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PE Central: A Possible Online Professional Development Tool

Amber M. Hall

A thesis submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of

Master of Arts

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## ABSTRACT

### PE Central: A Possible Online Professional Development Tool

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Bringing about positive teacher change in physical education is often a slow process not supported by traditional professional development practices. The purpose of this study was (a) to assess the usage and satisfaction with the online site PE Central and (b) to ascertain whether PE Central constitutes a valid source of professional development leading to changes in teaching practices and student learning outcomes.

Participants (45 pre-service and 288 in-service teachers) completed an online survey assessing the effects of using PE Central on their perceptions of usage, satisfaction, professional development, teacher change, and student engagement. Results indicated no significant differences between pre- and in-service teachers in usage and satisfaction of PE Central, but that on average the sample population uses it monthly and are more satisfied than not with the site. Results further indicated that PE Central is positively related to provisional and permanent teacher change and increased student engagement. However, the researcher recommends changes in order for the site to become a viable professional development option for teachers.

Keywords: PE Central, professional development, teacher change, physical education, online learning

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Many opportunities and blessings have been afforded me through this journey and I feel grateful for the support of Brigham Young University, and all those who contributed to my experiences in learning, researching, and presenting. Finally, I am thankful and indebted to my family and my God for their support, patience, and mentoring.

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## DESCRIPTION OF THESIS STRUCTURE

This thesis, *PE Central: A Possible Online Professional Development Tool*, is written in a hybrid format. The hybrid format brings together traditional thesis requirements with journal publication formats.

The preliminary pages of the thesis reflect requirements for submission to the university. The thesis report is presented as a journal article, and conforms to length and style requirements for submitting research reports to the Journal of Teaching in Physical Education (JTPE). The purpose of the JTPE is to communicate national and international research and stimulate collaboration, critique of teaching and teacher education, and curriculum as these issues relate to physical activity in schools, communities, higher education, and sport. The journal publishes original empirical studies in physical education along with integrative analyses of educational and methodological issues in the field. JTPE publishes research using a variety of methodological approaches.

The literature review is included in Appendix A with an in-depth description of the methods in Appendix B, and letter of consent included in Appendix C. Questions included in the participant survey are found in subsequent appendixes beginning with the demographic questions in Appendix D, pre-service teacher survey in Appendix E, beginning teacher survey in Appendix F, veteran teacher survey in Appendix G, questions from the Guskey Teacher Change (GTC) Scale in Appendix H, and finally additional findings in Appendix I.

This thesis format contains two reference lists. The first reference list contains references included in the journal-ready article. The second list includes all citations used in the Appendix entitled “Review of the Literature.”

Due to the scope of this study, all of the data gathered were not included in the journal article. Data included in the article are only those, which apply directly to the theoretical framework and research questions. A summary of some of the additional findings can be found in Appendix I.

## Introduction

Betchel and O'Sullivan (2006) called for more physical education (PE) specific professional development (PD) in our public schools. The intent of such PD is to promote teacher change by setting professional goals for improving their practice (Bechtel & O'Sullivan, 2006). Unfortunately, traditional forms of PD typically do little to improve daily practice (Armour & Yelling, 2004) because the process of teacher change (Guskey, 1986, 2002) is most often voluntary and disjointed (Bechtel & O'Sullivan, 2006). It is perhaps due to the ineffectiveness of traditional, non-PE-specific PD that PE practitioners are turning to outside sources for new ideas.

Research from the Pew Internet and American Life project (Zickuhr & Smith, 2012) found that 78% of U.S. adults participate in a variety of online affordances including online professional training. For educators, however, online training is relatively new and evolving (Carter, 2004) and is not without its challenges. However, it potentially provides a logical model of virtual collaborations, active learning, and mobile multi-media technologies (Carr, 2010; Carter, 2004) that could prove to be very effective in promoting both PD and teacher change.

PE Central ([www.pecentral.org](http://www.pecentral.org)), for example is possibly the most commonly used PE website in the world—currently receiving some 162,000 visitors and over 1.6 million page views each month with lesson ideas being the most commonly viewed resource (Personal Communication, Mark Manross, January 21, 2013). Additionally, the site has been recognized by 101 Best Websites for Elementary and Secondary Teachers in 2005, The President's Challenge Outreach Award in 2003, and Web Marketing for Dummies in 2012. The award winning PE Central website provides extensive and valuable information at the fingertips of pre- and in-service teachers. Based on its usage and breadth of information, PE Central is perhaps one

of the largest PE-specific online resources available for such things as lesson ideas, adaptations, and assessments. A sample screen shot of resources found on PE Central is shown in Figure 1.

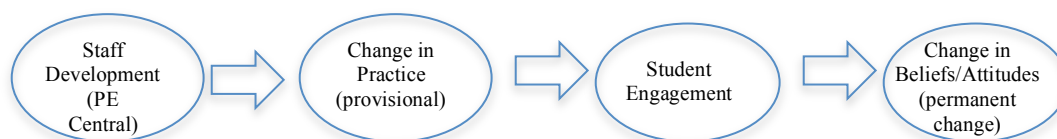
Last Updated	Lesson Type	Sub-Category	Activity Name	Grades	Views	Video
New! 2/25/2014	Classroom Management	Class-Gym Procedures	<a href="#">Physical Education Folder</a>	2-5	1,158	
New! 2/21/2014	Dance Lesson Ideas	Dance Lesson Idea of the Month	<a href="#">Differentiated Learning and Dance</a>	K-12	305	
2/14/2014	K-2 PE Lesson Ideas	Locomotor Skills/Space Awareness	<a href="#">We're Going to the Zoo!</a>	K-2	1,895	
2/4/2014	Instant Activity	Fitness	<a href="#">NFL Warm Up</a>	3-5	5,645	
2/2/2014	Pre-school PE Lesson Ideas	Body Awareness	<a href="#">Wall Spots and Body Parts</a>	PRE-K	1,851	
1/28/2014	Dance Lesson Ideas	Line Dances-Original	<a href="#">The Lacrosse (Lax) Dance</a>	6-10	2,198	
1/23/2014	Middle School PE Lesson Ideas	Volley Sports	<a href="#">Race to 100 in Volleyball</a>	6-8	2,375	
1/17/2014	Middle School PE Lesson Ideas	Interdisciplinary Lessons	<a href="#">Football in the Atmosphere</a>	6-8	1,338	
1/8/2014	Holiday Lesson Ideas	Halloween	<a href="#">Halloween Blast Off</a>	K-2	409	
1/8/2014	Holiday Lesson Ideas	Winter	<a href="#">Hungry Snowman Toss/Throw</a>	K-2	928	
1/8/2014	Paper and Pencil Assessment	Instructional Strategies	<a href="#">Pre-assessment Craft Sticks</a>	3-5	641	

Figure 1. Screen shot of a sample page from PE Central.

All PE Central resource materials have been submitted and peer-reviewed by PE professionals, and subsequent visitors are allowed to provide additional suggestions to the content. This virtual professional collaboration promotes the development of, and participation in, what may be considered, an online professional learning community—a key characteristic of PD programs (Carr, 2010; Carter, 2004; O’Sullivan & Deglau, 2006). What remains unclear, is (a) precisely how PE Central is being used, (b) how satisfied its users are, and (c) if PE Central can be considered a valid form of PD resulting in teacher change.

Guskey's (1986, 2002) model of teacher change (see Figure 2), hypothesizes that ideas from PD must first be deployed on a provisional basis. Only then can their value be weighed by the degree of increased student engagement that occurs, leading, ultimately to permanent change

in teacher attitudes, beliefs, and practices (i.e, only if it *works* for the students will teachers retain the practice). While there is some evidence supporting the relationship between student engagement and permanent teacher change, the entirety of Guskey's (1986, 2002) model of teacher change (i.e., that PD leads first to provisional teacher change, then increased student engagement, and finally to permanent teacher change) has yet to be examined.



*Figure 2.* Guskey (1986,2002) Model of Teacher Change

Guskey's model of teacher change suggests that successful PD yields provisional teacher change, followed by increased student engagement, and ultimately results in permanent teacher change in teacher beliefs and attitudes. Adapted from "Staff Development and the Process of Teacher Change," by T.R. Guskey, 1986, *Teacher and Teaching*, 15(5), 5-12.

The purpose of this study was to describe (a) the usage and satisfaction of PE Central users and (b) to assess its relationship to provisional teacher change, student engagement, and permanent teacher change within Guskey's (1986, 2002) model of teacher change.

## Method

### Participants and Setting

Participants in this study (n = 418) included pre-service (n = 45), beginning (1-3 years experience; n = 45), and veteran (4+ years experience; n = 288) teachers, and a convenience sample of non-responders (n = 40) from within the Southwest District of the American Alliance for Health, Physical Education, Recreation, and Dance (SWD AAHPERD). Included were teachers from Arizona, California, Guam, Hawaii, Nevada, New Mexico, and Utah. Participants were contacted through their individual state Alliance for Health, Physical Education, Recreation, and Dance (AHPERD) organization. The researcher also coordinated with physical

education teacher education faculty at various universities within SWD AAHPERD in order to sample a group of undergraduate physical education teacher education students. The sampling for this study was self selected as participants chose whether or not to accept the invitation to respond.

