & Charles, 2016; Kim & Cardinal, 2017; Melton et al., 2016; NASPE, 2009; Stapleton et al., 2017; Sacko, et al., 2017).

PAC literature encourages the use of mobile teaching and online learning (Goldstein et al., 2017; Milrad et al., 2013; Ozan & Kesim, 2013), as well as the training for technology use (Beaudoin et al., 2018; NASPE, 2009; Pentecost, Langdon, Asirvatham, Robus, & Parson, 2012; Stapleton et al., 2017). However, no studies have explored professional development best practices that specifically focus on training for PACs and technology (DeChenne et al., 2015; Koekoek, van der Mars, van der Kamp, Walinga, & van Hilvoorde, 2018). Well-designed professional development opportunities that promote effective instructional design strategies for PACs should be researched and evaluated in greater detail (Melton & Burdette, 2011; NASPE, 2009; Saunders et al., 2005; Stapleton et al., 2017; Tondeur et al., 2017). For instance, promoting student-centered instructional curricula that incorporates technology is one avenue to explore professional development and training among PACs (NASPE, 2009; Pentecost et al., 2012). More can be understood about the environment and culture GTAs experience as a PAC instructor, and the role technology may or may not play in a university physical activity program.

Role of the Researchers

Contextualizing the role of the researchers is customary for qualitative research. All three authors were at different occupational stages within higher education, which provided a broad scope of investigation on a single phenomenon. As a doctoral student (Dannon), a tenured associate professor (Jennifer), and a college administrator (Mark), we have a dynamic understanding and extensive background in the field of sport pedagogy as well as the use of technology as a pedagogical tool. The first author has spent five years teaching a variety of PACs at multiple universities. Additionally, the first author has 15 years as a videographer, focused on educational media. Jennifer and Mark have experience working with PAC instructors as faculty and administrative roles, and also served as a supportive role to the first author.

Mark and Jennifer guided me (Dannon) throughout this process to ensure an acceptable level rigor and trustworthiness were taken via reflexive and transparent practices (Lahman, 2017; Lincoln & Guba, 1985). For instance, reflexive annotations were made throughout the data analysis procedures and an audit trail was made to supporting themes and connecting meanings (Lincoln & Guba, 1985). Data saturation was reached through extrapolating meaning from the interviews and triangulating data through the researcher's annotations, observations and collected documents throughout the data collection process (Creswell & Poth, 2018;

Lincoln & Guba, 1995). Additionally, member checking was conducted with all participants, to ensure transcriptions were accurate (Merriam & Tisdell, 2009; Sparkes & Smith, 2013).

In the fall of 2017, I (Dannon) chose to focus on technology's role in PACs as a dissertation topic. However, as Merriam and Tisdell (2009) expressed, a pilot study should be conducted to practice data collection methods. A pilot study also helps with selecting the correct participants and data analysis procedures. Both Jennifer and Mark helped guide me during the analysis and writing process of this manuscript to help prepare me for a similar research design for my dissertation. Whereas my dissertation is primarily a case study, I first wanted to understand the culture of PAC instructors and their relations to technology in order to gain a foundational understanding of a physical activity program. Hence, this pilot study looked more broadly than a case study by exploring how people make sense of their world (Fusch et al., 2017).

Purpose

The purpose of this study was to investigate the culture and relationships of PAC instructors with technology. Literature has supported the use of technology in PACs (Charles & Charles, 2016; Melton et al., 2016; Stapleton et al., 2017). However, there is a lack of literature specifically investigating the culture of GTAs who teach PACs. This pilot study examined GTA physical activity instructors and their use of technology, where no full-time coordinator was present, in order to create meaning behind technology's vast and complex role in PACs. The following research questions helped guide the study:

1. What technologies are being used in university physical activity courses?
2. What influences the use of technology in physical activity courses?
3. What is the pedagogical culture of technology among university physical activity instructors?

Methods

Qualitative research requires a clear explanation of methods, methodology, theoretical perspective, and epistemological stance in order to justify the reasons in which the researcher examined a phenomenon (Crotty, 1998). Crotty explained that these four elements enable researchers to immerse themselves in the study and through data analysis, creating established and coherent assumptions based on theories, beliefs, and data. Similar qualitative research has followed similar approaches when explaining the reasoning behind their research within higher educational institutions (Smith & Schmidt, 2012). The following sections will provide a rationale for this study, explaining: the epistemology, the theoretical perspectives, the methodology, and the methods.

