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PROFESSIONAL DEVELOPMENT

PE Central: A Possible Online Professional Development Tool

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Abstract

Traditional professional development offerings for teachers often overlook the needs of the physical educator. Left to their own devices, PE teachers frequently turn to online resources (e.g., PE Central, PHE America [formerly pelinks4u], PHYSEDagogy, and SHAPE America's Exchange and Teacher's Toolbox) for professional growth support. Clearly these online offerings provide valuable resources to teachers, but it is unclear if any meet generally accepted definitions of what constitutes sanctioned professional development. The purposes of this study were to (a) describe pre- and in-service teacher usage of one of these websites, PE Central; (b) describe their satisfaction with PE Central; and (c) assess the relationship of these online resources to promote provisional teacher change, student engagement, and permanent teacher change. PE teachers (n = 418) responded to an online survey. Both pre- and in-service teachers averaged monthly usage and were more satisfied than not with the PE Central website. PE Central provided teachers some key elements of professional development and was positively related to provisional teacher change but negatively associated with student engagement and permanent teacher change. Suggestions for making the site a resource for sanctioned professional development credit and associated future research possibilities are explored.

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Traditional models of professional development (PD) are typically described in terms such as the following: "Professional development shall be comprised of professional learning opportunities aligned with student learning and educator development needs and school, school district, and or state improvement goals" (New Jersey Department of Education, 2014, "New Definition," see table, row 1, column 2). *Sanctioned* PD, then is the *formal* provision of time and resources allocated by the sanctioning body (i.e., school, district, or state) to provide training that the body deems sufficient to meet its criteria and goals to gatherings of educators. Traditionally, these once or twice yearly trainings have involved educators across all disciplines. Recent approaches such as *professional learning communities* (most often small groups of discipline-specific teachers) that are organized to address *local needs* and devise, implement, and assess solutions (O'Sullivan, 2007) are also gaining popularity. *Nonsanctioned* or *informal* sources of PD include popular online affordances of discipline-specific websites such as PHE America (formerly pelinks4u), PHYSEDagogy, and SHAPE America's Exchange and Teacher's Toolbox. These resources provide ideas about lesson plans and assessment, among other resources, to interested teachers at their convenience via their computers. The focus of this study is whether one particular online resource website, PE Central, is providing more than just resource files to interested teachers. In other words, does it rise to the level of providing teachers with sanctioned PE-specific training that leads to positive changes in learner outcomes and accomplishes school, district, and state goals? Indeed, the existence of PE Central and other such online resource sites is a direct result of PE-specific PD needs having been overlooked. Inspired solely by the notable popularity of this site, we conceived and conducted this study independent of any incentives provided by PE Central.

Unfortunately, the unique content and pedagogical needs of physical educators are often overlooked in traditional PD activities offered in school- or district-based teacher in-service trainings that are primarily designed for classroom teachers (Armour & Yelling, 2004). Thus, Bechtel and O'Sullivan (2006) understandably called for more physical education (PE)-specific PD for public school PE teachers. The intent of such PE-specific PD is to promote positive, ongoing teacher change by PE teachers setting personal goals to implement

information from training sessions and improve their professional practice (Bechtel & O'Sullivan, 2006). However, the shift from PD to positive teacher change, even for classroom teachers, is not ensured. Rather, positive teacher change is often a voluntary and disjointed process in which teachers can ignore or adopt training as they see fit (Bechtel & O'Sullivan, 2006). Further, we argue that positive teacher change, although laudable, is a necessary but insufficient indicator of the efficacy of PD activities (sanctioned or otherwise). Unless PD also results in positive changes in student learning, achievement, and attitudes, then clearly it falls short in its ultimate purpose. In an attempt to understand these relationships better, Guskey (1986, 2002) proposed that a successful transference is a process that follows a predictable ordering that *links* (a) PD in-service training to (b) positive teacher change and subsequently to (c) improvements in learner outcomes.