### **Procedures**

All procedures received university institutional review board approval. An email including a clause of implied consent and a link to a survey via Qualtrics software was sent to state AHPERD organization members to invite them to participate in this study (see Appendix B). Participants were incentivized to complete the survey within one week, after which a participant was randomly chosen in a drawing for a \$100 gift certificate for PE equipment. A follow-up email was sent at the beginning of the second week of data collection reminding members who had not completed the survey to do so by the end of the week in order to qualify for a second random drawing for a \$100 gift certificate.

Moser & Kalton (1974) further recommend a sampling of non-participants (with a target of 10% of non responders) in order to account for bias due to nonresponse. A bias may have manifest if the responses of the responders and those of the non-responders differed in a systematic way. A convenience sample of non-responders ( $n = 40$ ) were asked to complete the survey and their responses were compared to those of the initial responders to assess generalizability (Moser & Kalton, 1974). The researcher was looking for a lack of systematic differences between the groups' responses. A lack of difference meant that all participants were likely the same population and results could be generalized.

## Data Collection and Analysis

A two-part survey was sent to the participants in the study via Qualtrics software. Following the two-week data collection, participants' responses were analyzed using SPSS software.

**Instrumentation.** A two-part survey was developed using standard development procedures to compose and pilot questions based on a Likert scale (Moser & Kalton, 1974; Patten, 2011; Peterson, 2000). Questions from the survey derived from a combination of sources in traditional (Armour & Yelling, 2004; Guskey, 1986, 2002) and online professional development literature (Carr, 2010; Carter, 2004). Finally, input from PE Central's executive director (Personal Communication, Mark Manross, January 21, 2013) assisted in personalizing the survey tool. Section one of the survey was intended to understand teachers' (a) usage (e.g. How often, on average, do you visit PE Central?), and (b) satisfaction (e.g. I am satisfied with the usefulness of information on PE Central when compared to other sources of professional information) with PE Central.

Section two assessed the proposed structures of Guskey's (1986, 2002) framework for teacher change (GTC). A 16-item, four-subscale survey (see Appendix H) was created to assess teacher perception of PE Central as (a) a source of professional development, (b) affecting provisional teacher change in behaviors, (c) resulting in changes in student engagement and achievement, and (d) eventually resulting in permanent teacher change in behaviors, beliefs, and attitudes. The GTC scale was scored on a Likert scale (1 – Strongly Agree; 2 – Agree; 3 – Disagree; 4 – Strongly Disagree) and all four subscales were tested for reliability using a Cronbach alpha. The 16 GTC questions asked are listed in Table 1.

Early drafts of the survey went to five physical education teacher education professors familiar with PE Central to assess face validity prior to the completion of a pilot test using cognitive interviewing techniques (Willis, 2005) to further develop and refine the survey. The pilot identified and remedied issues with the survey software (functionality), and identified questions about the survey items themselves.

**Data analysis.** Descriptive data were analyzed using SPSS to find means, standard deviations, and correlations among variables of interest. Differences between pre-service, beginning, and veteran teachers were analyzed on usage and satisfaction using a chi square test on the bivariate contingency tables. Differences between groups (pre-service, beginning, veteran teachers, and non-responders) were identified using cross tabulations on variables of interest.

Subscale means for the GTC survey were calculated by averaging the scores of each subscale's respective four items. Cronbach alphas were calculated to estimate the internal consistency reliability of each subscale. Pearson correlations were calculated to test the magnitude and direction of the relationship among the four subscales. Subscale means were used for subsequent between group (beginning vs. veteran teachers) analyses using one-way ANOVA. Finally, effect sizes, via Cohen's *d* were calculated for the between groups differences on the GTC subscales ( $M_1 - M_2 / SD_{pooled}$ ).

## Results

### Descriptive results

Means, standard deviations, and frequencies for selected variables of usage and satisfaction are presented in Table 2. Results indicate that most teachers are satisfied with their monthly usage of PE Central. Moderate correlations between usage, satisfaction, and the four Guskey (1986, 2002) subscales are shown in Table 3. Means, standard deviations, levels of



significance, effect sizes and alphas for the four variables concerning the GTC scale are seen in Table 4.

Table 1

*Guskey's Teacher Change Scale Subscale Item*

---

Professional Development

PE Central provides ideas that help me overcome barriers I face as a physical educator.  
 PE Central provides me professional support that I do not get from my school and/or district.  
 I use PE Central as a source of PD.  
 PE Central provides me help with the practical, day-to-day, operation of my PE classes.

---

Provisional Teacher Change

I have experimented with different classroom practices as a result of using PE Central.  
 I have experimented with new instructional approaches (how I teach) as a result of using PE Central.  
 I have experimented with new lesson content (what I teach) as a result of using PE Central.  
 I have made modifications in my PE classroom management as a result of using PE Central.

---

Student Engagement

As a result of using ideas from PE Central my students' test scores (e.g. PE quizzes/exams) have increased.  
 As a result of using ideas from PE Central my students' attitudes have improved.  
 As a result of using ideas from PE Central my students' effort has increased.  
 I have not seen any improvement in my students as a result of using ideas from PE Central.

---

Permanent Teacher Change

Ideas I have found on PE Central have become a permanent part of how I teach.  
 I have changed how I teach because ideas from PE Central worked better than what I was doing before.  
 I have made permanent changes to my beliefs about PE as a result of using PE Central.  
 I have made permanent changes to my attitudes about PE as a result of using PE Central.

---

*Note:* All questions are based on a four-point Likert scale.

Table 2

*PE Central Users' Means, Standard Deviations, Frequencies*

		Frequency	Mean	Standard
		N (%)		Deviation
Usage		--	1.94	.61
	Never	16 (4.6)		
	Monthly	192 (55.5)		
	Weekly	79 (22.8)		
	Daily	59 (17.1)		
	Total	346		
Satisfaction		--	1.99	.66
	Very Satisfied	63 (19.9)		
	Satisfied	209 (65.9)		
	Rarely Satisfied	33 (10.4)		
	Never Satisfied	12 (3.8)		
	Total	317		

*Note:* Mean usage and standard deviation is for all responders, and frequencies indicate the total number of responses in each category with percentages for each. Mean and standard deviation indicates satisfaction for all responders with total frequencies for each category and percentages for each. Highlighted numbers indicate notable frequencies.

### Between Group Comparisons

Initial results indicated that 13% of all responders began the demographic portion of the survey, but were never given the entire survey on usage, satisfaction, or the GTC scale because they had never visited PE Central. Comparative analyses were completed between all three groups, and again between the two in-service teaching (beginning and veteran) groups. Results indicate no significant differences in usage and satisfaction ( $p > .05$ ) between beginning and veteran teachers. Both groups reported using the site monthly, on average, and most were satisfied with PE Central. Finding no significant differences between the two in-service groups, responses for these teachers were combined into one in-service group for all subsequent analyses.

Table 3

*Pearson Correlations for Variables of Interest and Components of the GTC Scale*

	Usage	Satisfaction	Guskey Professional Development	Guskey Provisional Teacher Change	Guskey Student Engagement	Guskey Permanent Teacher Change
Usage		.416	.450	.492	.425	.430
Satisfaction			.620	.562	.479	.540
Guskey Professional Development				.784	.617	.701
Guskey Provisional Teacher Change					.714	.754
Guskey Student Engagement						.674
Guskey Permanent Teacher Change						

*Note:* Pearson Correlations for two variables of interest and the four components of the GTC scale. All correlations are significant at  $p < .001$ .

Next, a comparative analysis between in-service and pre-service teachers was completed using a Yates's correction for continuity (chi-square) test. Results of this analysis indicate that there is no significant difference in the usage of PE Central between in-service and pre-service teachers ( $\chi^2 = 2.54$ ;  $df = 1$ ;  $p = .111$ ). Though there were no significant differences with respect to satisfaction ( $\chi^2 = 2.59$ ;  $df = 2$ ;  $p = .275$ ), overall means ( $M = 1.99$ ) and effect size indicate that all users are more satisfied than not.

No significant difference between voluntary responders and non-responders in the areas of usage ( $\chi^2 = 3.402$ ;  $df = 3$ ;  $p = .334$ ), and satisfaction ( $\chi^2 = 3.014$ ;  $df = 3$ ;  $p = .389$ ) were noted.

Additionally, there was no significant difference between the numbers of teachers who had never

visited PE Central between groups. It appears that there is an untapped market yet to be broken into, as about 14% of all participants indicated no exposure to the site.

Table 4

*Guskey's Teacher Change Scale Subscale Items, Item Means and Standard Deviations, Levels of Significance, Effect Sizes, and Alphas.*

	Beginning Teachers		Group Veteran Teachers		Sig	ES	$\alpha$
	M	SD	M	SD			
Professional Development	2.56	.65	2.45	.58	.306	.19	.81
Provisional Teacher Change	2.58	.7	2.47	.64	.356	.17	.89
Student Engagement	2.78	.61	2.62	.54	.133	.29	.81
Permanent Teacher Change	2.86	.56	2.72	.55	1.94	.25	.86

*Note:* Effect Size = Cohen's  $d = (M_1 - M_2) / SD_{pooled}$ . The magnitude of effect sizes was determined based on Cohen's guidelines for interpreting effect size (e.g.,  $d$  of .2 = small, .5 = moderate, .8 = large). There are no significant differences between groups on variables of interest ( $p < .05$ ).