Epistemology

Constructionism was used as the epistemological perspective for this research, as meanings are built through the interpretation of the world around them (Crotty, 1998). Crotty (1998) suggested that a constructionist viewpoint naturally undertakes an almost subjective role, that the researcher develops and transmits the constructed reality into meaningful interactions with those around them. In other words, curiosity drives the viewpoint to understanding the world.

Theoretical Perspective

Social constructivism and interpretivism have been conjointly described as a theoretical perspective (Creswell & Poth, 2018; Crotty, 1998;). Emerging from constructionism, a social constructivist perspective inductively interprets data and generates a theory or pattern that holds value (Creswell & Poth, 2018). Our examination used a social constructivist framework to embrace the idea of building on one's emotions and interactions of social realities, and expressing the endless variations in which one experiences life through the interactions with (or without) others. Using a social constructivist framework towards understanding the use of technology has been used in educational settings (Reynolds, 2016), but more qualitative efforts in understanding technology's role in PACs should be highlighted to begin a basic understanding of the potential benefits and barriers physical activity instructors may encounter.

Methodology

A mini-ethnographic case study methodology was used to explore how technologies were being used in PACs while understanding the influencing and cultural factors of technology in PACs (Fusch et al., 2017; Stapleton & Bulger, 2015). A mini-ethnography requires the researcher to understand the culture that is being studied (Creswell & Poth, 2018; Fusch et al., 2017) and aims to describe the overall environment in which the participants are being examined. A mini-ethnographic case study is recommended when time and resources are limited, but can still reach data saturation (Fusch et al., 2017). A case-study includes a "bounded system" (i.e. a classroom or an instructor) that provides an in-depth description of both processes and products in a chosen phenomenon (Creswell & Poth, 2018; Merriam, 2009; Sparkes & Smith, 2013; Stake, 1995). Furthermore, with a social constructivist framework, a case-study methodology approach can help capture "how" a case interacts in a natural context (Gaikwad, 2017). An ethnographic study also aims to capture the natural setting of behaviors in a culture (Sangasubana, 2011; Wolcott, 2005). Based on these two methodologies, a mini-ethnographic case study seemed appropriate to observe, investigate, and describe in rich detail the open-ended culture of physical activity instructors and their use of technology. Based on Crotty's (1998) components to qualitative research, *methods* will be described in the following sections: participants and setting, data collection, and data analysis.

Participants and Setting

Participants included seven GTA physical activity instructors at a mid-sized, four-year university in the mountain west United States. As Creswell and Poth (2018) stated, purposeful sampling is needed when the researcher's intent is to understand a particular group. All participants were instructors of record for one-hour credit PACs. Courses included: soccer, basketball, bowling, hiking, walking and jogging, self-defense, volleyball, and conditioning (online). All GTAs had various background knowledge and interest in both content and pedagogy. Additionally, GTAs were students enrolled in a kinesiology-related doctoral programs, including sport administration, sport psychology, and exercise physiology. All participants completed an IRB approved (1130183-1) consent form, protecting their confidentiality throughout the research.

Data Collection

Data collection began early during a fall semester and lasted until the semester ended. Data were collected via interviews, observations, and document collection. Semi-structured

and informal interviews were conducted mid-semester. The semi-structured interviews allowed questions to be flexible as all participants taught different courses, but specific enough to focus on the role of technology and have an in-depth understanding of their courses (Creswell & Poth, 2018; Merriam & Tisdell, 2009; Wolcott, 2005). Semi-structured interviews also helped the researcher explore new ideas within technology that might not have been predetermined when discussing the environment of a PAC. Informal interviews helped clarifying missing information from previous interviews, document collection, and observations (Fusch et al., 2017).

The lead researcher took the role of an observer as participant, which allowed interactions with students in the course taught by the physical activity instructor. An ethnographic observer role allowed a wider array of data to be collected about the overall experience and meaning of technology within a course but remained bounded to information about the instructor and not the students (Fusch et al., 2017; Merriam & Tisdell, 2009; Wolcott, 2005). The lead researcher also collected documents such as quizzes, assignments, exams, and syllabi, which were used as supplemental data for triangulation. These documents were requested by the researcher, who explained the purpose of the request, and allowed participants to choose which documents they wished to provide (Creswell & Poth, 2018).