Linking Professional Development to Teacher Change and Learner Improvements

Guskey (1986, 2002) described a four-stage model of teacher-change processes (see Figure 1), positing that ideas from PD (Stage 1) must first be implemented on a provisional basis (Stage 2) so that their value can be evidenced by increased student engagement and achievement (Stage 3), leading ultimately to permanent change in teacher attitudes, beliefs, and practices (Stage 4). Although evidence supports the relationship between student engagement and permanent teacher change (i.e., only if it works for the students will teachers retain the practice), the entirety of Guskey's model, specifically the existence of provisional change, has yet to be established.

Stage 1: Intentional Professional Development

Guskey (1986, 2002) described PD as a purposeful effort (sanctioned/formal or nonsanctioned/informal, either in groups or as individuals) with specific goals and a plan intended to *change* teacher attitudes, beliefs, and practices. To accomplish this, PD activities and presentations are geared first toward changing teacher attitudes and beliefs before changing teacher expectations of implementing new PD ideas. If especially effective, PD has provided teachers with sound and tried suggestions that will have a good

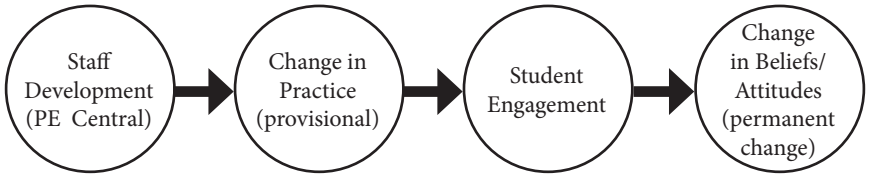

Figure 1. Guskey's model of teacher change. This model suggests that successful PD yields provisional teacher change, followed by increased student engagement, and ultimately results in permanent teacher change in teacher beliefs and attitudes. Adapted from "Staff Development and the Process of Teacher Change," by T. R. Guskey, 1986, *Teacher and Teaching, 15*(5), 5–12.

chance at succeeding. If, however, teachers have uncertainties about implementation, teacher belief will be undermined. Done properly, PD must gain some measure of investment or commitment from teachers either by involving teachers-as-experts or by using compelling presentations and content that convince teachers to at least try the new ideas.

Stage 2: Provisional Change; Let's Give It a Go!

Stage 2 begins as a temporary, experimental implementation of a new instructional approach, use of unique or updated materials, or change in procedures or formatting. During this stage, willing teachers are waiting to see if these changes work, specifically if they result in positive changes in student engagement and learning outcomes. Teachers are more likely to retain practices that help students attain desired learning outcomes.

Stage 3: How Does It Affect the Students?

Guskey (1986, 2002) argued that teacher attitudes and beliefs truly change only after teachers see evidence of increased student engagement and learning outcomes, including cognitive and psychomotor indices and a wide range of affective characteristics. Such evidence of student learning might include students' scores on tests and exams, results from standardized achievement tests, attendance at school or in class, engagement in class discussions, motivation for learning, and attitudes toward class.

Stage 4: Positive Teacher Change

In Stage 4, positive student indicators foster increased teacher belief, and positive teacher attitudes often lead to the adoption of new ideas. Ultimately, the success or failure of PD endeavors is whether training has resulted in permanent teacher change to align with the intent of that PD.

Last, these four stages described by Guskey (1986, 2002) are not entirely linear. Rather, they represent only one cycle that begins anew with the next PD activity. Even so, traditional PD formats (e.g., once or twice yearly) still may suffer from a too infrequent offering and lack of ongoing support during Stages 2 to 4. These shortcomings of traditional PD have led many teachers to seek new ideas in other venues, for example, through easily accessed online sources.

Traditional Professional Development and 21st Century Alternatives

Researchers from the Pew Internet and American Life Project (Zickuhr & Smith, 2012) have found that 78% of U.S. adults participate in a variety of online affordances, including online professional training. For educators, online PD is currently evolving (Carter, 2004) and is not without challenges. However, few would doubt the logic of its potential to provide a wealth of information in a variety of formats including virtual collaborations, active learning, and mobile multimedia technologies (Carr, 2010; Carter, 2004) that could prove effective in promoting PD and teacher change.

