Using IT for Information Seeking Behavior: Viewpoints of University Physical Education Instructors

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Abstract

Aim: This study investigated physical education (PE) instructors' attitudes and practices of information technology (IT) for information-seeking behavior (ISB).
Method: This cross-sectional study carried on eighty-eight PE instructors from three universities. The 36-item online questionnaire was designed electronically for measuring instructors' attitudes, IT use for ISB, and information-seeking (IS) methods. The analyses conducted for descriptive statistics involved reporting response frequency, percentages, means, and standard deviations for the attitude sections. Mean scores for attitude and use factors were used to conduct a two-tailed Pearson correlation analysis. SPSS-23 was used for analysis.
Results: The findings indicated that participants generally had positive attitudes about technology use for ISB. Significant relationship exists between participants' perceptions of relevance/importance of IT use for IS ($r = .565$, $p < .01$). Also, a positive correlation was found between instructors' perceptions of relevance/importance of IT and physical instructors' IS methods ($r = .536$, $p < .01$).
Conclusion: Based on the current study, physical instructors may be willing to apply IT for IS if given opportunities to participate in searching databases workshops and practice and utilize appropriate information resources.

Keywords: Physical education; Information-seeking behavior; Information technology

Technology is changing continually and raising new questions on using it in an effective, interactive, engaging, and integrated way in the classroom. Although education has been part of the new technology era for some years, the choice of using technology appropriately to develop effective information-seeking behavior (ISB) may be a difficult task for many instructors. The relative contribution of technology to information settings is still open to discussion, particularly concerning higher education (1-3).

An area in which technology has not become customary, yet has great potential, is ISB in physical education (PE). Although discipline-specific technology has been developed, generally, technology for information-seeking (IS) has not become commonplace in PE due to limitations like lack of training, personal comfort levels, availability of equipment, and space and time (4).

Physical instructors can integrate information technology (IT) for information seeking (IS) through a variety of approaches. Preparing, generating, administering, and reporting information such as fitness scores, class participation, or motor skill rubric grades for both students and teachers are completed more efficiently (5). In addition to everyday IT use, PE programs can be structured based on enhancing content-specific technology (6). As technology becomes increasingly available in universities, the necessity to examine usage, issues of quality, and attitude are of greater importance (7).

The influences on IT use involve both the structures of attitude and practice in IS. Beliefs and attitudes often account for a large part of the teachers' willingness or reluctance to use IT to meet their information needs. The formation of attitudes can provide an understanding of teachers' decisions and perceptions (8). Attitude may serve to explain the decisions instructors apply to IS and how they prepare to fulfill their information needs with technology (9).

Results from various studies have shown that physical instructors most often use IT for IS, yet their proficiency and integration levels are relatively low in general. Along with attitude, quality and quantity of IT training and workshops are strong predictors of the IT used for IS (10). Teachers' technical proficiency and frequency of professional application are significantly associated with their ISB (4). Additional factors that may influence IT to use include searching methods with which the user is comfortable and the ISB. Contextual factors can shed light on how teachers interpret their role, respond, and make sense of their ISB based on their conditions (11, 12). However, teachers may be constrained by factors such as access to equipment, training or workshops, personal comfort levels, availability of equipment, and time. Barriers within a teachers' context may hinder efforts and meaningful use even when IT's value for ISB is widely accepted by faculty (4, 13).

Several factors can help instructors decide when to use IT when planning for lessons and teaching. This study focused on four distinct variables about IS, including perceptions of relevance and importance of information technology, technology proficiency, the context, and methods. Identification of these variables provides valuable information for those working on curricular modifications, instructor training workshops, and professional expectations.

Method

Based on the literature review (4, 5, 9, 13), the 36-item online questionnaire was designed electronically and mailed for collecting data. The content validity was confirmed by experts (experienced university professors, library and information sciences professors, and educational IT programmers). A pilot study was conducted to approve the reliability of the questionnaire by 30 participants.

Items were initially clustered into four major factors, including (a) physical instructors' perceptions of relevance/ importance of IT for ISB; (b) physical instructors' IT proficiency for ISB; (c) contextual factors; (d) physical instructors' ISB methods; physical instructors' IT proficiency and use. Other survey items included demographical questions, IT usage, and awareness of IT equipment.

A 5-point Likert-type scale, ranging from strongly agree to disagree strongly, was used for the attitude section of the instrument.

SPSS-23 was used for analysis. Reliability and validity of the survey instrument scores were evaluated by comparing reliability scores with fit indices during the analysis. The alpha coefficient for the entire survey was calculated to be 90.7. Cronbach's alpha coefficient for inter-item reliability was reviewed at several points during data analysis. After working with items and factors to develop the most appropriate fit, the

final model consisted of 22 items separated into four factors.

Also, the Content validity resulted in a high percentage of agreement (x= 94%) by eight experts.