Data Analysis

As Creswell and Poth (2018) suggested, both ethnographies and case studies require in-depth analysis through multiple sources of data (i.e., interviews, observations, document collection). However, the interviews and interactions with the participants served as the primary focus for data analysis, using observation notes and collected documents for triangulation and supplemental information (Creswell & Poth, 2018; Merriam, 2009). An interpretive phenomenological analysis was used to extract meanings from the interviews and develop general knowledge while making sense of each participants' personal and social world (Smith & Osborn, 2007; Sparkes & Smith, 2013).

An interpretive phenomenological analysis seemed most appropriate to compare and analyze patterns across cases while structuring an essence of meanings from each instructor's lived experiences with technology (Smith & Osborn, 2007). For instance, each case came from varying kinesiology programs and taught different PACs but remained as a homogenous group because all participants were GTAs teaching PACs (Sparkes & Smith, 2013). Given this information, a stepwise presentation of an interpretive phenomenological analysis is necessary to explain how the transcribed interviews were analyzed and supported through triangulation and data saturation (Fusch et al., 2017; Smith & Osborn, 2007; Sparkes & Smith 2013). Based on Sparkes and Smith (2013), an interpretive phenomenological analysis includes six steps: search for themes, identify and label themes, connect themes, produce a table, continue the analysis with other cases, and write. The following paragraph will explain each step in more detail.

First, each transcription was read and re-read to gain familiarity with the document (Smith & Osborn, 2007). Annotations were made in order to identify and label themes and threading the research questions back to the data. Second, themes were identified and labeled clustered and rearranged to analyze connections between transcriptions, field notes, and collected documents. Third, all labeled themes from each individual were then connected to each other in order to highlight patterns, issues, and attitudes around technology in PACs. The connected themes were placed on a separate document and placed in hierarchical relationships to capture an essence of the experiences related to the research questions (Fusch et al., 2017; Merriam & Tisdell, 2009; Sparkes & Smith, 2013). Fourth, a table was produced to list and cluster all identified themes for each participant. The table allowed all themes to be easily

examined and connected back to all original data. Fifth, the table and connected patterns were crossed-analyzed with each participant leading to a final table with highlighted themes and 'richness' found in the overall analysis (Creswell & Poth, 2018; Sparkes & Smith, 2018). Lastly, the themes were interpreted into coherent accounts with in-depth descriptions and narrative passages (Smith & Osborn, 2007; Sparkes & Smith, 2013).

Findings

The purpose of this study was to explore the cultural environment and innerworkings of PACs and the use of technology. Although each college and university offer their own unique physical activity policies and courses, these findings focused on the culture of a single university physical activity program without an official physical activity program coordinator. The results from the data are described via a composite narrative (a *day in the life*), which has been shown to portray accurate and actual accounts into characteristic narratives (Boufoy-Bastick, 2003; Smith & Osborn, 2007). Furthermore, the results from this study were derived via our stance to a social constructivist framework, which centers on each educator's lived experiences (Crotty, 1998; Fink, 2013; Litchfield, 2018; Wilson, 2018). Based on an interpretive phenomenological analysis (Smith & Osborn, 2007; Sparkes & Smith, 2013), three themes emerged about the role of technology within PACs: campus environment, instructor pedagogical experience, and social influences. Additionally, the importance behind teaching experience and professional develop emerged as an overall essential impact regarding technology's role in PACs. Results are divided into two sections. The first section expands on the themes and overall essence, sharing detailed accounts of the participants lived experiences. The second section highlights a composite *day in the life* of physical activity instructors, detailing actual accounts of each PAC observed, throughout the study.