PE Central

PE Central (www.pecentral.org) may be one of the largest PE-specific online resources available for information such as lesson ideas, best practices, class management, use of technology, and assessment ideas. PE Central archives 10,000 resource files and receives some 162,000 visitors and over 1.6 million page views each month, with lesson ideas being the most commonly viewed resource (M. Manross, personal communication, January 21, 2012). The site has received a number of awards and recognitions for its contribution to the field (see PE Central, n.d.).

Although PE Central was conceived and created and is maintained with the sole purpose of providing PE teachers with *resources*,

we think that it exhibits some of the characteristics of PD for PE teachers. For example, all PE Central resource materials have been submitted and peer reviewed by fellow PE professionals. Further, visitors are allowed to engage in the ongoing dialogue by providing 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* (Beddoes, Prusak, & Hall, 2014)—a key characteristic of PD programs (Carr, 2010; Carter, 2004; O'Sullivan & Deglau, 2006). It provides extensive and valuable information to pre- and in-service teachers and teacher educators. However, despite its obvious popularity, what remains unclear are (a) how PE Central is being used, (b) what level of satisfaction its users experience, and (c) whether PE Central can be considered a valid professional learning community that provides its own PE-specific PD that in turn facilitates teacher change.

Therefore, the purposes of this study were to (a) describe pre- and in-service teachers use of PE Central, (b) describe their satisfaction with PE Central, and (c) assess the relationship of these online resources to promote provisional teacher change, student engagement, and permanent teacher change as proposed by Guskey (1986, 2002).

Method

Participants and Setting

Participants in this study ($N = 418$) included preservice ($n = 45$), beginning (1 to 3 years of experience; $n = 45$), and veteran (4+ years of experience; $n = 288$) teachers, along with a convenience sample of nonresponders ($n = 40$) from the Southwest District of the American Alliance for Health, Physical Education, Recreation, and Dance (SWD AAHPERD). The study included teachers from Arizona, California, Guam, Hawaii, Nevada, New Mexico, and Utah, whom we contacted through their state AHPERD organization. We coordinated with physical education teacher education (PETE) faculty at various universities within SWD AAHPERD to sample a group of undergraduate PETE licensure students. The sample for this study was self-selected; that is, participants chose whether to accept the invitation to respond.

Procedures

The university institutional review board approved all procedures. We sent an e-mail including a clause of implied consent and a link to a Qualtrics (www.qualitrics.com) survey to state AHPERD organization members to invite them to participate in this study. Participants who completed the survey within 1 week were entered in a drawing for a $100 gift certificate for PE equipment. At the beginning of the second week of data collection, we sent a follow-up e-mail reminding members who had not completed the survey to do so by the end of the week to qualify for a second drawing for a $100 gift certificate.

Moser and Kalton (1974) recommended including a sampling of nonparticipants (with a target of 10% of nonresponders) to account for bias due to nonresponse. A bias might have been detected if the responses of the responders and those of the nonresponders had differed in a systematic way. We asked a convenience sample of nonresponders (n = 40) to complete the survey, and we compared their responses to those of the initial responders to assess generalizability (Moser & Kalton, 1974). We considered the lack of systematic differences as evidence that nonparticipants did not differ significantly, allowing generalization of the survey results.

Data Collection and Analysis

We provided a two-part Qualtrics (www.qualtrics.com) survey to the study participants. Following the 2-week data collection, we analyzed participants' responses with SPSS software, using a chi-squared test on the bivariate contingency tables. We identified group differences using cross tabulations on variables of interest.

Instrument. We used standard development procedures to compose and pilot survey questions based on a Likert scale (Moser & Kalton, 1974; Patten, 2011; Peterson, 2000). We derived questions from the survey from a combination of sources in traditional (Armour & Yelling, 2004; Guskey, 1986, 2002) and online (Carr, 2010; Carter, 2004) PD literature. Finally, we used input from PE Central's executive director to make the survey tool more website specific (M. Manross, personal communication, January 13, 2013). Section 1 of the survey assessed the nature of teachers' experience with PE Central: their (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 compared to other sources of professional information).