### Reliability of the Guskey Teacher Change Scale

Cronbach alphas for the survey confirmed reliability of the scales designed to understand the potential of PE Central as a professional development tool for physical educators as defined by Guskey's (2002) model of teacher change. Alpha values confirm reliability in professional development, provisional teacher change, student engagement, and permanent teacher change. Alphas are listed in Table 3.

Questions written to understand the potential of PE Central as a PD tool, as defined by Guskey (2002) were given to in-service teachers only. Means from these questions confirm that in-service teachers agree slightly ( $M = 2.46$ ) that PE Central is a source of PD that helps them overcome barriers, provides support not received from schools and districts, and provides help with practical, day-to-day operations. In-service teachers likewise agree slightly ( $M = 2.49$ ) that

their usage of PE Central has resulted in provisional change in their classroom as they have experimented with new practices, instructional approaches, lesson content, and classroom management strategies. However, results indicate that in-service teachers disagree slightly ( $M = 2.68$ ) that student engagement has increased in their classrooms as a result of PE Central. Finally, in-service teachers disagree slightly ( $M = 2.74$ ) that their usage of PE Central has resulted in permanent teacher change in their practices, attitudes and beliefs in day-to-day teaching. However, teachers conclude that ideas found on PE Central worked better than what they were doing previously (Table 3).

### **Discussion**

The purpose of this study was to describe (a) the usage and satisfaction of PE Central users and (b) to assess its relationship to provisional teacher change, student engagement, and permanent teacher change within Guskey's (1986, 2002) model of teacher change.

#### **Usage**

The results of this study indicate that teachers from all four groups (pre-service, beginning, veteran teachers, and non-responders) report using PE Central monthly, though there may have been a limitation in the response choices due to variability between monthly and never. Findings from this study support claims made by Bechtel and O'Sullivan (2006) describing PE teachers' engagement in PD as voluntary and disjointed because PE Central is being accessed at the teacher's convenience and for their own needs.

If the owners, operators, or managers of PE Central desire an increase in site usage, the researcher suggests that providers consider the effectiveness of the site in providing PE teachers with resources that motivate and promote teacher change (Guskey, 1986, 2002). PE Central may want to consider various opportunities for their users to communicate their specific needs.

Online affordances, such as those offered by PE Central, may provide a virtual environment that could provide PD (Carr, 2010; Carter, 2004), and perhaps promote teacher change (Guskey, 1986, 2002).

### **Satisfaction**

The frequency with which teachers used PE Central may be related to the satisfaction results. Most teachers from all groups indicated being satisfied with the resources found on PE Central. Armour and Yelling (2004) conclude that to be effective, PD resources must provide teachers with what they need by focusing on the delivery (Baranowski & Jago, 2005) and value of information provided (Tozer & Horsley, 2006). Likewise, in order to increase user satisfaction, PE Central must understand and deliver the kind of valuable materials needed by users.

Fejgin and Hanegby (1999) found that in-service teachers face difficulties accessing the type and amount of PD needed, and Ince, Goodway, Ward and Lee (2006) added that teachers lack the knowledge and skills to implement technologies and practices in their classrooms. Similarly, satisfaction may increase if teachers knew how to identify the appropriate resources on PE Central and how to implement such practices and technologies.

### **PE Central as a Source of Professional Development**

The GTC scale was developed with the intention to assess Guskey's (1986, 2002) proposed framework of teacher change. Alphas confirmed internal consistency. Although there are no statistically significant differences between beginning teacher, veteran teacher, or non-responder results, trends in mean differences indicate a small effect between groups. Veteran teachers statistically agree slightly more that their usage of PE Central has resulted in increased student engagement and permanent teacher change than beginning teachers (Guskey, 1986,

2002). Also notable, in-service teachers disagree slightly that their usage of PE Central results in permanent teacher change, yet agree that ideas found on PE Central worked better than what they were doing previously. This contrast in responses brings to light the difficulty in creating permanent teacher change in beliefs, attitudes, and practices (Guskey, 1986, 2002).

As predicted by Guskey (1986, 2002) correlations suggest a moderately strong relationship between the variables within the GTC scale. It appears that as teachers report an increase in PE Central usage, they may begin to view the site as a PD source, and may subsequently be related with an increase in provisional teacher change, student engagement, and permanent teacher change. The researcher suggests that teachers be actively recruited and drawn to use PE Central more often by offering the incentive of continuing education credit for re-licensure. As teachers visit PE Central more frequently, the site may have the potential to effectively provide PD that results in teacher change of attitudes, beliefs, and practices (Guskey, 1986, 2002).

### **Implications for PE Central and Other Online Vendors**

PE Central is currently serving the purpose it was designed for. If, however, PE Central aims to become a PD source it must “formalize” a program. There is some evidence that PE Central contributes to PD for PE teachers, however recognition of PE Central as PD is not yet strong enough. As anticipated by PD literature, most teachers are continuing to voluntarily use the site as a resource of convenience (Armour & Yelling, 2004), with which they are mostly satisfied. The online resource of ideas and tools for PE teachers on PE Central should provide incentive for teachers to voluntarily access the site more regularly.

Such incentives for usage may include partnerships between states or continuing education unit institutions as a source of teacher training. PE Central is not currently recognized

by such entities as a source of PD, but moving to an active PD emphasis by offering continuing education credits through collaborating with continuing education unit institutions and states may change responses based on usage, satisfaction, and the process of teacher change (Guskey, 1986, 2002). The researcher suggests a more aggressive recruiting strategy for PE Central usage and thereby avoiding the voluntary and infrequent nature of current PD described by Bechtel & O'Sullivan (2006).

Each state has its own requirements for re-licensure for teachers. However, it appears that in most states, a teacher may advocate for the PD of their choice by clearing a source of PD with their school administrator. After communicating with a series of state offices of education, the researcher found that most states agree that one hour of course work is equivalent to one continuing education credit hour toward teacher re-licensure.

The researcher suggests that if the executives of PE Central decide to sanction a formal PD course, a series of learning modules will need to be created. Suggestions for the modules include providing teachers with accessible (Baranowski & Jago, 2005) and relevant, context-specific topics like assessment, management, and lesson ideas (Armour & Yelling, 2004). Designers also may consider developing a mode of communication for teachers via PE Central. Allowing teachers to build a virtual professional learning community via PE Central may encourage a sense of responsibility to a feeling of leadership in the field (Beddoes, Prusak & Hall, in press).

Carr (2010) and Carter (2004) stated that online learning is evolving and includes challenges and promise for collaboration and teacher change (Armour & Yelling, 2004; Guskey 1986, 2002). Likewise, PE Central is a rich online resource of information and collaboration for teachers, but it appears that most teachers do not plan to contribute, nor engage in virtual



collaboration. The researcher suggests addressing these challenges by finding new ways to draw teachers to PE Central by providing information they need to know (Armour & Yelling, 2004), engaging teachers in virtual professional learning communities (Carr, 2010; Carter, 2004; O'Sullivan & Deglau, 2006), and promoting individual growth, and learning (Guskey, 1986, 2002).

### **Implications for Practitioners; Virtual Professional Learning Communities**

PE Central may be a source of PE-specific PD for teachers, but the random and voluntary usage of the site indicates that teachers are using the resource in an unstructured sense, not intended for individual growth, learning, or teacher change (Guskey, 1986, 2002). Providing a sanctioned source of PD and developing an outlet for a virtual collaboration through an online professional learning community (Carr, 2010; Carter, 2004; O'Sullivan, & Deglau, 2006) may increase time invested on the site and encourage teachers to view the site as a valid PD resource recommitting them to leadership in PE (Bechtel & O'Sullivan, 2006).

PE teachers have the opportunity to become leaders (Bechtel & O'Sullivan, 2006) through online professional learning communities with professionals from around the world as they collaborate, publish, ask questions, and discuss possible solutions to issues in their classrooms through PE Central. Collaboration of this kind allows likeminded professionals to come together to approach education from a learning perspective focused on best practices and eliminating the isolated nature of PE (Beddoes, Prusak & Hall, in press). Ultimately, communication of this nature helps teachers develop a sense of responsibility to PE, students, and other practitioners (Carr, 2010; Carter, 2004; O'Sullivan & Deglau, 2006).

## **Future Research**

While confirming the validity of the GTC scale is beyond the scope of this study, the researcher confirmed the reliability of the scale. Following a confirmatory factor analysis to assess the validity of the 16-item scale, the researcher recommends using the GTC scale to further study a broader population of possible PE Central users. Additionally, other traditional or PE-specific PD entities may use the instrument to assess the effectiveness of content and delivery of their programs (Armour & Yelling, 2004). Lastly, the researcher recommends the development of a formal PD course to be piloted on PE Central in order to understand teacher change in beliefs about PD, provisional teacher change, student engagement, and permanent teacher change (Guskey, 1986, 2002).