Campus Environment

The PACs were taught in various gyms, classrooms, and fields across campus as well as off campus (e.g. bowling alley and hiking trails). Because there were numerous gyms where PACs were held, the program's equipment was spread across campus. For example, a large number of basketballs, volleyballs, and soccer balls were held in an equipment room on the west side of campus near the large gym. The equipment room stored most of the department's equipment and had a full-time staff member who checked out all equipment (balls, goals, paddles, etc.), including technology equipment (video cameras, microphones, pedometers, etc.). All equipment could be checked out by other faculty and students because the department offered undergraduate degrees such as physical education and coaching, which require a variety of equipment. The large gym was shared with the athletic department. Both the sport and exercise science department and the athletic department did not have time conflicts. Another equipment room was located on the east side of campus adjacent to a smaller gym. Both gyms had access to a built-in sound system for music or other audio needs. Other PACs met outside on the practice fields, which were also shared with the athletic department. Similar to the large gym, this did not seem to interfere with either the PACs or the athletic department, as the campus had more than five large fields.

PACs that were held off campus were hosted at local businesses or public sites. The bowling class had lanes and were reserved based on class size but still shared the building with the public. The hiking class was held off campus and changed based on wherever the PAC instructor decided to hike. There was one course offered fully online (fitness and conditioning courses), and it was hosted via the learning management system, Canvas. Students in the online

course varied in location, both on and off campus. Students were given assignments that did not have to be completed on campus.

Campus Environment and Technology

The campus environment provided technology equipment that PACs could utilize. For instance, the large gym had a fully operational scoreboard and a built-in sound system (auxiliary Bluetooth capabilities). The scoreboard was readily available but was not used by any of the PAC instructors. When asked about the desire to use such technology, one physical activity instructor (Devon) mentioned he, "haven't really needed" to use it, and stated, "it's pretty easy to figure out plus one, plus two," when using the scoreboard. Only the small gym (Eastside gym, 15-minute walk from the large gym had a flat screen television attached to the wall, which was encased in a shatter-resistant barrier. The television had a display port for laptops and mobile devices (HDMI, VGA, and auxiliary capabilities). The small gym also had a whiteboard with dry-erase markers and eraser. Although a whiteboard may not be categorized as a high-tech piece of equipment, the ability to use a whiteboard in class was considered to be a unique benefit for PAC instructors to providing students information. Additional classroom equipment such as projectors were not in the gyms, which limited PAC instructors to share information. For instance, one physical activity instructor (Henry) who had classes outside on the practice fields expressed that he, "would have liked to show YouTube clips or a PowerPoint," given the opportunity. One class was held in a technology-funded room with a computer at each seat, as well as a projector and screen. Overall, the classroom environment varied so greatly that all seven instructors adapted their classes to their campus environments differently.

Pedagogical Experience

The teaching experiences varied among the PAC instructors. Four of the seven instructors were teaching at a college level for the first time that showed to be a pinnacle point of the study as using technology seemed limited among the newer instructors. However, when asked if utilizing technology would be of any interest to them, instructors showed an interest in learning more about ways to use technology in PACs. Using technology such as video, one physical activity instructor (Paul) noted, "I think that [using video] is a skill that is becoming more and more applicable to both teaching and coaching… I think it's definitely something that would be a good tool to have."

One instructor (Gregory) had never taught a PAC but had taught college students in other kinesiology lab courses. Another instructor (Emily) was in her second year of their program and had taught the same course their previous two semesters but had no teaching experience prior to becoming a GTA. The physical activity instructor who taught the online course (Brooke) had been teaching for five years at another university and had experience teaching numerous formats of PACs. Moreover, her experience with online courses provided unique insight into distance-learning for PACs. Brooke was confident in knowing how learning outcomes and assessments should be addressed in PACs. Brooke was also much more comfortable about her use of technology and how to properly utilize an array of tech-tools in PACs compared to the other PAC instructors.

Social Influence

All physical activity instructors had varying degrees of social influences that impacted the knowledge and use of technology. The variety of social influences came as no surprise

since the PAC instructors came from various fields in kinesiology (exercise physiology, sport pedagogy, and sport administration). Consequently, the exchange in information and advice about teaching PACs varied by individual and by program. For example, five of the seven PAC instructors shared an office on the opposite side of campus (west side) from the remaining PAC instructors. The five instructors had to collaborate separately from other kinesiology students, which in turn, created different exchanges of ideas and advice towards PACs. For example, first-year instructors who shared an office worked together to figure out how to use the learning management system, Canvas. As Devon shared his experiences trying to enroll and unenroll students on Canvas, "All four of us in here were trying to figure out Canvas … and you have people students coming in and out of classes and of that stuff." Social influences also included any technology-based opportunities outside of the kinesiology department. For example, university-wide workshops were hosted by the university library, which included a Canvas workshop at the beginning of the semester.

