Original Article

Insights from teachers on the digitization of the physical education knowledge base

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Abstract
Problem Statement: Today, physical educators can access an array of online resources. The knowledge base for physical education (PE) is changing with specific regards to the proliferation of online resources that teachers can access. There remains a need to better understand how physical educators perceive and interact with online resources. **Purpose Statement:** The general aim of this study was to explore the increasing presence of digital resources with particular attention directed toward physical educators' perceptions and consumption of online resources. **Approach:** A mixed-methods research design was used to explore this topic. A total of 63 participants responded to a survey and eight completed a follow-up interview. **Results:** Participant results indicated that the most common technology used were basic search engines followed by PE Central and YouTube. Further, the qualitative data illustrated that: (a) Teachers believed there is an abundance of online resources for physical educators, (b) teachers' process of searching for online resources often starts with Google, and (c) participants' preferences of online resources is related to ease of use and accessibility. **Conclusions:** Participant findings reflect shifts in the knowledge base for PE, regarding who authors content, information, and resources. For the field, it is important that attention is directed to the online knowledge base. The knowledge base has grown immensely over the years. As more people turn to online platforms for information, it is important for the field to be proactive and remain vigilant regarding how PE is being conveyed. In doing so, it may be incumbent for all those in the PE field to have a digital presence to promote reputable web-based resources.
Keywords: **Physical Education, Teachers, Technology, Internet, Online Resources**

Introduction

Physical education (PE) teachers' use of technology has drawn interest in recent years, with many scholars highlighting the possibilities of its use. In the US, the National Standards for Initial Physical Education Teacher Education indicates that teacher candidates being able to integrate technology into their instruction is an essential skill (Society for Health and Physical Education [SHAPE America], 2017). There is a growing expectation for physical education teacher education (PETE) programs to graduate teachers who have the capacity to use technology in their instruction (Krause, 2017). Some examples of the applicability range from using technology to facilitate assessment, analyze video, and track physical activity (Hyeonho et al., 2017).

Scholars have also examined how PE teachers use specific online resources (i.e., PE Central) (Hanson et al., 2017). An emergent finding from the work of Hanson and colleagues (2017) was that a website has potential to facilitate professional development for teachers. In another study, researchers studied how PE teachers used an online discussion forum to exchange views related to technology, such as using digital tools to collect student data (Krause et al., 2017). Researchers similarly explored how PE teachers engaged with Twitter and found that many used it to network and exchange information with fellow teachers (Harvey & Hyndman, 2018). The work of these scholars illustrates the promise of social media applications as a potential conduit for professional development (Goodyear et al., 2014). More and more, people seem to be turning to the internet to connect with fellow teachers, look for lesson ideas, and support their instruction.

The emergence of online resources for physical educators presents an interesting premise on which to examine the knowledge base for the field. For perspective, consider traditional knowledge distribution channels: professional development, PETE programs, textbooks, and networking with fellow teachers. The traditional textbook, from a knowledge distribution perspective, is a resource that could be characterized as static. Once published, it can be difficult to alter or change the information in a textbook. Contrast this with the online environment, information is dynamic and can be changed in rapid fashion. It is within the online environment that teachers can access websites, social media platforms, and podcasts to consume knowledge. Another defining aspect of the online environment is who can publish information. Compared to traditional means of information

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generation and sharing (i.e., article publishing and textbooks) the online space provides a platform for broader participation. One illustration of this point, in May 2021 a Google search for 'physical education teacher resources' produced approximately 371,000,000 results. "The internet presents a very different environment – one of information abundance" (Metzger et al., 2010, p. 414).

The online environment is participatory, dynamic, and contains a wealth of resources for PE teachers. Of note and interest to this study is the sheer volume of web-based resources. The International Society for Technology in Education (ISTE) standards (2017) pinpoints the importance of educators being knowledgeable, critical consumers of online content. Specifically, Standard 4a stresses how educators themselves must possess the awareness, knowledge, and skill to critically consume online content, while also being able convey these skills to students they instruct in the K-12 setting (ISTE, 2017). The language in the standard acknowledges that navigating the internet and judiciously examining online information is an emerging aspect of modern-day teaching and citizenship. It is important to note that for the Initial Standards for Physical Education Teacher Education (SHAPE, 2017) fails to specifically embed language related to PE teachers' needing to be critical consumers of online resources; rather, the language centers more on the use of technology in the teaching-learning setting. From this perspective, the purpose of this study possesses a degree of material relevance with the emphasis on exploring how the internet is transforming the way that PE teachers consume and interact with the knowledge base.