## References

- Allen, M. J., & Yen, W. M. (2002). *Introduction to Measurement Theory*. Long Grove, IL: Waveland Press.
- Armour, K. M., & Yelling, M. (2004). Professional 'development' and professional 'learning': Bridging the gap for experienced physical education teachers. *European Physical Education Review*, 10(1), 71-93.
- Baranowski, T., & Jago, R. (2005). Understanding the mechanisms of change in children's physical activity programs. *Exercise and Sport Sciences Reviews*, 33(4), 163-168.
- Bechtel, P. A., & O'Sullivan, M. (2006). Effective professional development: What we know now. *Journal of Teaching in Physical Education*, 25, 363-378.
- Beddoes, Z., Prusak, K.A., Hall, A. (in press). Overcoming marginalization of physical education in America's schools with professional learning communities (PLC). *Journal of Physical Education Recreation and Dance*.
- Carr, V. B. (2010). The viability of online education for professional development. *AASA Journal of Scholarship and Practice*, 7(3), 6-15.
- Carter, K. (2004). Online training: What's really working? *Technology and Learning*, 24(10), 32-36.
- Fejgin, N., & Hanegby, R. (1999). School based in-service training of PE teachers. *European Journal of Physical Education*, 4(1), 4-16.
- Guskey, T. R. (1986). Staff development and the process of teacher change. *Teacher and Teaching*, 15(5), 5-12.

- Guskey, T. R. (2002). Professional development and teacher change. *Teacher and Teaching: Theory and Practice*, 8, 381-391.
- Ince, M. L., Goodway, J. D., Ward, P., & Lee, M. (2006). The effects of professional development on technological competency and the attitudes urban physical education teachers have toward using technology. *Journal of Teaching in Physical Education*, 25, 428-440.
- Moser, S.C., & Kalton, G. (1974). *Survey methods in social investigation*. Jackson, TN: Basic Books, Inc.
- O'Sullivan, M., & Deglau, D. (2006). Principles of professional development. *Journal of Teaching in Physical Education*, 25, 441-449.
- Patten, M.L. (2011). *Questionnaire research: A practical guide* (3<sup>rd</sup> ed.). Glendale, CA: Pyrczak.
- Peterson, R.A. (2000). *Constructing effective questionnaires*. Thousand Oaks, CA: Sage.
- Tozer, S., & Horsley, H. (2006). Professional development of teachers in physical education – Where are we now? *Journal of Teaching in Physical Education*, 25, 450-457.
- Willis, G.B. (2005). *Cognitive interviews: A tool for improving questionnaire design*. Thousand Oaks, CA: Sage.
- Zickuhr, K., Smith, A., (2012). Digital differences. *Pew Internet and American Life Project*.

## APPENDIX A

### Review of Literature

#### **Introduction**

PE Central ([www.pecentral.org](http://www.pecentral.org)) is possibly the most commonly used website in the world for the field of Physical Education (PE). In fact, the website receives about 162,000 visitors each month with 1.66 million page views (Personal Communication, Mark Manross, January 21, 2013). Since PE Central was launched in August of 1996 the website has continued to grow including thousands of lesson plans, assessments, and more. The extensive information contained on PE Central has put valuable information at the fingertips of pre-service and in-service teachers and has become one of the largest resources in the field.

In his attempt to understand and improve professional development (PD), Guskey (1986) listed teacher change in classroom practice, beliefs and attitudes, and improved learning outcomes for students as three major goals. Guskey (1986) hypothesized that most PD programs fail because they fail to address what motivates teachers, and the process by which teachers change practices and beliefs. Further, Guskey (1986) suggests PD providers must pay special attention to the order in which change takes place. Guskey's (1986) model of teacher change predicts that before teacher change can take place, student learning and engagement must be improved. Guskey (1986) suggests (a) identifying teacher change as a slow process, (b) ensuring prompt feedback on student learning, and (c) providing follow-up support and training as crucial components of a successful PD programs.

Although we know that thousands of people are accessing PE Central each month, it is still unclear who is using the website, what, if anything, they are using from the website in their teaching, and whether or not they find the website's resources useful. PE Central may be

considered a PD tool for physical educators. The review of literature will examine (a) the educational demands for PD, (b) the effects of PD on teachers' beliefs and practices, and (c) the benefits of online PD.

### **The Educational Demands for Professional Development**

Current trends in physical education include a demand for research on PD. Mary O'Sullivan and Dena Deglau (2006) have taught that PD is any involvement in a program to help professionals remember why they chose to teach, set new goals, and increase their promise to invoke change. Bechtel and O'Sullivan (2006) concluded that three major forces are driving the added attention to PD. The three major forces are (1) the educational standards movement, (2) professional organizations, and (3) a call for research on teaching.

After a further review of the PE PD literature, Bechtel and O'Sullivan (2006) identified the school culture, micro politics, support, and workplace conditions as the major issues inhibiting the implementation of PD efforts. Along with barriers that inhibit PD, O'Sullivan and Deglau (2006) have identified major issues inhibiting the evaluation of PD as measures of teacher learning, defining appropriate time frames for evaluation, and analyzing how teachers learn.

The goal of PD defined by O'Sullivan and Deglau (2006) is for teachers to set goals and increase their promise to invoke change. Bechtel and O'Sullivan (2006) define teacher change as a process using several PD frameworks including the Guskey (1986, 2002) model of teacher change. Bechtel and O'Sullivan concluded that providing and evaluating PD is a difficult and complicated process because teacher learning is disjointed and almost entirely voluntary (Bechtel & O'Sullivan 2006). Armour and Yelling (2004) suggest that in the UK and the United States, PD typically does little for teachers in terms of improving daily practice. Lack of improvement

may be due to the disjointed and non-linear process of teacher learning. Armour and Yelling conclude that for PD to be successful it would require the inclusion of academic rigor, and increased teacher knowledge and skills. Further, an assessment of the issues in PD, Tozer and Horsley (2006) conclude that teacher change is the result of understanding the value in knowledge.

### **The Effects of Professional Development on Teachers' Beliefs and Practices**

In a study of the effects of PD on the beliefs and practices of teachers, Deglau and O'Sullivan (2006) found answers to questions about teachers' beliefs and practices, communities of practice, and teachers' thinking about their students. In regards to teachers' beliefs and practices, Deglau and O'Sullivan found that after the implementation of a PD program, teachers began to believe that (a) alternative models of instruction benefit students, (b) technology is a productive assessment tool, and (c) assessments should be used to inform parents as well as teachers. Further, in regards to the professional learning communities developed within a PD program, Deglau and O'Sullivan found that teachers began to share a commitment to the community as well as beginning to see themselves as leaders in the field. And lastly, after the implementation of the PD program, teachers' views of their students began to change. In general, teachers trusted their students more and began to give them more autonomy. Such autonomy resulted in increased student engagement.

Additional studies (Baranowski & Jago, 2005; Ko, Wallhead & Phillip, 2006) have been completed in order to understand what teachers take away from PD workshops and use in their classrooms. Ko et al. (2006) examined the effects of PD on classroom practices and the lack of evidence about teacher change and student learning. They concluded that teachers took home

and used “seasonal” content most often. However, each teacher modified the content from the original lesson in order to meet the needs of their school context and students.

Baranowski and Jago (2005) developed a model designed to evaluate the change in teachers’ practices and beliefs after the implementation of a PD program. The result of such evaluation would result in (a) a strong, positive change, requiring change and maintained interventions, (b) a weak positive change suggesting that new, more strongly related mediators need to be implemented, (c) no change, requiring revision for future program outcomes, and (d) identification of variables for which different implementation should be sought. Baranowski and Jago (2005) conclude that in order for professional development to successfully change teachers’ beliefs and practices, it must focus on the complexity of the implementation of delivery.

Ko et al. (2006) conclude that there are three essential components to the success and implementation of PD. First, it was concluded that in order for professional development to be entirely successful, instructors must have some kind of prior knowledge of the contextual barriers in teachers’ schools. Second, teachers need support in order to effectively learn and implement complex ideas and activities. And third, teachers need resources to help them begin implementing ideas into their own classrooms. Ko et al. (2006) conclude that with the successful implementation of these three components, teachers’ beliefs and practices are likely to change. Additionally, Armour and Yelling (2004) reported that there is a gap between what teachers want and need to know, and what is actually available to them in most continuing PD programs.

Some pre-service and veteran teachers alike are suffering from the unfortunate results of current PD programs, or the lack thereof. Through their undergraduate coursework, physical education teacher education students must be challenged, introduced to key concepts, and be given laboratory and clinical experience (Howey & Simpher, 1989). These challenges must be



met with prompt and adequate feedback, and follow-up training and support. This can be accomplished when teacher education programs take a critical approach to curriculum, and allow time and resources for students to learn and reflect (Graham, 1991). Pre-service teachers should graduate with the knowledge and skills to implement technologies and practices in their classrooms (Ince, Goodway, Ward & Lee, 2006). It is important for teacher education programs to infuse current PD within their undergraduate coursework in order to bridge the gap between academic theories and K-12 curriculum and instructional practices.

### **The Benefits of Online Professional Development**

One possible way for teachers to continue to learn is through online PD. Carr (2010) recognizes the limited time teachers have for PD and believes that education on the Internet is abolishing those boundaries. Carr evaluated and compared two groups of K-12 administrators and teachers. One group of teachers attended a face-to-face PD program on campus, while the second group completed a “mirror” program online. The only difference between the two groups was the mode of delivery. Carr searched to understand the differences in academic quality of learning, the types of learning strategies offered, the amount of participation/active learning that took place, and the perception of academic rigor. Results suggest that there was no significant difference between the academic learning outcomes of the two groups. However, teachers attending the online program reported an appreciation for the convenience of online PD and report the perception of a more rigorous course online (Carr, 2010).