Only one PAC instructor took advantage of the Canvas workshop since no formal training was provided to the PAC instructors. In fact, a recurring conversation included a lack of training for PAC instructors. As Amanda stated, "I definitely think they [administration] should touch on Canvas. At least show what it is, show what it looks like, because we didn't even talk about Canvas…and that's where your grading goes into, that's where your syllabus goes into." Overall, the social influences showed the cultural microcosms among PAC instructors and the institution. Moreover, accessibility to asking or receiving help or resources regarding technology greatly differed as instructors had offices across campus, which further divided opportunities to communicate between GTAs. However, multiple PAC instructors commented on the department's administrative assistant as a resources and guidance. The administrative assistant and department chair were the closest roles to a physical activity coordinator.

Composite Narratives

The following sections are composite narratives formulated from seven physical activity instructors uses and attitudes towards technology (Rossman & Rallis, 2006; Smith & Osborn, 2007). Depicted as a *day in the life* during the middle of the semester, this composite is a representation of data from many people and sources (e.g. interviews, observation, and documents) into single narratives, which creates a deep sense of the experience for the reader and a heightened confidentiality for the participants (Smith & Osborn, 2007; Rossman & Rallis, 2006). Although composites generally merge various encounters to formulate a cohesive narrative, the following accounts were the actual instructors within their courses. Only the names (pseudonyms) and the time of day were adjusted in order to create a compelling narrative on the exploration of technology in PACs.

8:00 AM
Emily sits in a chair with her computer nestled in the corner of a hollowed gym while students are silently hunched along the walls on their phones.

Emily has been teaching a self-defense class for three semesters now. Like other PAC instructors, Emily teaches multiple sections of the same class. Emily's use of technology is, according to her, extensive to the point of necessity. "I take attendance every day on Canvas. I also use Canvas for announcements, online journals, and group projects…. We watch YouTube videos on the TV… that's probably the extent of technology in the classroom." Based on classroom observations, Emily takes advantage of any technological device needed. For

instance, the small gym she teaches in contains a mounted flat screen television (eastside gym), equipped with surround sound, which she has used more than once since it's installment a few months ago.

Emily is in her third semester as a doctorate student. Since her first time teaching last year, Emily contributes much of her college teaching strategies to a class she took on college teaching. The college teaching course was intended for graduate kinesiology students and is only offered once every two years. Emily expressed how the class helped with student engagement strategies. For instance, Emily positively reflected on a *get to know you* informal assessment to learn about her students. Before taking the college teaching class, Emily, "didn't know how to run a classroom… Didn't know anything about classroom management and didn't know anything about dealing with people my age."

Class begins with a Canvas-documented attendance, followed by a warm-up combination of punches, which were each created by the students. Emily uses the remainder of the class to practice self-defense scenarios.

9:00 AM
Henry arrives on the field with a cart full of soccer balls while undergraduate students lean along a railing while on their phones.

Henry is an international student in his first semester in a Ph.D. program. Although Henry had no previous teaching experience, he had been playing recreational soccer since he was seven. Henry felt comfortable with warmup routines, performing drills, and participating in matches with his students. Henry's curriculum scaffolded soccer content based on his idea of difficulty levels. With approximately 26 students, Henry designed his lessons around ball for half of the semester, and regular scrimmaging for the remainder of the semester. Henry shows me his schedule on a Microsoft Excel spreadsheet.

Based on the isolated location of the field, there is not much technology that could be utilized. Henry was primarily concerned about ways to effectively teach the spectrum of the students skills in his class. The learning management system was the only intended use of technology. "It's not necessary for the students to use technology. But they should know about how to use Canvas…If there was an assigned room indoors, I could maybe give some lectures on soccer skills (using videos) … Yeah, I could be a lot better if there was an assigned room."

Class begins with Henry taking attendance and a rote-response warm-up. Class proceeds with a warm-up lap and an immediate 10 vs. 11 game. Henry notices the uneven teams and steps in to join for the remainder of the class.

10:00 AM
Amanda sits next to an unused Daktronics scoreboard system, talking to a student about the day's volleyball activities while other students quietly sit with their phones along the walls.