The purpose of this exploratory, mixed-methods study was to explore PE teachers' interaction with online resources, the decisional tendencies when interacting with online content, and what resources they favor. The following research questions informed the study: (a) What types of online resources do physical educators use? (b) What influences physical educators' decision-making when searching for online resources?

Theoretical Framework

Decision theory offers illuminating insight into human behavior. When making decisions, people are largely guided by automatic processes (Kahneman, 2011). By automatic, it means that people prefer to trust their intuition for decisions. This is not to say that people are not capable of critical, well-reasoned thought. In fact, it is quite the opposite; the human mind is versatile and capable of different information processing approaches (Kahneman, 2011). Decision theorists have posited that people can process information and make decisions in two manners. Stanovich and West (2000) applied the terms *System I* and *System II* to describe the different decisional approaches. See Table 1 for an illustrative depiction on System I and System II processes. System I is the approach to decision-making that would be described as the intuitive, rapid approach. Think about identifying off task behavior, many physical educators can rapidly recognize the behavior and respond accordingly. In comparison, System II represents a slower, more effortful approach to decision-making. From a physical educator's perspective, a System II decision may relate to differentiating instruction, developing an analytical scoring rubric, and mapping out a yearly curriculum. For some, these tasks may require thought, involve mental strain, and take time.

Table 1

Mental Processes Associated with System I and System II.

System I Process	System II Process
Quick	Slow
Low effort, high capacity	High effort, low capacity
Concrete	Abstract
Biased	Analytic
Contextualized	Consequential decision-making
Experience-based decision-making	Linked with Cognitive ability

Note. Adapted from Evans, J. S. B., & Stanovich, K. E. (2013). Dual-process theories of higher cognition advancing the debate. *Perspectives on Psychological Science*, *8*(3), 223-241.

A key point to understand as it pertains to the two systems model is that System I is the primary driver of the decision-making process. While System II is capable of more critical thought, it often is content with System I making decisions. Kahneman (2011) described System II as being a "lazy controller," which means the inferences and decisions System I makes are often accepted without contest by System II. System I decision making enables people to make quick, rapid decisions, and System II allows people to critically consider multiple aspects related to a decision. Most of the time, System I and System II work together to produce desirable results (Kahneman, 2011). Of note to this study, the decisional tendency to rely on System I serves as an ideal premise to explore how physical educators engage with online resources.

Considering the number of resources that physical educators can access online, it is reasonable to surmise it may be challenging to optimize the decision of locating a useful, reputable resource. The findings of Metzger and colleagues (2010) supports this assertion in that the sheer volume of information on the internet will force people to apply time saving measures. From a decision optimization perspective, people should consider all the available alternatives and cues for each alternative (Thaler, 2015). Take the task of identifying a lesson idea to promote personal and social responsibility in elementary-aged children. A choice optimization approach would require the physical educator to carefully review the available resources, compare different factors (e.g., clarity of directions, developmental appropriateness, standard-based, etc…) to select the most appropriate one. In such a time-consuming process, people are prone to a predictable course of action. Shah and Oppenheimer (2008) stated that people facing a time-consuming decision-making task may "employ methods or strategies that reduce effort" (p. 207). More specifically, decisional approaches rely on the principle of least effort, as such people "must arrive at their inferences using realistic amounts of time, information, and computational resources" (Gigerenzer & Todd, 1999, p.24).