Carr (2010) reports several benefits of online PD. First, the accessibility of online PD made learning opportunities more realistic because teachers never had to leave their job. Learning can take place during an online PD program while maintaining a work schedule. Second, online professional development also reduced the need for transportation. Online PD

may provide an effective option for improved teacher practices. Carr (2010) concluded that, with some commitment, online PD opportunities might provide the experience needed to master new teaching skills and introduce new learning opportunities for future students.

In a study of the technological competencies and attitudes of PE teachers, Ince et al. (2006) implemented a PD program designed to help teachers integrate technology in the classroom. This study compared the pre and posttests of two groups. One group received PD training on technology, and the other did not. Findings suggest that exposure to and support for technologies in the classroom develops affinity among the teachers. The study also revealed that although pre-service teachers are generally more technology savvy than in-service teachers, both groups need training on how to use technology in the classroom. Pre-service teachers should graduate with the knowledge of what technology is available and how to implement it in their classrooms. Further, in-service teachers need training to keep them abreast of the current technologies available to them (Ince et al., 2006).

Research from the Pew Internet and American Life project (2004) found that 63% of U.S. adults are online. In a review of online professional training completed Carter (2004), many conveniences of online training were mentioned including access from home, communities of learners, communities of practice, and professional support. However, challenges still remain. Although the convenience of online PD is inviting, it does not necessarily generate time for teachers to take advantage of it. Other activities that reserve teachers' time during the evenings and weekend may prevent them from engaging in online PE (Carr, 2004). Fegin and Hanegby (1999) found that teachers face the difficulties of retrieving the type and amount of PD they would ideally like. Online PD is still an evolving source of training, but has promise as a productive and reasonable avenue to teacher change (Carr, 2004).

## **Relating Online Professional Development to PE Central**

This study is concerned with teacher change, if any, that may occur as the result of the content provided on PE Central. In his model of teacher change, Guskey (2002) examines whether PD changed teachers' beliefs (Bechtel & O'Sullivan, 2006). However, because PE Central has not been studied in relationship to its usage and satisfaction, there is a need to understand its users. This description of how PE Central is being used by PE teachers may lead to changes in how online resources can more effectively contribute to teachers' PD.

Armour and Yelling (2004) have concluded that in order for PD providers to bring about teacher change, they need direction. Although there is currently a demand for research on PD, no one has evaluated the usage or effectiveness of PE Central as a possible PD resource for physical educators. The purpose of this study was to describe how physical educators are using PE Central and its influence, if any, on them as pre-service and in-service teachers.

## APPENDIX B

### Method

#### Context

Questionnaire responses were collected from the membership lists of each of the states within the Southwest District of the American Alliance for Health Physical Education Recreation and Dance, and a sample of undergraduate physical education teacher education students from the Southwest District. The Southwest District is made up of seven states: Utah, California, Nevada, New Mexico, Arizona, Hawaii, and Guam.

#### Participants

The Southwest District of the American Alliance for Health Physical Education Recreation and Dance is made up of K-12 pre-service and in-service teachers and administrators in Arizona, California, Guam, Hawaii, Nevada, New Mexico, and Utah. Each state has its own Alliance for Health Physical Education Recreation and Dance organization. A sample of undergraduate physical education teacher education students was included in the survey sample. Participants for this study included pre-service and in-service teachers from both urban, and rural settings.

The researcher coordinated with the presidents of the state Alliance for Health Physical Education Recreation and Dance organizations within the Southwest District of the American Alliance for Health Physical Education Recreation and Dance to obtain a membership contact list. The researcher also coordinated with physical education teacher education faculty at various universities within the Southwest District of the American Alliance for Health Physical Education Recreation and Dance in order to sample a group of undergraduate PETE students. Participants included K-12 pre-service and in-service teachers only and were contacted by email.

Only those who consented to having their data used in the study were eligible to participate (See Appendix C).

### **Data Sources**

The survey began with a demographic section (See Appendix D) designed to identify participants as pre-service, induction, or veteran teachers. The remainder of the questionnaire varied and asked questions specific to each participant's teaching experience (Pre-service Teacher Survey, see Appendix E; Beginning Teacher Survey, see Appendix F; Veteran Teacher Survey, see Appendix G). Each branch of the survey contains three sections devised to ask questions that answered clarifying questions about PE Central as a possible PD tool in regards to participants (a) usage, (b) satisfaction, and (c) PD as defined by Guskey (1986, 2002). The survey was designed to answer the following questions. Within the sample population, what are the characteristics of PE teachers who use PE Central, and why? To what extent are users satisfied with the website? What evidence is there in the users' responses that PE Central has contributed to a change in teaching practices, student engagement, attitudes and beliefs about physical education?

The survey questions were developed based on current research on PD (Guskey, 2002), usage (Armour & Yelling, 2004;), and satisfaction (Bechtel & O'Sullivan, 2006; Deglau & O'Sullivan, 2006) information about PE Central (M. Manross, personal communication, January 2013). The researcher employed cognitive interviewing (Willis, 2005) with PE professionals in order to detect potential problems with the instrument (Moser & Kalton, 1974). After making the revisions from the cognitive interviews, the survey was piloted online to identify any problems with the instrument's functionality. The purpose of the double pilot was to identify and correct potential problems with the instrument or functionality prior to data collection.

## **Design**

This was a descriptive study that utilized a survey (Moser & Kalton, 1974; Patten, 2011; Peterson, 2000). The sampling for this study was self selected as participants chose whether to accept the invitation to respond, and came from the membership lists of the individual state Alliance for Health Physical Education Recreation and Dance organizations within the Southwest District of the American Alliance for Health Physical Education Recreation and Dance, and a sample of undergraduate PETE students from colleges/universities within the Southwest District of the American Alliance for Health Physical Education Recreation and Dance.

## **Procedures**

After obtaining appropriate IRB approval from Brigham Young University and permission from each of the individual state Alliance for Health Physical Education Recreation and Dance organizations within the Southwest District of the American Alliance for Health Physical Education Recreation and Dance, an email was sent inviting its members to participate (see Appendix B). In this email, participants were given a link to this survey via Qualtrics software. Participants were informed that if they complete the survey by the end of the first week they would be entered into a drawing for a \$100 gift certificate for PE equipment. At the completion of the first week, a winner was randomly chosen and notified from those who had completed the survey. A follow-up email was sent at the beginning of the second week of data collection reminding members who had not completed the survey to do so by the end of the week. They were also informed if they complete the survey by the end of the second week that they would be entered into a drawing for a \$100 gift certificate for PE equipment.

A survey technique of obtaining non-participant bias was utilized (Moser & Kalton, 1974). After the two-week survey period, the researcher identified the non-participants based on the membership lists provided by the individual state Alliance for Health Physical Education Recreation and Dance organizations within the American Alliance for Health Physical Education Recreation and Dance Southwest District. A random sample of these non-participants were contacted via email, phone, and in person asking if they would be willing to visit with the researcher shortly to understand how they would have answered the survey. If the phone responses of the non-participants were similar to the answers from the survey responders, the researcher could be confident in the generalizability of the survey responses (Moser & Kalton, 1974).

### **Data Analysis**

Descriptive data were analyzed using SPSS to find means, standard deviations, frequency distributions, and correlations among variables of interest. Differences between pre-service, induction, and veteran teachers were analyzed on key indicators using a chi square test on the bivariate frequency tables. Differences between groups were identified using crosstabulations on variables of interest.

## THESIS REFERENCES

- Allen, M.J., & Yen, W. M. (2002). *Introduction to Measurement Theory*. Long Grove, IL: Waveland Press.
- Armour, K. M., & Yelling, M. (2004). Professional ‘development’ and professional ‘learning’: Bridging the gap for experienced physical education teachers. *European Physical Education Review*, 10(1), 71-93.
- Baranowski, T., & Jago, R. (2005). Understanding the mechanisms of change in children’s physical activity programs. *Exercise and Sport Sciences Reviews*, 33(4), 163-168.
- Bechtel, P. A., & O’Sullivan, M. (2006). Effective professional development: What we know now. *Journal of Teaching in Physical Education*, 25, 363-378.
- Beddoes, Z., Prusak, K.A., Hall, A. (In Press). Overcoming marginalization of physical education in America's schools with professional learning communities (PLC). *Journal of Physical Education Recreation and Dance*.
- Carr, V. B. (2010). The viability of online education for professional development. *AASA Journal of Scholarship and Practice*, 7(3), 6-15.
- Carter, K. (2004). Online training: What’s really working? *Technology and Learning*, 24(10), 32-36.
- Deglau, D., & O’Sullivan, M. (2006). The effects of a long-term professional development program on the beliefs and practices of experienced teachers. *Journal of Teaching in Physical Education*, 25, 379-396.
- Fejgin, N., & Hanegby, R. (1999). School based in-service training of PE teachers. *European Journal of Physical Education*, 4(1), 4-16.