Amanda is an international student in her first semester in a Ph.D. program. Amanda had never taught volleyball before but played volleyball for ten years and worked with the Korean senior women's volleyball national team. Like Henry, Amanda found no need to use technology during class. "If using technology is not mandatory, I'm not sure I will use it." Unknowingly, Amanda, greatly utilized technology to assess students by preparing a criteria-based

performance skill midterm. With photos for each cue, Amanda and students seemed prepared to play and be tested thanks to learning management systems.

Amanda's use of technology revolved around her personal computer and mobile phone by using videos she found online to demonstrate and explain content. Moreover, Amanda shared the videos on Canvas for students to use as a reference. "If I found proper drills from the internet, then I would try to apply the same drill with the student."

> *Class begins with attendance, using a pen and paper, followed by a rote-response warm-up led by Amanda. The class is then instructed to participate in a defensive skill around the two nets in the gym.*

> **11:00 AM**
> *Devon arrives with a cartful of basketballs while students sit in the bleachers on their phones.*

Devon had never taught a basketball class before this semester. Fortunately, Devon worked with a NCAA division I national championship basketball team for ten years. Devon's use of technology is minimal, as Devon does not see much of a need for it in a PAC. "Being the fact that it's a one credit course, it's very cut and dry – come in and play." Based on the gym location, there was no need to include any technology. The scoreboards were tucked away in a locked closet, and based on observations, students seemed to mirror Devon's philosophy of coming to class and simply playing basketball. "I think if it was a three-credit course, I think I would incorporate more technology."

> *Class begins with a paper and pencil documented attendance, followed by a rote-response warm-up led by a student of a Devon's choice. Following the warm-up, students played a quick defensive skill activity, and played a six on six game for the remainder of the class.*

> **12:00 PM**
> *Paul the turns on the computer and projector in the corner of the technology-funded classroom (a class full of computers) as students quietly sit with their phones.*

Paul had never taught a hiking class before this semester. Paul frequently hikes and indulges in outdoor activities regularly. Paul's class lasted eight minutes since most of the class time is spent on the weekends at state and national parks roughly an hour-drive away. However, Paul took advantage of the eight minutes by making sure students knew exactly where to go and what time to arrive by posting information on the projector. Additionally, the few minutes gave students a chance to communicate carpooling possibilities and exchange contact information.

Paul is in his first semester as a Ph.D. student. Paul's use of technology involved using Canvas to communicate with his students. By uploading announcements, PowerPoint presentations of hiking materials, and hiking maps, Paul took advantage of the learning management system, Canvas. However, Paul wished he could have learned more about Canvas's tools but was not familiar with the various learning management systems the university offered. Therefore, Paul decided to take a workshop hosted by the university library system. "I attended a Canvas learning course at the beginning of the semester…but it would have been nice to know how to use Canvas features."

> *Class begins with an attendance sheet being passed around. Paul starts with a caveat, "We should be out of here real quick." For the remainder of the class, students learn where their next hike is located and what students should be prepared for.*

1:00 PM
Gregory sits in a chair on the edge of the gym while students form a seated semi-circle around him.

Gregory has never taught a walking and jogging class before this semester but considers himself physically active. Gregory's recognized the benefits of technology as a pedagogical tool but did not know how to begin implementing technologies into his walking and jogging class. Due to his unfamiliarity with teaching a walking and jogging course, Gregory reflects how could have incorporated technology, "What I would've done is, I would've given each student a pedometer or a smart watch and have them download a fitness tracker app so they can actually track their fitness whether it's class time or whether it's on their own… I didn't have enough time to prepare for that type of planning, but administration said I can do whatever I want."

Gregory was in his fifth semester as a Ph.D student. Before his walking and jogging class, Gregory had only been a lab teaching assistant, helping with physiology courses. Gregory's experience as a lab instructor for exercise physiology courses had given him the advantage of knowing how to work with an undergraduate university student population and using Canvas to achieve tasks such as email and pre/post assessments, and lab-based instruction. Due to his experience teaching lab courses, Gregory had adopted a flipped learning approach to teaching, which involved giving students the information before it is taught in class. "Yeah, I usually posted early as a kind of way to have some experience with a lab technique that we are going to be doing before we met and talked about it in class…it seems to work pretty well."