To reduce the effort of time-consuming decisional tasks, people apply heuristics. Heuristics allow people to make decisions with less effort and more efficiency (Shah & Oppenheimer, 2008), which is a product of System I (Kahneman, 2011). Heuristics provide insight on how a physical educator perusing the internet may approach this process. One such example, *satisficing*, first introduced by Simon (1955), is a heuristic where people will decide when they find a solution that is "good enough." The satisficing heuristic suggests that people would prefer not to scan the 371,000,000 results produced by Google relative to physical education resources; instead, the likely course of action is to efficiently settle on a resource that is good enough. Specific to seeking information online, the *reputation heuristic* is indicative of a person relying heavily on the reputation of the website as opposed to critically appraising the actual content of the website (Metzger, et al., 2010). Building on this example, the *expectancy violation heuristic* describes when a person seeking internet-based information will equate the aesthetic appeal and overall functionality of the website to credibility.

The expectancy violation heuristic also can capture when a person receives unwelcomed information from a website, such as how a pop-up advertisement can lead to questioning the credibility of that website (Metzger et al., 2010). Heuristics, when applied, are ways for people to reduce the time involved with decision-making. Identifying if heuristics influence the decision-making process provides an intriguing perspective to examine physical educators' engagement with online resources.

A striking tension that this study seeks to highlight is that people are designed to approach decisions with an eye toward efficiency; however, in the online environment and particularly for educators, efficiency may not always be prudent when selecting resources that are used to inform instructional practices. Modern day teachers are a Google search away from an abundance of resources. Understanding how PE teachers approach and interact with online resources stands to broaden and deepen this emerging skillset that is connected to the work of teachers today.

Materials and Methods
Participants

To capture a broad perspective, physical educators from different contexts participated in the study including the following: pre-service teachers, graduate students pursuing a degree in PE, K-12 PE teachers, and faculty who work in a PETE program. An open sampling technique was used to recruit participants (Strauss & Corbin, 1998). The researchers distributed a recruitment email and used social media to promote the study. Thereby, the participants had the autonomy to decide if they wanted to participate in the study. Participants included 63 physical educators (18 pre-service teachers, 20 K-12 teachers, and 25 college teachers; 37 female and 26 male). The sample represented 18 US states. Table 2 depicts background information of the participants. Following the survey, eight participants were recruited for follow-up semi-structured interviews. Table 3 summarizes demographic background of the participants who took part in the follow-up interviews.
Table 2

Background information on survey participants.

Age		Where they teach		Years of teaching	
Years	Frequency (%)	Area	Frequency (%)	Age Band	Frequency (%)
18-20	2 (3.2)	Urban/city	12 (19.0)	1-5	12 (19.0)
21-29	26 (41.3)	Suburb	14 (22.2)	6-10	9 (14.3)
30-39	20 (31.7)	Rural	18 (28.6)	11-15	6 (9.5)
40-49	4 (6.3)	N/A	19 (30.2)	16-20	2 (3.2)
50-59	5 (7.9)			21-30	5 (7.9)
60 or older	6 (9.5)			Over 30 years	6 (9.5)
				N/A	23 (36.5)

Note. N/A = No answer.

Table 3
Background information on follow-up interview participants

Pseudonymous	Age Range	Level of Teaching	Areas of Teaching	Years of Teaching
Brittni	50-59	K-12	Rural	21-30
Mark	21-29	K-12	Rural	1-5
Christina	21-29	K-12	Suburb	6-10
Laura	21-29	College	Urban/City	1-5
Janet	30-39	College	Rural	6-10
Victor	30-39	College	Suburb	6-10
Craig	30-39	K-12	Suburb	1-5
Sylvia	21-29	K-12	Rural	1-5

Research Design

To answer the research questions, a mixed-methods design was used. A notable aspect of the research design was collection of survey data to inform the creation of a semi-structured interview protocol. Qualitative data were used to confirm and expand on the trends that emerged from the quantitative data.

Data Sources

The survey was designed from an exploratory perspective and sought to gather information regarding the online resources that physical educators use. The focus of the survey was to investigate the current trend of teachers' use of online sources, and the follow-up interview was to explore the process of decision-making as well as challenges and barriers that accompany the process of searching for online resources.