- Graham, K. (1991). The influence of teacher education on pre-service development: Beyond a custodial orientation. *Quest*, 43(1), 1-19.
- Guskey, T. R. (1986). Staff development and the process of teacher change. *Teacher and Teaching*, 15(5), 5-12.
- Guskey, T. R. (2002). Professional development and teacher change. *Teacher and Teaching: Theory and Practice*, 8, 381-391.
- Howey, K., & Zimpher, N. (1989). Profiles of pre-service teacher education: Inquiry into the nature of programs. *Albany, NY: SUNY Press*.
- Ince, M. L., Goodway, J. D., Ward, P., & Lee, M. (2006). The effects of professional development on technological competency and the attitudes urban physical education teachers have toward using technology. *Journal of Teaching in Physical Education*, 25, 428-440.
- Ko, B., Wallhead, T., & Ward, P. (2006). Professional development workshops: What do teachers learn and use? *Journal of Teaching in Physical Education*, 25, 397-412.
- Moser, S.C., & Kalton, G. (1974). *Survey Methods in Social Investigation*. Jackson, TN: Basic Books, Inc., Publishers.
- O'Sullivan, M., & Deglau, D. (2006). Principles of professional development. *Journal of Teaching in Physical Education*, 25, 441-449.
- Patten, M.L. (2011). *Questionnaire research: A practical guide* (3<sup>rd</sup> ed.). Glendale, CA: Pyrczak.
- Peterson, R.A. (2000). *Constructing effective questionnaires*. Thousand Oaks, CA: Sage.

- Tozer, S., & Horsley, H. (2006). Professional development of teachers in physical education – Where are we now? *Journal of Teaching in Physical Education*, 25, 450-457.
- Willis, G.B. (2005). *Cognitive interviews: A tool for improving questionnaire design*. Thousand Oaks, CA: Sage.
- Zickuhr, K., Smith, A., (2012). Digital differences. *Pew Internet and American Life Project*.  
<http://pewinternet.org>.

## APPENDIX C

## Letter of Consent

Dear Educator,

My name is Amber Hall. I am a Teacher Education (PETE) graduate student at Brigham Young University. I am currently working on my master's thesis under the direction of Dr. Todd Pennington, from the department of Teacher Education. I am writing to invite all K-12 physical education teachers and undergraduate PETE majors to participate in a 15-20 minute survey about an online resource for physical educators. You have been selected to participate in this study as part of a convenience sample to represent all teachers.

Your participation in this study will require the completion of the attached survey. This should take approximately 15-20 minutes of your time. You will not be paid for being in this study; however, the survey will be available for two weeks. At the conclusion of the first week there will be a drawing for a \$100 gift card provided by S&S Worldwide for PE equipment! All those who complete the survey by the end of the first week will be entered in the drawing. This survey involves minimal risk to you. The findings, however, may benefit teachers and staff development providers by increasing knowledge about online professional development for physical educators.

You do not have to be in this study if you do not want to be. You do not have to answer any question that you do not want to answer for any reason. I will be happy to answer any questions you have about this study. If you have further questions about this project or if you have a research-related problem you may contact Amber Hall at [amber.m.hall@gmail.com](mailto:amber.m.hall@gmail.com). You may also contact my advisor, Dr. Todd Pennington at [todd\\_pennington@byu.edu](mailto:todd_pennington@byu.edu).

If you have any questions about your rights as a research participant you may contact the IRB Administrator at A-285 ASB, Brigham Young University, Provo, UT 84602; [irb@byu.edu](mailto:irb@byu.edu); (801) 422-1461. The IRB is a group of people who review research studies to protect the rights and welfare of research participants.

The completion of this survey implies your consent to participate. If you choose to participate, please click on the link below within two weeks.

Thank you for your participation.

Sincerely,

Amber Hall

## APPENDIX D

## Demographic Questions

Name & Contact info

-Mailing address

-Phone number

-Email address

1. Which best describes you:

- a. Undergraduate Elementary Education Major
- b. Undergraduate Secondary Education Major
- c. Undergraduate Physical Education Teacher Education Major to be licensed K-12
- d. Elementary School PE Teacher
- e. Middle School (Level) PE Teacher
- f. High School (Level) PE Teacher
- g. Adapted PE Teacher (K-12)

2. Level of teaching experience:

- a. Undergraduate student
- b. 1-3 years
- c. 4+ years

3. At the conclusion of this school year, how many years of teaching experience do you have?

- a. Dropdown box of years

4. What best describes your educational background:

- a. Currently completing an undergraduate degree
- b. Undergraduate degree completed
- c. Masters degree completed
- d. Doctoral degree completed

5. What is your gender?

- a. Male
- b. Female

6. What is your ethnicity?

- a. Caucasian
- b. African American
- c. Latin
- d. Asian
- e. Native American
- f. Pacific Islander
- g. Other

5. What state do you currently teach or attend school in? (Drop down menu with all the states listed)

6. If you are teaching, what number of schools are you currently teaching at?

- a. 1
- b. 2
- c. 3
- d. 4+

7. From what college and/or university did you get your degree? (text box)

8. Do you coach?

- a. Yes
- b. No

9. Are you currently a member of the National Association for Sport and Physical Education (NASPE):

- a. Yes
- b. No

10. Have you ever been a member of the National Association for Sport and Physical Education (NASPE):

- a. Yes
- b. No

11. If you are a member of NASPE, how long have you been a member:

- a. 0-1 year
- b. 2-3 years
- c. 4-5 years
- d. 6-10 years
- e. 11-15 years
- f. 16+ years

12. Are you a member of your state AHPERD organization?

- a. Yes
- b. No

13. Do you currently subscribe to any PE related journals?

- a. Yes
- b. No

14. Have you ever subscribed to any PE related journals?

- a. Yes
- b. No

15. If you do, or have ever subscribed to any PE related journals, which journal(s) did you subscribe to? (You may select all that apply)?

- a. Strategies
- b. Journal of Physical Education, Recreation, and Dance
- c. The Physical Educator
- d. Journal of Teaching Physical Education
- e. State AAHPERD Sponsored Journal
- f. Other (Text Box)

16. Have you ever visited the PE Central Website?

- a. Yes
- b. No

## APPENDIX E

## Pre-service Teacher Survey

**Usage**

1. Are you required to visit PE Central as an assignment for any of your college/university courses?
  - a. Yes
  - b. No
  - c. N/A
2. How often (on average) do you visit PE Central?
  - a. Never
  - b. Monthly
  - c. Weekly
  - d. Daily
3. Which resource found on PE Central is most useful in assisting you in completing undergraduate course assignments?
  - a. Kids program
  - b. Lesson ideas
  - c. Assessment
  - d. Adapted Info
  - e. Pre-K info
  - f. Active gaming
  - g. Class management
  - h. Media
  - i. Jobs
  - j. Professional information
  - k. Other
  - l. N/A
4. I use PE Central to prepare for my practicum teaching experiences.
  - a. Never
  - b. Monthly
  - c. Weekly
  - d. Daily
5. How often (on average) do you use PE Central to assist you in completing assignments for your undergraduate courses?
  - a. Never
  - b. Monthly
  - c. Weekly
  - d. Daily
6. How often (on average) do you use PE Central for lesson ideas when preparing for PE practicum teaching experiences?
  - a. Never
  - b. Monthly
  - c. Weekly
  - d. Daily
7. To what degree does your use of PE Central depend on it being a “free” resource?
  - a. Always
  - b. Sometimes
  - c. Rarely
  - d. Never
8. I only visit PE Central to assist me in completing assignments for my undergraduate courses.
  - a. Never
  - b. Monthly
  - c. Weekly
  - d. Daily

**Satisfaction**

9. I am satisfied with the usefulness of the information found on PE Central for my practical teaching experiences.
  - a. Very satisfied
  - b. Satisfied
  - c. Rarely satisfied
  - d. Never satisfied

10. Which resource found on PE Central is most useful when preparing for PE practicum teaching experiences?
- Kids program
  - Lesson ideas
  - Assessment
  - Adapted Info
  - Pre-K info
  - Active gaming
  - Class management
  - Media
  - Jobs
  - Professional information
  - Other
  - N/A
11. I am satisfied with the “usefulness of the information” on PE Central when compared to other sources of professional information in my undergraduate program.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
12. Which resource found on PE Central are you most satisfied with?
- Kids program
  - Lesson ideas
  - Assessment
  - Adapted Info
  - Pre-K info
  - Active gaming
  - Class management
  - Media
  - Jobs
  - Professional information
  - Other
  - N/A
13. I am satisfied with the degree to which PE Central helps me feel more connected to licensed PE teachers.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
14. Which resource found on PE Central are you least satisfied with?
- Kids program
  - Lesson ideas
  - Assessment
  - Adapted Info
  - Pre-K info
  - Active gaming
  - Class management
  - Media
  - Jobs
  - Professional information
  - Other
  - N/A
15. I am satisfied with the quality of the content found on PE Central.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
16. I am satisfied with the extent to which PE Central has made it easier for me to complete undergraduate assignments and/or prepare to teach PE.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied

17. I am satisfied with the manner in which using PE Central helps me feel up to date/or current in my profession.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied

### **Professional Development**

18. Visiting PE Central has increased my enthusiasm for becoming a physical educator.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree
19. The information on PE Central is very different than what I am learning in my college and/or university undergraduate preparation program.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree

20. Where do you get the majority of your information about PE outside of your college/university undergraduate program?
- PE Central
  - PE related journals
  - Online resources
  - Professional development workshops
  - AAHPERD/NASPE
  - Other
  - N/A
21. I find the information found on PE Central helpful during my undergraduate studies.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree
22. I plan on submitting ideas to PE Central for publication.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree
23. What is your perception of your college/university PE faculty concerning your use of PE Central for course assignments including teaching experiences?
- They require it
  - Strongly encourage it
  - Do not encourage or discourage it
  - Discourage it
  - Will not allow it
  - N/A



## APPENDIX F

## Beginning Teacher Survey

**Usage**

1. Are you the only PE teacher in your school?
  - a. Yes
  - b. No
2. Did you use PE Central in your undergraduate program?
  - a. Yes
  - b. No
3. How often (on average) do you use PE Central?
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never
4. Which resource on PE Central do you use most often?
  - a. Kids program
  - b. Lesson ideas
  - c. Assessment
  - d. Adapted Info
  - e. Pre-K info
  - f. Active gaming
  - g. Class management
  - h. Media
  - i. Jobs
  - j. Professional information
  - k. Other
5. To what degree does your use of PE Central depend on it being a “free” resource?
  - a. Always
  - b. Sometimes
  - c. Rarely
  - d. Never
6. I use PE Central for lesson ideas when preparing for my PE classes.
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never
7. I use PE Central.
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never
8. Where do you find the majority of your new ideas for your classes?
  - a. PE Central
  - b. National Association (AAHPERD/NASPE)
  - c. Professional Development Workshops
  - d. PE Related Journals
  - e. Online Resources
  - f. Other
9. How often (on average) do you use content from PE Central in your PE classes?
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never
10. How often (on average) do you use PE Central for lesson ideas when preparing for your PE classes?
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never
11. I use content from PE Central in my PE classes.
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never

**Satisfaction**

12. I am satisfied with the manner in which using PE Central helps me feel up to date/or current in my profession.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
13. Which of the following options are you most likely to choose when looking for resources for your PE Classes?
- PE Central
  - Online Resources
  - National Association (AAHPERD/NASPE)
  - PE Related Journals
  - Online Resources
  - Other
14. I am satisfied with the “usefulness of information” on PE Central when compared to other outlets for professional information.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
15. To what degree do the following factors affect your decision as to which resource to use when looking for information for your PE Classes?
- |   | Ne<br>ver | Seld<br>om | Oft<br>en | Alw<br>ays |
|---|-----------|------------|-----------|------------|
| <b>Accessi<br/>bility</b>                   |           |            |           |            |
| <b>Qualit<br/>y of<br/>Inform<br/>ation</b> |           |            |           |            |
| <b>Cost</b>                                 |           |            |           |            |
16. I am satisfied with the degree to which PE Central helps me feel connected to other PE teachers.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
17. Which of the resources found on PE Central are you most satisfied with?
- Kids program
  - Lesson ideas
  - Assessment
  - Adapted Info
  - Pre-K info
  - Active gaming
  - Class management
  - Media
  - Jobs
  - Professional information
  - Other
18. I am satisfied with the extent to which PE Central has made it easier for me to teach PE.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
19. Which of the resources found on PE Central are you least satisfied with?
- Kids program
  - Lesson ideas
  - Assessment
  - Adapted Info
  - Pre-K info
  - Active gaming
  - Class management
  - Media
  - Jobs
  - Professional information
  - Other

20. To what degree are you satisfied with the quality of the content found on PE Central?
- Very satisfied
  - Satisfied
  - Rarely Satisfied
  - Never Satisfied
21. I am satisfied with the content from PE Central that I have used when teaching my PE classes.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied

### **Professional Development**

22. PE Central provides ideas that help me overcome the barriers I face as a physical educator.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
23. PE Central provides me professional support that I do not get from my school and/or district.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
24. PE Central provides resources that I do not get from my school and/or district.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
25. I use PE Central as a source of professional development.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
26. PE Central provides me help with the practical, day-to-day, operation of my PE classes.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
27. I have experimented with different classroom practices as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
28. I have experimented with new instructional approaches (how I teach) as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
29. I have experimented with new lesson content (what I teach) as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
30. I have made modifications in my PE class classroom management as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
31. As a result of using ideas from PE Central my students test scores (e.g., PE quizzes, exams) have increased.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree

32. As a result of using ideas from PE Central my students' attitudes have improved.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
33. As a result of using ideas from PE Central my students' effort has increased.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
34. I have not seen any improvement in my students as a result of using ideas from PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
35. Ideas I have found on PE Central have become a permanent part of how I teach.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
36. I have changed how I teach because of ideas from PE Central worked better than what I was doing before.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
37. I have changed certain things I used to do because of what I have learned from PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
38. I have made permanent changes to my beliefs about PE as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
39. I have made permanent changes to my attitudes about PE as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
40. The content provided on PE Central is useful in improving the quality of PE in my classroom/gym.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree
41. The information on PE Central is different than what I learned in my college and/or university undergraduate program.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree
42. I plan on submitting ideas to PE Central for publication.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree
43. Since you first started visiting PE Central, how many professional development conferences have you attended?
- 0-5
  - 6-10
  - 11-15
  - 16+

44. Where do you get the majority of your information about PE?
- PE Central
  - PE related journals
  - Online resources
  - Professional development workshops
  - AAHPERD/NASPE
  - District/School in-services
  - Other
45. I have tried new ideas found on PE Central more often than those from other professional development resources.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree
46. Visiting PE Central contributes to me having a positive outlook on my profession.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree

## APPENDIX G

## Veteran Teacher Survey

**Usage**

1. Are you the only PE teacher in your school?
  - a. Yes
  - b. No
2. Did you use PE Central in your undergraduate program?
  - a. Yes
  - b. No
3. How often (on average) do you use PE Central?
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never
4. As an experienced teacher, which resource on PE Central do you use most often?
  - a. Kids program
  - b. Lesson ideas
  - c. Assessment
  - d. Adapted Info
  - e. Pre-K info
  - f. Active gaming
  - g. Class management
  - h. Media
  - i. Jobs
  - j. Professional information
  - k. Other
5. How often (on average) do you use content from PE Central in your PE classes?
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never
6. To what degree does your use of PE Central depend on it being a “free” resource?
  - a. Always
  - b. Sometimes
  - c. Rarely
  - d. Never
7. I use PE Central.
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never
8. Where do you find the majority of your new ideas for your classes?
  - a. PE Central
  - b. National Association (AAHPERD/NASPE)
  - c. Professional Development Workshops
  - d. PE Related Journals
  - e. Online Resources
  - f. Other
9. How often (on average) do you use PE Central for lesson ideas when preparing for your PE Classes?
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never
10. I use PE Central for lesson ideas when preparing for my PE classes.
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Never

### Satisfaction

11. To what degree do the following factors affect your decision as to which resources to use when looking for information for your classroom?

	Ne ver	Seld om	Oft en	Alw ays
Accessi bility				
Qualit y of Inform ation				
Cost				

12. I am satisfied with the manner in which using PE Central helps me feel up to date/or current in my profession.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
13. I am satisfied with the extent to which PE Central has made it easier for me to teach PE.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
14. Which resource found on PE Central are you most satisfied with?
- Kids program
  - Lesson ideas
  - Assessment
  - Adapted Info
  - Pre-K info
  - Active gaming
  - Class management
  - Media
  - Jobs
  - Professional information
  - Other
  - N/A
15. I am satisfied with the degree to which PE Central helps me feel connected to other PE teachers.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
16. I am satisfied with the content from PE Central that I have used when teaching my PE classes
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
17. I am satisfied with the “usefulness of information” on PE Central when compared to other outlets for professional information.
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied
18. Which resource found on PE Central are you least satisfied with?
- Kids program
  - Lesson ideas
  - Assessment
  - Adapted Info
  - Pre-K info
  - Active gaming
  - Class management
  - Media
  - Jobs
  - Professional information
  - Other
  - N/A
19. To what degree are you satisfied with the quality of the content found on PE Central?
- Very satisfied
  - Satisfied
  - Rarely satisfied
  - Never satisfied

### **Professional Development**

20. PE Central provides ideas that help me overcome the barriers I face as a physical educator.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
21. PE Central provides me professional support that I do not get from my school and/or district.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
22. PE Central provides resources that I do not get from my school and/or district.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
23. I use PE Central as a source of professional development.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
24. PE Central provides me help with the practical, day-to-day, operation of my PE classes.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
25. I have experimented with different classroom practices as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
26. I have experimented with new instructional approaches (how I teach) as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
27. I have experimented with new lesson content (what I teach) as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
28. I have made modifications in my PE class classroom management as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
29. As a result of using ideas from PE Central my students test scores (e.g., PE quizzes, exams) have increased.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
30. As a result of using ideas from PE Central my students' attitudes have improved.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
31. As a result of using ideas from PE Central my students' effort has increased.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree



32. I have not seen any improvement in my students as a result of using ideas from PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
33. Ideas I have found on PE Central have become a permanent part of how I teach.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
34. I have changed how I teach because of ideas from PE Central worked better than what I was doing before.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
35. I have changed certain things I used to do because of what I have learned from PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
36. I have made permanent changes to my beliefs about PE as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
37. I have made permanent changes to my attitudes about PE as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
38. The content provided on PE Central is useful in improving the quality of PE in my classroom/gym.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree
39. What is the reason you primarily choose to visit PE Central?
- As a means of sharing ideas for publication
  - Kids program
  - Lesson ideas
  - Assessment
  - Adapted Info
  - Pre-K info
  - Active gaming
  - Class management
  - Media
  - Jobs
  - Professional information
  - Other
40. Where do you get the majority of your information about PE?
- PE Central
  - PE related journals
  - Online resources
  - Professional development workshops
  - AAHPERD/NASPE
  - District and/or school in-services
  - Other
41. I have tried new ideas found on PE Central more often than those from other professional development resources.
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree

42. Visiting PE Central contributes to me having a positive outlook on my profession.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
43. I plan to submit ideas to PE Central for publication
- Strongly agree
  - Agree
  - Disagree
  - Strongly disagree

## APPENDIX H

## GTC Scale

1. PE Central provides ideas that help me to overcome the barriers I face as a physical educator.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
2. I have experimented with different classroom practices as a result of using PE Central.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
3. As a result of using ideas from PE Central my students test scores (e.g. PE quizzes, exams) have increased.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
4. Ideas I have found on PE Central have become a permanent part of how I teach.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
5. PE Central provides me professional support that I do not get from my school and/or district.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
6. I have experimented with new instructional approaches (how I teach) as a result of using PE Central.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
7. As a result of using ideas from PE Central my students' attitudes have improved.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
8. I have changed how I teach because ideas from PE Central worked better than what I was doing before.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
9. PE Central provides me help with the practical, day-to-day, operation of my PE classes
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
10. I have experimented with new lesson content (what I teach) as a result of using PE Central.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree

11. As a result of using ideas from PE Central my students' effort has increased.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
12. I have made permanent changes to my beliefs about PE as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
13. I use PE Central as a source of professional support.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
14. I have made modifications in my PE classroom management as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree
15. I have not seen any improvement in my students as a result of using ideas from PE Central.
- Strongly Disagree
  - Disagree
  - Agree
  - Strongly Agree
16. I have made permanent changes to my attitudes about PE as a result of using PE Central.
- Strongly Agree
  - Agree
  - Disagree
  - Strongly Disagree

## APPENDIX I

### Additional Findings

Due to the scope of this study, all of the data gathered were not included in the journal article. Data included in the article are only those, which apply directly to the theoretical framework and research questions. Additional findings provide information that will benefit PEC in making changes and benefiting teachers in the future, and will guide future research and publications.

#### Usage

As previously stated, participants in this study report using PEC monthly, on average. Usage of the site was not significantly different between groups. Likewise, it appears that additional responses about usage are not significantly different ( $p > .05$ ) between pre-service, beginning, and veteran teachers. Consistent with the overall usage of PEC, 59.9% of participants report using lesson ideas from the site monthly when preparing to teach classes. When asked which resource on PEC is most useful, 71.5% of participants reported lesson ideas. Class management and jobs, on the other hand, were reported last as the most useful resource with less than 1% of participants choosing this option.

These findings are not surprising to the researcher, as teachers are preparing lessons at a rapid pace and in need to new ideas. New lesson ideas are in high demand must be delivered (Baranowski & Jago, 2005) in context of what is actually needed by teachers (Carter, 2004). Additionally, 70% of all responders report that their usage of PEC is due to it being a free resource for PE-specific information. PEC is free and can be accessed anytime from anywhere (Carter, 2004), so users can access the site at their convenience and for their own needs (Armour & Yelling, 2004).

Significant differences ( $p < .001$ ), however, were found in responses between beginning and veteran teachers when asked if they used PEC during their undergraduate training programs. Overall, 62.8% of all responders did not use PEC during their undergraduate training programs. But, more beginning teachers did use PEC than did not and more veteran teachers did not use PEC than did during their undergraduate studies.

Further, significant differences ( $p < .001$ ) were found between groups when asked if the information on PEC is different than what they learned in their undergraduate training programs. Pre-service and beginning teachers slightly disagree that the information on PEC was different than their undergraduate programs, while veteran teachers slightly agree. Because veteran teachers were generally not exposed to PEC during their undergraduate studies and the information is different, they will need training on what technologies exist and how to implement these technologies in their classrooms (Ince, Goodway, Ward & Lee, 2006). PEC may provide in-service teachers with a logical means for virtual collaborations and multimedia technologies if users are taught how to use the site effectively (Carr, 2010).

### **Satisfaction**

The researcher in this study found that participants were more satisfied than dissatisfied with their usage of PEC. Likewise, the researcher found that PEC is mostly successful in meeting the needs of users as most users are more satisfied than dissatisfied with (a) the manner in which PEC connects them with other PE teachers, (b) the quality of content provided on PEC, (c) the manner in which PEC makes them feel up to date and current in their profession, (d) the increased enthusiasm they feel as a result of using PEC, and (e) the content from PEC they have used in their classrooms. Findings about satisfaction are consistent with previous research indicating that professional learning communities and

collaboration are essential to professional development (Beddoes, Prusak & Hall, in press; Carter, 2004), and content must be delivered (Baranowski & Jago, 2005) in a manner that is context specific (Carter, 2004) and immediately useful in classrooms (Armour & Yelling, 2004; Guskey, 1986, 2002).

Participants in this study were asked which resource on PEC they are most satisfied with. They were then asked which resource on PEC they are least satisfied with. Please see Table 5 for frequencies of responses. Interestingly, “lesson ideas” was the identifiable resource listed as the most satisfactory and the least satisfactory in comparison to other resources provided on PEC. A significant difference ( $p < .05$ ) was found between satisfaction with resources and 70% of participants report most satisfaction with “lesson ideas.” A majority of participants appear very satisfied with the lesson ideas provided on PEC. However, while “lesson ideas” was listed as the identifiable resource participants were least satisfied with, only 9% responded this way. There was no significant difference ( $p > .05$ ) found between dissatisfaction with resources on PEC as the distribution of responses was fairly evenly spread among resources. It appears that generally, PEC is providing teachers with the lesson ideas needed in their classrooms, but may not be providing the kind or amount of other resources needed by teachers (Armour & Yelling, 2004; Carr 2010, Carter, 2004).

### **Professional Development**

PD and training is offered through a variety of resources, but typically does little in terms of promoting teacher change (Armour & Yelling, 2004). Since finding PE-specific resources is difficult, many teachers are turning to outside sources for PD (Bechtel & O’Sullivan, 2006). Participants in this study were asked where they get the majority of their

new ideas. Most participants reported getting new ideas from PD workshops (30%), while only 12% list PEC as their primary source for new ideas. In their study of professional learning communities Beddoes, Prusak & Hall (in press) teach that collaboration and idea sharing are essential components of successful PD. In this study, 65% of participants disagree or strongly disagree that they plan to submit new ideas to PEC for publication. Educating teachers on the importance of collaborating and rewarding them for publication on the site may bring more new ideas to PEC. In turn, this may result in higher percentages of teachers turning primarily to PEC for new ideas.

Many factors contribute to teachers' decisions of which resources to use for PD and teaching information. Participants in this study report that accessibility of information (Carr, 2010; Carter, 2004) contributes to their decision of which resource to use more often than not. Percentages of all participants indicate that 92% of teachers often or always choose teaching resources based on accessibility. Quality of information (Armour & Yelling, 2004; Baranowski & Jago, 2005) has also been identified as a contributing factor affecting teachers' decision of which resource to use. Participants in this study (94.3%) indicated that the quality of information present often or always contributes to their decision of which resource to use. Finally, more teachers in this study report cost as a contributing factor than not. More than 89% of participants admit that cost often or always contributes to their decision of which resource to use. This is consistent with previously stated data. A majority of teachers agree that cost is a contributing factor in choosing PD resources and that their usage depends on it being a free resource.



Table 5

*PE Central Users' Resource Means, Standard Deviations, Frequencies*

	Frequency	Mean	Standard Deviation
Most Satisfactory Resource	--	3.94	3.64
Kids Program	4		
Lesson Ideas	230		
Assessment	16		
Adapted Info.	10		
Active Gaming	3		
Class Management	5		
Jobs	1		
Professional Info.	14		
Other	11		
N/A	35		
Total	329		
Least Satisfactory Resource	--	9.0	3.87
Kids Program	5		
Lesson Ideas	30		
Assessment	21		
Adapted Info.	18		
Active Gaming	5		
Class Management	14		
Jobs	17		
Professional Info.	9		
Other	25		
N/A	160		
Total	318		

*Note:* Mean responses and standard deviation is for all responders. Responses were coded from 1-10 (kids program = 1, N/A = 10). Frequencies indicate the total number of responses in each category.

## Conclusion

The information presented in this appendix is not directly related to the theoretical framework or research questions presented in the journal article. However, the additional data holds practical importance and provides information for PEC and other PD resources.

The researcher suggests that directors and editors for PEC consider the information provided

as they begin to make changes to the site and consider what teachers really need. The information offered may also provide the data needed for further research concerning PEC; it's usage, satisfaction, and potential as a valid source for PE-specific PD.