> *Class begins with a quick team huddle about ways to prepare for the upcoming cold-weather. Students are then off on their own to freely run their jogging routes around campus.*

2:00 PM
Brooke walks into her office and begins working at her computer while students are scattered throughout the state.

Brooke has taught various university courses for over five years. An exercise and weight control class was nothing new to her. However, Brooke's new challenge was facilitating a completely online PAC, where she will never meet her students in person. Brooke's reliability on technology greatly exceeded other physical activity instructors, as she is passionate to deliver contemporary content through innovates pedagogical practices. "I try to use as much technology as possible… I have everything from discussion participation points, to quizzes, research papers, to group activities – some are media based, some are not. It's pretty varied."

Brooke is in her third semester as a doctoral student and has been strategic in her teaching, as Brooke lives two hours away from the university and works as a full-time faculty at another university. Brooke is the youngest faculty member at her other university and prides herself on her progressive pedagogical experiments.

"For example, last year I went to the Teaching with Technology Conferences, because it's something that interests me and I feel like it's a good way to engage students in things that

they are already interested in – to make, maybe the content more interesting… I've been a primary go-to for teaching online classes for a while because I'm comfortable with it."

Subsequently, Brooke was the first PAC instructor to design and teach a 100% online PAC at the university. In order to adhere to the students' level of technological interests, Brooke used the mobile app, *Snapchat*, to assess student participation.

"They [had] to go out in groups and go [on] a scavenger hunt and find different fitness or wellness resources on campus, and then send me snapchats of them… they enjoy it more than if they wrote me a reflection paper – Which I don't necessarily want to read [laughs]."

Class began when students pulled out their phones…

Discussion

Fusch et al. (2017) stated that a researcher should choose a research design study to best answer research questions. Based on this pilot study, a mini-ethnographic case study was an appropriate research design to investigate what technologies were used at a single university physical activity programs while exploring the influences and culture of technology among GTAs and their respective PACs. Results of this pilot study revealed that all PAC instructors used technology as a pedagogical tool within their courses in one form or another. Although each instructor varied in PAC formats, pedagogical experiences, and social surroundings. All instructors used online media as well as the learning management system, Canvas. As Melton et al. (2016) suggested, learning management systems can provide essential components for quality PACs by allowing virtual access between instructors and students. However, Melton and colleagues cautioned that using learning management systems add complexity for both instructors and administration to integrate meaningful pedagogical practice. Based on our findings and supporting literature (Brock et al., 2018; Melton et al., 2016; NASPE, 2009; Stapleton et al., 2017), GTAs, regardless of teaching experience, should be part of orientations and trainings for learning management systems. Furthermore, the trainings should be consistent in content (e.g., syllabus page, communication rules, etc.) for all PACs, and should be documented for future evidence-based research (Beaudoin et al., 2018; Melton et al., 2016). Finally, although this study focused on instructors and their courses, students played an inevitable role in understanding culture of technology in PACs. More research should focus on the use of technology among students enrolled in PACs. Specifically, our findings support the potential role phones play among both PAC instructors and their students (Goldstein et al., 2017; Melton et al., 2015; Sweeney et al., 2017).

With an ethnographic constructivist lens, this pilot-study explored the culture of PAC instructors' knowledge, understanding, and interactions with technology (Fusch et al., 2017). As Kretschmann (2015) suggested, an institution's culture can impact how much (or how little) technology is used as a pedagogical tool. An interpretive phenomenological analysis revealed unique implications among the various PAC instructors while generating individual and holistic meanings (Smith & Osborn, 2007). Results from this pilot study showed a culture of GTA support and guidance from fellow GTAs who teach PACs or other kinesiology-related courses. For instance, GTA's who shared the same office exchanged ideas in order to problem-solve unexpected Canvas troubleshooting. Likewise, literature supports mentorship roles among GTAs who teach PACs (Brock et al., 2018; Langdon et al., 2017; Melton et al., 2016; NASPE, 2009). Research should further investigate how GTA's develop their knowledge of technology as a pedagogical tool in PACs.