By convenience sampling, the participants in this study were 88 PE instructors from three universities: the Shahid Chamran University of Ahwaz, the University of Isfahan, and Shiraz.

The analyses conducted for descriptive statistics involved reporting response frequency, percentages, means, and standard deviations for the attitude sections. Mean scores for attitude and use factors were used to conduct a two-tailed Pearson correlation analysis. The use section, where individuals selected the frequency of use for IT-related tasks, was used for correlation statistics.

Results

The results are reported based on the factors affecting the ISB as follows:

Access to technology

University instructors (UIs) averagely have been provided an office computer and Internet access for the past seven years. Some (91.9%) of participants have Internet access at their home, 90% have Internet access in their offices, and 94.7% have Internet access to a university computer site. Barriers were reported in the survey of participants about IT use for ISB. They reported English language skills (81.7%) as the most profound barrier, followed by class size (48.7%). A list of barriers can be found in Table 1. Interestingly, if barriers were not a dilemma when using IT for ISB, 80 individuals (90%) agreed they would use information technology.

Table 1. Contextual Factors on participants' IT Use for ISB

Applicable Barriers	*N*	%	Most Challenging Barrier	*N*	%
English Language skills	72	81%	English Language skills	35	40%
Class equipment	43	48%	Class equipment	16	18%
Lack of training	35	39%	Lack of training	11	13%
Administrative support	21	24%	Administrative support	5	6%
Internet down/unavailable	15	17%	Internet down/unavailable	2	3%
Collegial support	11	12%	Collegial support	2	2%
Other	22	25%	Other	10	11%

Note. Instructors checked all applicable barriers, and the barrier was perceived to be most challenging.

ISB training/workshop

The majority of participants reported attending approximately 2-3 ISB workshops over the past year. Additional forms of training reported were self-taught skills, and some did not have any formal training. The highest responses to the specific type of training received involved basic computer literacy (78.8%) and basic information databases (77.5%) of those who had training. Less than half of the sample had training in specialized databases (46%) and IS training for curricula integration (36.6%). More than half of them reported receiving either a full day (35.9%) or multiple full/half days over several years (28%). Only 5.8% of instructors attended a full semester course in IS training.

IT use

Over 90% of participants use a computer for personal and professional work, the Internet and email, and the computer while at work daily. Approximately 78% of them use a computer daily at home. When calculating the number of instructors who give assignments that require technology use, serve on IT

committees, or review/select IT products, it was found that 70% or more occasionally or never do those things. About 60% of participants occasionally or never use a computer during ISB searching about PE, discussing information technology/Internet with other instructors, or help others use computers/ information technology. Around 48% of them occasionally or never use any IT to seek information about PE content. Over 75%, however, use a computer either weekly or daily for lesson preparation. More than half of these instructors use the Internet for ISB to acquire teaching resources and rely on IT for daily preparation or routine tasks at a weekly minimum.

Also, they were asked to report their perceived level of IT use in one or more areas using a progressive scale from 1 (little knowledge of IT use) to 9 (I apply IT throughout my curriculum). The 30.1% of them rated their IT level to be at the most extensive level. The majority, however, rank them toward the middle of the continuum where they believe that they use IT intermittently and for short-term or specified tasks only. At these levels, they are aligned with being fairly comfortable with IT use and are still in a preparation phase for more comprehensive IT for IS. They were asked to report their knowledge, accessibility, and IT use for IS about specific technology items. The results (Table 2) indicate that the most accessible piece of IT for PE instructors is the university website.

Note. Multiple responses were acceptable within the five categories for each item.

Attitude

Participants generally had positive attitudes about technology use for ISB in the PE context. The overall means for the factors revealed that the common responses to items were favorable, indicating instructors had a positive attitude. Means for each factor were reported using a scale of 1 (strongly agree) to 5 (strongly disagree) for responses and are presented in Table 3. Approximately 95% of instructors who participated in this survey indicated that IT can enhance the quality of ISB in PE. Around 90% of the instructors have increased their use of the Internet and the computer over the past three years and would like to learn more about and use IT for ISB. Instructors (82%) in this study indicated that they would consider IT for ISB when redesigning curriculum, and 57% responded to making an effort to apply IT for ISB in their current curriculum. Respondents (76%) revealed IT training as a positive experience, and 82% attempt to implement new IT once they learn it. Based on these figures, it is not surprising that the majority of participants (92%) expressed that they use a variety of ISB methods for students in PE class. Of the 88 participants, 34% indicated that they need help using IT, and 70% feel confident with their current abilities. Instructors (80%) expressed that using IT to seek information is enjoyable for them, yet 53% responded that technical problems and troubleshooting make them feel tense.

Table 2: The results of IT use variables based on clustering of it items by type.