Section 2 assessed teacher perceptions of the proposed structure of Guskey's (1986, 2002) framework for teacher change. The Guskey Teacher Change (GTC) is a 16-item four-subscale survey created to assess teacher perceptions of PE Central as (a) providing a useful source of PD; (b) provisional change in their teaching behaviors; (c) changes in student engagement and achievement; and (d) permanent changes in their, beliefs, attitudes, and practices. The GTC survey was scored on a Likert scale (1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, 4 = *strongly disagree*), and we tested all four subscales for reliability using Cronbach's alpha. Table 1 lists the 16 GTC questions.

Table 1
Change Subscale Items Based on Guskey's Model

Subscale and questions
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.

Table 1 (cont.)

Subscale and questions
Student Engagement
• Because I used ideas from PE Central, my students' test scores (e.g., PE quizzes/exams) have increased.
• Because I used ideas from PE Central, my students' attitudes have improved.
• Because I used ideas from PE Central, my students' effort has increased.
• I have not seen any improvement in my students as a result of my 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 4-point Likert scale.

We sent early drafts of the survey to five PETE professors who were 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 survey items and with the functionality of Qualtrics.

Data analysis. We analyzed descriptive data using SPSS to find means, standard deviations, and correlations among variables of interest. We analyzed differences regarding usage and satisfaction among preservice, beginning, and veteran teachers using a chi-squared test on the bivariate contingency tables. We identified group differences using cross tabulations on variables of interest.

We calculated the subscale means for the GTC survey by averaging the scores of the four respective items. We calculated Cronbach's alphas to estimate the internal consistency and reliability of each

subscale. We calculated Pearson correlations to test the magnitude and direction of the relationship of the four subscales. We used subscale means for subsequent between-group analyses (e.g., beginning vs. veteran teachers) using a one-way ANOVA. Finally, we calculated effect sizes via Cohen's d ($M_1 - M_2 / SD_{pooled}$) for the between-group differences on the GTC subscales.

Results

Descriptive Results

Table 2 presents the means, standard deviations, and frequencies for selected variables of usage and satisfaction. Most teachers were satisfied with their monthly usage of PE Central. Table 3 shows the moderate correlations between usage, satisfaction, and the four Guskey (1986, 2002) subscales. Table 4 displays the means, standard deviations, levels of significance, effect sizes, and alphas for the four variables concerning the GTC scale.

Table 2
PE Central Users' Means, Standard Deviations, and Frequencies

Variable	Frequency *n* (%)		*M*	*SD*
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 are calculated in terms of all responders; frequencies indicate the total number of responses in each category with percentages for each. Means and standard deviations indicate satisfaction for all responders with total frequencies for each category and percentages for each. Bolded numbers indicate notable frequencies.

Table 3
Pearson Correlations for Variables of Interest and Components of the GTC Scale

Variable/component	1	2	3	4	5	6
1. Usage		.416	.450	.492	.425	.430
2. Satisfaction			.620	.562	.479	.540
3. Guskey professional development				.784	.617	.701
4. Guskey provisional teacher change					.714	.754
5. Guskey student engagement						.674
6. 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 $p < .001$.

Table 4
Guskey's Teacher Change Scale Subscale Items, Item Means and Standard Deviations, Levels of Significance, Effect Sizes, and Alphas

	Group						
	Beginning teachers		Veteran teachers				
Subscale item	*M*	*SD*	*M*	*SD*	Sig	ES	α
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. ES = 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 were no significant differences between groups on variables of interest ($p < .05$).

Between-Group Comparisons

Of all of the responders, 13% began the demographic portion of the survey but did not complete the questions on usage and satisfaction or the GTC scale because they had never visited the PE Central website. We completed comparative analyses between all three groups (preservice, beginning in-service, and veteran in-service). We found no significant differences in usage or satisfaction between beginning and veteran teachers. Both groups reported using the

site monthly on average and were equally satisfied with PE Central. Finding no significant differences between the two in-service groups, we combined responses for these teachers into one in-service group for subsequent analyses.

Next, we completed a comparative analysis between in- and preservice teachers using a Yates's correction for continuity (chi-squared) test. We found no significant difference in the usage of PE Central between in- and preservice teachers ($\chi^2 = 2.54$, $df = 1$, $p = .111$). We found no significant differences with respect to satisfaction ($\chi^2 = 2.59$, $df = 2$, $p = .275$). Overall means ($M = 1.99$) and effect sizes indicated that all groups comprised more satisfied than dissatisfied users.