Survey

Survey items were drafted by the co-authors of this paper. To inform the design of the survey items, a deliberate review of relevant literature was conducted to identify online resources that have previously been mentioned (Goodyear et al., 2014; Hanson et al., 2017; Harvey & Hydman, 2018; Krause et al., 2017). Beyond demographic questions, participants were prompted to reflect on the pedagogic resources that they use for support including online and non-online resources (e.g., textbooks and past experiences), specify which online resources they use, and how often they use those resources. The survey also contained two open-ended questions that asked participants to reflect on the favorable aspects of online resources and their recommendations for online resources. Prior to distributing the survey, a variety of standard developmental procedures were employed. Five PE content experts reviewed the survey for clarity, readability, and face validity. The expert review panel process produced minor revisions to the survey. The range of the time to complete the survey was 5 to 25 minutes according to Qualtrics®.

Interview. Semi-structured interviews were also conducted to explore the participants' perspectives, experiences, and decision-making process of using online resources (Patton, 2002). The interview questions were underpinned by the decision-making theory (Kahneman, 2011; Thaler, 2015). For example, "how do you determine the quality of online resources?" An interview protocol was used to ensure that each interview was organized in a similar manner. The interviews were completed through a phone call due to geographical constraints. The interviews lasted between 20-30 minutes. All interviews were transcribed verbatim. Prior to the study, all interview questions were piloted for clarity.

Research Procedures

Following Institutional Review Board approval, the research team distributed an electronic survey through email and a social media application to invite physical educators to participate in the study. Qualtrics® software was used to construct the survey, provide informed consent, and gather participant data. Participants who completed the survey were automatically entered into a drawing for a $25 gift card. The survey was active for a period of eight weeks. Email invitations were distributed to 80 physical educators. These participants were then encouraged to share the link with participants who satisfied the inclusion criteria. A link to the survey was also posted on Twitter. A total of 92 people accessed the link (85 via email, 7 via Twitter) to the online survey, 63 ultimately completed it, which equaled a 68% response rate. After survey data were collected, an email was sent to schedule follow-up interviews with the participants who agreed to participate in this aspect of the study. Participants were then afforded the opportunity to schedule the interview at a time of their convenience. Participants (*n*= 8) who opted to complete the follow-up interview were entered into a drawing for a $50 gift card. The follow-up interview invitations yielded a 90% response rate.

Data Analysis

Descriptive statistics were used to analyze survey data on the types of online resources that physical educators use (RQ1). To understand what influences physical educators' decision-making process when searching for online resources (RQ2), open-ended survey questions and semi-structured interview data were analyzed through inductive content analysis (Elo & Kyngas, 2008) and constant comparative method (Boeije, 2010). A constant comparative method (Boeije, 2010) was used to interpret the data which allowed themes to emerge from the theoretical framework of the study. The basic strategy of this analytical process is constantly comparing pieces of data. More specifically, each potentially meaningful piece of data within the transcripts

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from the first set of interviews with each participant was coded independently by the first and second researchers, and the differences were discussed until agreement was reached. One of the researchers initially coded the second set of interviews and checked by the second researcher. Coded data from transcripts and each participant were compared to identify similarities and differences. The researchers grouped the codes into thematic categories, which were then refined into recurring themes (Boeije, 2010). To ensure the trustworthiness of the data analysis process, peer debriefing and member checks were used (Patton, 2002).

Results

        The guiding research questions for this study were as follows: (a) What types of online resources do physical educators use? (b) What influences physical educators' decision-making when searching for online resources? The first section outlines the results from the quantitative survey questions. The second section provides a summary of the qualitative data (i.e., open-ended survey questions and semi-structured interviews) with a blended focus across the guiding questions for the study. All participants were assigned a pseudonym, open-ended survey respondents were provided a number, while interviewees were provided a name.

Physical Educators' Use of Online Resources

        Table 4 provides general insight on the resources that physical educators use, with particular emphasis on frequency of use. Across the different resources, nearly 50% of the participants referenced their 'own experiences' as the most preferred resource. Collegial support was also cited as an important resource with just over 20% citing it as something that they 'always' used. Online resources were also noted as a resource with 17.5% of respondents asserting that they 'always' used them. Along this line, 38% of participants cited they used online resources 'most of the time.'

Table 4
Frequency of the use of instructional resources.