As Stapleton and Bulger (2015) suggested, administration should aim to understand the culture of their physical activity programs, which include how PAC instructors utilize their environment and their social influences. To the author's knowledge, no literature has explored

the culture of a physical activity program without a full-time program coordinator, which is considered essential to deliver quality both GTA's and PACs (Brock et al., 2018; NASPE, 2009 Melton et al., 2016). Specifically, this pilot study explored the virtually unknown culture and innerworkings associated with technology in PACs. As higher educational institutions continually rely on technologies for efficiency and effectiveness (Ottenbreit-Leftwich et al., 2010; Melton et al., 2016), there has been a gap in literature regarding the cultural realities that might benefit or prevent technology use in PACs (Charles & Charles, 2016; NASPE, 2009; Stapleton et al., 2017). This pilot study provided evidence about the importance of physical activity program support for PAC instructors while adhering to the campus climate (Langdon et al., 2017; Melton et al., 2016; NASPE, 2009; Stapleton et al., 2017). For instance, Gregory wished he could have implemented wearable devices and mobile apps into his jogging and conditioning course. Unbeknownst to Gregory, wearable devices and mobile apps were available had Gregory known equipment was available on the opposite side of campus in one of the equipment closets. Moreover, most students were seen using mobile phones, suggesting app-based interventions are a good way to adhere to digital natives enrolled in PACs (Melton et al., 2015; Ottenbreit-Leftwich et al., 2010; Stapleton et al., 2017). Future studies should explore how a PAC instructor's attitudes can be impacted by their social environment.

Limitations

It is important to express the limitations of this pilot study. First, the convenience sample of this study was limited to a single university physical activity program, thus limiting generalizability (Sparkes & Smith, 2013). However, the sample was also purposeful as the study aimed to learn about a physical activity program with no full-time coordinator. As previously mentioned, no studies have specifically explored technology use within a program without a full-time coordinator. Therefore, this pilot study provided unique in-depth descriptions and interpretations of PAC instructors to develop a feasible level of generalizability (Donmoyer, 2000; Sparkes & Smith, 2013). Second, ethnographic research is susceptible to researcher bias (Fusch et al., 2017; Wolcott, 2005). Minimizing personal pretenses and thoughts included researcher reflections after each interview, bracketing the researcher's experiences as a separate, yet connected to the operational analysis of the data (Creswell & Poth, 2018; Sparkes & Smith, 2013). Lastly, a pilot study was conducted by a novice researcher is open for potential errors, (Fusch et al., 2017; Merriam & Tisdell, 2009), but provided the author a well-rounded experience for qualitative research.

Future Implications

The roles and responsibilities of GTAs vary by university and by program (NASPE, 2009). The research found within this study aimed to showcase only a few of the numerous (and almost endless) cultures of PAC's and their use of technology. Moreover, this research highlighted the spectrum of experiences and philosophies of PACs regarding technology. The authors encourage other colleges and universities to promote not only *what* technological practices are used, but *how* technological practices are used within PACs. If institutions, wish to promote quality health-enhancing PACs for students, greater investment into technologies that enhance GTAs teaching while adhering to digital native learning (Beaudoin et al., 2018; Charles & Charles, 2016; Goldstein et al., 2017; Melton & Burdette, 2011; Ottenbreit-Leftwich et al., 2010; Stapleton et al., 2017).

With a competitive budgetary environment, colleges and universities need to remain adamant about the promotion of PACs through effective teaching practices (Charles & Charles, 2016). It is recommended that administrators place stronger efforts towards technology-

focused physical activity programing, which include professional development opportunities, instructional design development, and an overall evaluation of physical activity programs and their PAC instructors (Cardinal, 2017; Charles & Charles, 2016; Goldstein et al., 2017; Melton et al., 2016; NASPE, 2009; Stapleton, et al., 2017). Although literature continues to explore technology-focused interventions (Goldstein et al., 2017; Krause, 2017; Melton et al., 2016 Stapleton et al, 2017), no qualitative study has attempted to narratively highlight the culture of technology among PACs in higher education. Future research should further explore technological tools used in PACs. Additionally, documentation of trainings, professional development opportunities, and mentorship initiatives should be further applied and researched. It is imperative that higher educational institutions learn and adopt to digital pedagogies that cater to their digital native culture. Understanding what and how technologies are used can hopefully provide programs who might lack the resources (e.g., full-time coordinator) to effectively implement technology in PACs.

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