We found no significant difference between voluntary responders and nonresponders in the areas of usage ($\chi^2 = 3.402$, $df = 3$, $p = .334$) or satisfaction ($\chi^2 = 3.014$, $df = 3$, $p = .389$). Additionally, we found no significant difference between groups in the numbers of teachers who had never visited PE Central. It appears that awareness saturation of PE Central is high, with only about 13% of all participants indicating no exposure to the site.

Reliability of Scale Based on the Guskey Teacher Change Model

Cronbach's alphas for the survey confirmed reliability of the GTC subscales designed to understand use of PE Central as a PD tool for physical educators consistent with Guskey's (2002) model of teacher change. Alpha values confirmed reliability in PD, provisional teacher change, student engagement, and permanent teacher change ($r_{\alpha = .81–.89}$, see Table 3).

Questions focused on the potential of PE Central as a PD tool were given only to in-service teachers. In-service teachers agreed slightly ($M = 2.46$) that resources provided by PE Central helped them overcome barriers, provided support not received from schools and districts, and helped with practical day-to-day operations. This is noteworthy in that although PE Central was not designed to be a source of PD, it seems to provide key elements of such trainings. In-service teachers likewise agreed slightly ($M = 2.49$) that their use of PE Central resulted in provisional change in their classrooms, having had experimented with new practices, instructional approaches, lesson content, and classroom management strategies—

again, noteworthy because PE Central provided willing PE teachers with resources in a way that convinced them to at least try new practices. However, in-service teachers disagreed slightly ($M = 2.68$) that student engagement had increased in their classrooms as a result of PE Central. Similarly, in-service teachers disagreed slightly ($M = 2.74$) that their use of PE Central had resulted in permanent changes in their practices, attitudes, and beliefs in day-to-day teaching. However, teachers concluded that the ideas on PE Central had worked better than some of their earlier practices (Table 3).

Discussion

The purpose of this study was to describe (a) the nature of PE Central usage, (b) describe the satisfaction of pre- and in-service teachers who use PE Central, and (c) to assess the relationship of the site's resources to promote provisional teacher change, student engagement, and permanent teacher change as described in the GTC model.

Usage

Teachers from all groups (preservice, in-service, and nonresponding teachers) reported using PE Central monthly, on average. Considering that there are over 162,000 visits each month, it is clear that PE teachers are actively seeking out a source of readily available information to guide or supplement their practice. However, it is equally clear that these visits lack any systematic structure that could fully be described as *intentional* PD. Rather, teacher access to PE Central resources more closely reflect what Bechtel and O'Sullivan (2006) described as voluntary and disjointed—occurring at the teachers' convenience and according to their needs.

Satisfaction

Not surprisingly, frequency of use and satisfaction with PE Central were positively related to the manner in which the teachers used it. Most teachers from all groups indicated being more satisfied than not with the resources on PE Central, a notion supported by their frequent use of it. Armour and Yelling (2004) argued that effective PD provides teachers with what they need (i.e., satisfaction) by focusing on the delivery (Baranowski & Jago, 2005) and value

(Tozer & Horsley, 2006) of information provided. Likewise, Fejgin and Hanegby (1999) found that in-service teachers face difficulties accessing the type and amount of needed PD, and Ince, Goodway, Ward, and Lee (2006) added that PE teachers report lacking the knowledge and skills to access the technologies and implement the practices in their classrooms. Thus, satisfaction might increase if interactions with PE Central were evermore user friendly.

PE Central as a Source of Professional Development

The GTC scale was developed with the intention to assess teachers' use of PE Central in terms of Guskey's (1986, 2002) proposed framework of teacher change. Alphas confirmed internal consistency. Although we found no statistically significant differences when comparing beginning teacher, veteran teacher, and nonresponder results, trends in mean differences indicate a small effect among groups. Veteran teachers agreed more than not that their usage of PE Central had resulted in increased student engagement and permanent teacher change than did beginning teachers. Also notable, in-service teachers disagreed slightly that their usage of PE Central was resulting in permanent change, yet they agreed that ideas found on PE Central worked better than ideas they had implemented previously. This contrast in responses brings to light the difficulty in creating permanent teacher change related to teacher attitudes, beliefs, and practices (see Guskey, 1986, 2002).