	Textbook (%)	Curriculum (%)	Online (%)	Experiences (%)	Colleagues (%)
Always	10 (15.9)	7 (11.1)	11 (17.5)	31 (49.2)	13 (20.6)
Most of the time	14 (22.2)	21 (33.3)	24 (38.1)	26 (41.3)	22 (34.9)
About half the time	5 (7.9)	11 (17.55)	8 (12.7)	4 (6.3)	9 (14.3)
Sometimes	20 (31.7)	19 (30.2)	19 (30.2)	1 (1.6)	17 (27.0)
Never	14 (22.2)	5 (7.9)	1 (1.6)	1 (1.6)	2 (3.2)

        Table 5 illustrates physical educators' use of different types of online resources. Among different types of online resources, the highest percentage of teachers responded that they use 'always' or 'most of the time' was search engine (65.1%) followed by PE Central (41.3%) and YouTube (39.7%).

Table 5
Frequency of the use of different types of online resources.

	PE Central (%)	Pinterest (%)	SHAPE (%)	SPARK (%)	Twitter (%)	YouTube (%)	Search Engine (%)
Always	10 (15.9)	5 (7.9)	6 (9.5)	4 (6.3)	0 (6.3)	9 (14.3)	23 (36.5)
Most of the time	16 (25.4)	8 (12.7)	13 (10.6)	9 (14.3)	4 (17.5)	16 (25.4)	18 (28.6)
About half the time	11 (17.5)	4 (6.3)	14 (22.2)	10 (15.9)	11 (17.5)	9 (14.3)	4 (6.3)
Sometimes	20 (31.7)	22 (34.9)	22 (34.9)	19 (30.2)	11 (57.1)	24 (38.1)	14 (22.2)
Never	6 (9.5)	24 (38.1)	8 (12.7)	20 (31.7)	36 (98.4)	5 (7.9)	4 (6.3)

Note. Other (Go Noodle, Research, Open PE, PE-Kansas.com, Facebook, Supportteacher.org)

The Decision-Making Process of Physical Educators' When Searching for Online Resources

        Qualitative data from the open-ended survey question and semi-structured interviews revealed three emergent themes. Participant responses to the open-ended survey questions also supported these emergent themes. Each theme was framed by a reflective participant quote. It is also important to note that participants' decision-making when searching for online resources were better examined through qualitative data.

"The important part is to decipher what is valuable and quality"

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The first theme describes how participants believed there is an abundance of online resources for physical educators. For example, a participant stated, "There are unlimited resources at our fingertips" (P51). Another participant voiced a similar sentiment, "There are endless (online) resources that teachers can use" (P37). Numerous participants reflected on the online environment in this manner. Such assertions align well with what others have claimed regarding the bounty of resources that physical educators can access online (Franks & Krause, 2017).

While many of the participants voiced that due to the volume of resources within the online, it was important to focus on locating reliable, quality information. To this point, a participant shared "there is a plethora of information out there. I feel sometimes people do not know exactly where to begin" (P43). One participant conveyed the following, "be cautious, no one reviews or gives feedback regarding materials online. We need to be careful about false information" (P60). Another participant emphasized the importance of approaching online resources with one's own context in mind, "I don't know that there is a bad website or bad resources unless they take it directly and don't consider how to adjust it to the needs of their class" (Janet). A degree of prudence toward the consumption of online resources has been found elsewhere; specifically, Sundar (2008) noted how information seekers will attribute the credibility of digital content to whether the website is an authority on the topic. The internet offers a unique environment to attain information in that traditional, trusted authorities (e.g., textbook authors, teacher educators) who determine the credibility of information are not always present (Metzger et al., 2010).

Participants offered different perspectives regarding how they determined the credibility of online resources. One participant highlighted that they focus on who is producing the content. "A lot of it comes down to the personality or the credibility of it, like if it is on Pinterest, is the person like me that's put it up? Do they have a bubbly personality, very neat, and organized?" (Sylvia). Scholars have similarly reported that trust and credibility can influence online behavior (Koh & Sundar, 2010). One participant stated,

> I just kind of use my knowledge of what I think is good or not. Was it written soundly, simple things like punctuation, complete sentences, and does this have cues that make sense or learning objectives or anything that a standard lesson plan or curriculum should have…Like who wrote this, what do they do, is this something I could trust, or is this somebody who does not even teach and is just coming up with ideas (Christina).