As predicted by Guskey (1986, 2002), correlations suggested a moderately strong relationship among the variables within the GTC scale. It appears that as teachers increase their use of PE Central, they may begin to view the site as a PD source and subsequently may increase provisional changes, be more attentive to student engagement, and be more likely to implement permanent change. We suggest that teachers might be actively recruited and motivated to use PE Central more often if they could earn continuing education credits by doing so. As teachers visit the site more frequently, particularly in a structured, systematic fashion with a clear PD focus and sanctioned outcomes, PE Central may have more potential to result in teachers' change of attitudes, beliefs, and practices (see Guskey, 1986, 2002).

Implications for PE Central and Future Research

PE Central is currently serving its expressed purpose—a rich online clearinghouse of PE-specific resources. However, if PE Central desires to expand its already considerable reach, we suggest that it also consider its possible role as a source of PE-specific, online PD. PE Central's online presence and reputation could allow it to alleviate the all too common void of PE-specific PD available locally. We further suggest that an opportunity exists to provide a low-cost PD alternative to teachers and districts alike.

Such opportunities may include partnerships involving states or continuing education institutions as sources of teacher training. Although PE Central is not currently recognized by school districts and states as a source of PD, offering continuing education credits through partner educational institutions and state licensure programs may increase teachers' site usage and satisfaction. Therefore, we suggest that PE Central create a series of learning modules including providing teachers with accessible (Baranowski & Jago, 2005) and relevant context-specific topics such as assessment, management, and lesson ideas (Armour & Yelling, 2004).

If PE Central were to move in this direction, we would recommend that additional research into its form, function, and effectiveness accompany the endeavor. Perhaps, for example, the proposed relationship between the four stages of Guskey's model of PD could be examined to deepen understanding of the mechanisms of positive teacher change.

Further, we recognize the immense opportunity that PE Central faces—the creation of a virtual professional learning community facilitated by online affordances (e.g., discussion boards, resource files, suggestion box, management and instruction tips, lesson planning, support materials, research synthesis, and advocacy tips). In a virtual sense, PE Central has a greater reach than any of the local, state, or national PE organizations. We would encourage all like-minded entities and individuals to join in a mutually successful partnership (Carr, 2010; Carter, 2004; O'Sullivan & Deglau, 2006).

If, however, PE Central were to expand to become a more prominent PD source, it would need to "formalize" a PD program.

Although PE Central contributes to PD for PE teachers, recognition of PE Central as PD is not yet strong enough. Most teachers are continuing to use the site voluntarily as a resource of convenience (Armour & Yelling, 2004), with which most indicate a degree of satisfaction. The online resource of ideas and tools for PE teachers on PE Central could increase its incentives for teachers to access the site voluntarily more regularly.

Each state has its own requirements for relicensure of teachers. However, it appears that in most states, teachers may advocate for the PD of their choice by clearing a PD source with their school administrator. After communicating with a series of state offices of education, we found that most states agree that 1 hr of coursework is equivalent to 1 continuing education credit hour toward teacher relicensure.

When we informed PE Central of these findings prior to publication, they have embraced the idea and, in consultation with experts in the field, have since created a series of PD modules, along with offering continuing credits from an accredited partner university. It will be intriguing to see who joins this learning community.

We suggest that additional research be conducted to compare and contrast other PE-specific online resource sites. Unfortunately, that scale of an examination was beyond the scope of this study. It could be informative to examine similarities and differences among these sites and bring further insight to efforts to ensure that PE-specific PD needs are being met and that they are effectively transferred in support of improved learner outcomes.

Last, although confirming the validity of the GTC scale is beyond the scope of this study, we confirmed the reliability of the scale. Following a confirmatory factor analysis to assess the validity of the 16-item scale, we recommend using it to study a broader population of PE Central users. Additionally, schools or districts may use the instrument in their PD activities to assess the effectiveness of content and delivery of their programs (Armour & Yelling, 2004). Once a fully valid instrument is created, it could well serve to assess the effectiveness of traditional school- or district-wide PD efforts to facilitate meaningful teacher change.

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