Within the online environment, participants' approaches to filtering resources were nuanced and guided by different principles. Each participant seemed to have different rules of thumb (i.e., personality of the content provider, organization of the resource) that grounded how they interacted with online resources. Judging the credibility of online information based on whether it conforms with one's own beliefs relates to the expectancy violation heuristic. Another characteristic that emerged related to the expectancy violation heuristic related to the appearance and usability of the website. Relying on surface characteristics such as poor grammar has also been found to influence how internet users judge the credibility of a website (Flanagin & Metzger (2007).

"I just Google a lot"

Within this theme, participants consistently described how their process of searching for online resources often starts with Google, which was aligned with the findings in the quantitative data. From the quantitative data, it was found that using a search engine was the most preferred means to locate online resources. When prompted to describe how they preferred to search for resources, one participant shared the following, "I go to Google, type in what I need and then peruse the sites that pop up and I see something that catches my eye" (Christina). Participants consistently echoed that their preference to begin the search process with Google rested on their belief that this was the easiest route. One participant noted, "I find it easier to use Google for the search instead of going to those individual websites" (Janet). Building on this point, another participant shared that the utility of Google rested in its ability to support their instructional needs,

> I am constantly on Google to see how somebody else taught this or can I take an idea from this science class and apply it to a health lesson or something of that nature. So, I probably use Google every single day or every other day (Ashley).

For these participants, Google seemed to unlock the vastness that is the internet and specifically the available resources for teachers.

Using Google as the initial springboard also seemed to direct participants to specific websites that have been identified as hubs for PE resources (Hanson et al., 2017; Harvey & Hyndman, 2018). For example, one participant noted the following, "Let's say I am looking for a new handball drill. I Google that, I will Google that, most of the time it brings me back to PE Central or PE Universe" (Janet). Another participant stated:

> The one I use the most especially lately and a colleague helped know even more what is out there and what is available. Because they were fresh out of college and very well informed and I had been kind of out of school for a while and just used to certain things and doing the same things. PE Central has been the resource that I use the most (Brittni).

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Other websites mentioned by the participants included YouTube, Facebook, Twitter, Physical Educator, and SHAPE America.

The apparent preference for these websites, in the case of PE Central, it is a website that has been a longstanding, web-based resource that educators can use (Hanson et al., 2017). Affinity toward this website also speaks to the tendency to rely on reputable, established websites. Researchers have previously found that the reputation heuristic can prominently influence the decisions of people searching for online information (Metzger et al., 2010). Specifically, these scholars noted that people will associate popular websites as trusted sources for information. Regarding information seeking within the online environment, "people are likely to believe that a source whose name they recognize as more credible" (Metzger et al., 2010, p. 426). Collectively, the participants expressed that Google was an efficient way to locate resources from their preferred websites.

"It has to be accessible to everyone"

The quote that frames this theme captures participant preferences for online resources. In voicing preferences, participants were able to provide insight into how the online environment best serves their needs. When prompted to reflect on preferences, participants shared a range of perspectives based on their experiences of consuming online information. A primary preference related to ease of use and accessibility. One manifestation of this preference was for online resources to contain multimedia information (e.g., textual information, visual aids, and video). Here is how a participant summarized the essence of this preference,

> Instead of just having a text format of a lesson plan, a short video could be added because of the pictures, the visuals would be really useful. It gives you a much better idea of what the activity looks like. Having the demonstration is so much better than having to read through or write down what the movement should be like, you know like all of the mechanics. So a video is really great. If they could combine those (text and video) that would be great (Brittni).

Like this preference, another participant stated, "Videos are the most helpful. I usually choose PE Universe because I can watch the video" (P9).

The focus on multimedia information was also closely related to the general visual appeal and organization of a website. As other scholars have found, visual appeal and navigation are critical factors in how people initially judge a website (Al-Qeisi et al., 2014; Schenkman & Johnson, 2000). Participants were also emphatic on the importance of how websites were designed, with particular attention toward how easy it was to locate information. "I want it to be easy to comprehend. I don't want to read paragraphs and stuff. I assume no teacher has more than 45 minutes in a day. I want it to be quick to consume and comprehend" (Christina). Another participant noted,

> I would like it to become even more user friendly. Searching for instructional activities, competitions, and instant activities can be time consuming. So, if activities that correlated with one another were easily accessible it would be beneficial for physical educators (P35).

One participant even cited how some online searches can be frustrating. "Things seem to be hidden within a site, you know what I mean, there is like a rabbit hole and then I can't get back" (Janet). One participant emphasized a preference specific to the organization,

> It would be helpful if the website would have the information on the website based off the years of the teachers, so we can see how a newer teacher does their lesson plan against a teacher who has been teaching a while (P48).

In terms of accessibility and navigation, another preference related to website navigation was lack of access due to pay walls. Participants expressed an unwillingness to pay money for resources. One participant stated the following about the pay wall frustration,

> Some of the websites that I've used have the appearance of having an activity, but when you click on the actual activity, and it leads you to another page, that would require you to sign in and sign-up for a membership. I've really not come across a website that I would go yeah…I would pay for that (Craig).

Another participant further elaborated on the financial concern:

> I feel the amount of free resources are VERY limited, or basic. There are several resources out there, but many cost money. As an older college student, money is hard enough as is, let alone to try and find resources/to know which is worth the money (P25).

Pay wall aversion has been found in other online websites, such as newspapers. Chiou and Tucker (2013) found that a paywall reduced select newspaper website visits by 51%. Along with the concern with paywalls, participants clearly voiced the factors that impeded ease of access were problematic to the overall experience.

Collectively, the preferences voiced by the participants for online resources suggest when searching online there can be factors that influence their decision-making process. To this end, other scholars have

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mentioned that when searching online if websites do not match expectations (i.e., expectancy violation heuristic), it can influence how people evaluate the credibility of information (Metzger et al., 2010). These scholars reported that website features such as appearance, layout, and functionality can all influence decision-making. In this study, factors such as appearance, organization, cost were all factors that participants used to inform their search.

Discussion

The general aim of this study was to understand PE teachers' interaction with online resources, decisional tendencies when interacting with online content, and what resources they favor. In examining this topic, it is our hope to bring attention to the increasing relevance that is internet-based resources for physical educators. Participants from this study provided further evidence that physical educators are using online resources and related information. Results of this study are congruent with other recent inquiries into the online environment (Hanson et al., 2017). Physical educators from this study indicated interest in using online resources to inform their instruction.

Participants in this study support what other PE scholars have posited (Harvey & Hyndman, 2018; Krause et al., 2017) which is that the internet and online resources are well positioned to play a notable role in the way that teachers acquire knowledge. The internet and online content providers may represent a viable means to transmit information to PE teachers. At this preliminary stage, the notion of using different, internet-based technologies to disseminate knowledge to physical educators warrants further investigation. Of upmost importance, there must be intentional efforts to ensure that any information purporting to be professional development for physical educators in the digital environment is sound and any deviations from professional standards are addressed. At the same time, it is also important that teachers can distinguish quality and non-quality within the online environment. Prioritizing the need for PE teachers to be critical consumers of online information would further align with ISTE standards. Researchers are encouraged to further focus inquiry in this area to strengthen oversight and share best practices as it relates to knowledge sharing within the online space.

A guiding principle of decision-theory is that people implicitly prefer the path of least resistance and in doing so many decisions are intuitive in nature (Kahneman, 2012). One indicator of this decisional tendency rested with a notable result from survey data. Survey completers ranked their own personal experiences as the most preferred resource to inform their instructional practices. Relying on personal experience to guide the decision-making process supports the work of scholars who have examined the relevance of occupational socialization to frame the decisional tendencies of PE teachers (see Richards et al., 2019). Applying heuristics and mental short cuts enable people to efficiently make decisions (Shah & Oppenheimer, 2009). Perhaps, the greatest timesaving measure is to simply rely on one's own experiences to guide and inform their instruction. Beyond personal experience, over the course of the study, instances of heuristics emerged throughout participant data (e.g., reputation heuristic, expectancy violation heuristic). Such findings have been found in other studies that examined online search behavior of people (Metzger et al., 2010). Of note and in line with decision theory is the tendency to approach the online search with an eye toward efficiency. Using a search engine, such as Google, is fast and enables physical educators to quickly access online resources. Problematic to the ease and access that Google provides is that it can make it easier to be less critical when perusing the Web for information.

The participants of this research project offered insight into factors that influence their decision-making when searching for online resources. Notably, there was an emphasis on efficiency as decision-making theory illustrates. These participant findings imply that it is critical for content providers to know what positively and negatively influences the online search process (e.g., videos, pay wall). Other scholars have similarly found that the factors that influence the online search and decision-making process for people will vary (Metzger et al., 2010). Importantly, participant data suggests that there needs to be a degree of equilibrium between those who produce online content and consume it. Ensuring that the needs of consumers are met may help to maximize the utility of online resources. There remains a need to further examine how PE teachers prefer to consume online content, and of equal importance is shifting attention to those who produce content for the field. Broadening understanding of the online environment will help to move toward a point of equilibrium whereby consumers and producers are responsive to one another.

As the participants in the study conveyed, online resources need to be accessible to everyone. To accomplish this goal, it may be necessary to think strategically and beyond PE about the dissemination of online content. Business, psychology, marketing, and other fields have all explored online consumer behavior from different perspectives. For example, Mallapragada and colleagues (2016) found that a website that contains greater product variety is associated with consumers staying for a longer duration of time. Importantly, the work of these researchers underscores the role of data. Studying how physical educators interact with different online resources may help to improve the design and utility of digital content. At the very least, to help physical educators, it may be important to further investigate the factors that influence their behavior and decisions within the online environment.

In the crowded market that is online resources, participants from this study shared how they attempt to discern quality. Notably, participants echoed that there was not a firm, overly logical process in place to sort through online information. Instead, participants shared different rules of thumb (e.g., visual appeal,

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organization) to determine quality. Again, the application of these rules of thumb seemed to help them quickly judge and sort through information (Shah & Oppenheimer, 2009). The merits of an efficient search process warrant further investigation within the context of PE. There are still questions regarding the uses and impacts of online resources on physical educators and students. As a future direction, more work is needed within the online space to help physical educators navigate and select optimal resources to promote student learning in PE.

Limitations

The research design for this study has two major limitations. Both the survey and interview relied on self-report data. However, the intent of the study was to research the topic from an exploratory perspective and the research design and associated data collection tools outweighed alternative methods. Considering this limitation, future studies on this topic may benefit by drawing on actual online behavioral data of people accessing PE related websites. Another limitation stemmed from the sample size. A larger sample size could have produced more thorough understanding of the use of online resources across the population of physical educators.

Conclusion

Like other aspects of modern life, technology is ushering in change to PE. A leading conclusion of this study is that physical educators are using the internet to locate instructional resources. Identifying quality online resources was identified as a common concern for participants in this study. We believe that this specific concern is one that holds relevance for the field at large. To this end, we encourage critical re-examination of the Initial Standards for Physical Education Teacher Education (SHAPE, 2017) to include language that recognizes the increasing role of the internet, web-based resources, and how PE teachers must be well versed on this dimension of what is means to be a modern-day teacher. Physical Education Teacher Educators should ensure that pre-service teachers are able to identify and connect with reputable online resources.

Participants in the study also expressed concern about paywalls and avoiding spending money on online resources. On this point, the field in the broadest sense should prioritize promoting reputable, cost-effective online content producers. Physical Education Teacher Education programs could be intentional to endorse specific places where pre-service teachers can seek out quality online resources. Harvey and Hyndman's (2017) study brought attention to Twitter, a cost-free tool, can provide PE teachers with quality resources to inform their instructional practices. How to leverage quality, online resources to help teachers could also be a focus for professional development that is offered to PE teachers.

Participant findings also reflect shifts in the knowledge base for PE, regarding who authors content, information, and resources. For the field, it is important that attention is directed to the online knowledge base. The knowledge base has grown immensely over the years. As more people turn to online platforms for information, it is important for the field to be proactive and remain vigilant regarding how PE is being conveyed. In doing so, it may be incumbent for all those in the field to have a digital presence to promote reputable web-based resources.

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