Items	Knowledge	Accessibility	Confidence	Use for IS	Non-Use
Internet Related Databases	45.6%	29.2%	37.2%	20.5%	31%
General IT Software	48.1%	23.8%	35.1%	31.1%	27.8%
General IT Hardware	49.1%	28.2%	31.6%	20.6%	34.8%
PE Specific Computer Software	47.3%	18.7%	23.9%	21.1%	41.7%
PE Specific Hardware	50%	18.4%	30.6%	26.5%	32%

Table 3: Means and standard deviations for attitude items

Factors		*N*	Mean	SD
Perception of Importance/Relevance Mean= 2.05 SD= 0.37	Use IT for IS can enhance the quality of PE	87	1.52	0.67
	I use a variety of IS methods for students in the PE context.	87	1.79	0.74
	Having more IT available would increase my use when searching.	86	2.04	0.91
	After learning something about IT, I attempt to implement it.	87	2.11	0.77
	IT training for Info seeking has been a positive experience for me.	86	2.21	0.92
	I would consider IT for IS when redesigning my curriculum.	86	2.05	0.79
	I make an effort to apply a variety of IT for IS within my instruction.	85	2.60	1.06
IT Proficiency Mean= 2.46 SD= 0.54	I feel confident with my current ability to use IT for IS.	87	2.32	1.07
	Most IT is frustrating to use for me without help.	86	2.44	1.11
	Technical problems or troubleshooting makes me feel tense.	86	3.19	1.14
	Using IT to search is enjoyable for me.	87	1.90	0.90
Contextual Factors Mean= 2.69 SD= 0.61	I am expected to be knowledgeable in the uses of IT for IS.	87	2.02	0.91
	In my university, most instructors use IT when searching.	86	2.24	0.98
	I know of many PE instructors who use It to search.	87	2.82	1.10
	I have enough IT equipment appropriate for my IS practices.	86	3.79	1.17
	I can easily access IT resource personnel in my university.	87	2.61	1.19
	Administrators support the development of IT activities for ISB.	86	2.67	1.04
IS Methods Mean= 2.48 SD= 0.47	IT for IS takes time away from more important concerns.	86	2.49	1.03
	IT does not accommodate personal searching styles.	86	2.21	0.88
	It is difficult using different search methods to search PE.	86	2.68	1.13
	ISB affects my decision to use IT for IS in PE.	85	3.07	1.13
	Knowing searching methods promotes IS in PE.	87	1.93	0.89

* Physical Education (PE)-* Information Technology (IT) -* Information Seeking Behaviour (ISB) - * Information Seeking Behaviour (ISB).

This factor reported the lowest attitude of the four attitude factors based on mean scores. However, the mean score (2.69, SD=0.61) still indicates that instructors generally responded positively to these items. The results indicated that most participants (69%) use IT for IS. Around 80% of them believe they are expected to be knowledgeable in the uses of IT for ISB. As far as having enough equipment to accommodate for IS practices, only 29% of instructors indicated they do so. Approximately 60% of them can easily access IT resource personnel in their university. Some participants (62%) had many barriers that limit their use of technology for ISB.

Participants indicated (77%) that knowing searching methods promote IS in PE. Around 38% of them believe that IT for IS takes time away from more important concerns. Just 27% responded that technology does not accommodate personal searching styles. It was difficult for 31% of instructors to use IT to search for PE information, but 45% think that ISB affects their decision to use IT for Info seeking in the PE context.

Relationships among attitudes and IT use for IS

When examining the five factors, four for attitude and one for use, significant Pearson Product Moment correlations were found between all of the factors. Some relationships,

however, were stronger than others. The results indicate that a significant relationship exists between participants' perceptions of relevance/importance of IT use for IS ($r = .565$, $p < .01$). The factors of participants' perceptions of relevance/importance of IT for IS and instructors' IT proficiency were positively correlated ($r = .549$, $p < .01$). A positive correlation was found between instructors' perceptions of relevance/importance of IT and physical instructors' IS methods ($r = .536$, $p < .01$). Moreover, a strong relationship exists between instructors' IT proficiency and IT use for IS ($r = .516$, $p < .01$).

Discussion

About instructors' attitudes and IT use for ISB

Results indicated that participants tended to be experienced instructors who frequently use the computer and Internet for general purposes. Attitude has been associated with both searching experience and years of computer experience (16, 17). Positive attitudes toward IT use for IS are linked with the amount of IT experience an individual attains (6, 18). It is not surprising that the participants in this study demonstrate characteristics that directly relate to attitude outcomes. Positive attitudes and experience, however, do not necessarily translate into IT use for ISB. Participants perceived a high expectation to use IT for ISB, yet expectations may not be realistic if they face implementation challenges.

Identified challenges like English language skills, class equipment, and lack of training and workshops certainly inhibit the IT use to seek information about PE. Multiple barriers seem to pose integration difficulties for instructors based on the results of this study, and other studies have reported similar findings with instructors in other fields (4, 16, 19).

When looking at the barriers of IT use for ISB in this study, the most outstanding factor is the dominance of English language skills. Therefore, more emphasis must be placed on improving English language skills to not create an effective barrier in its use, and more Persian information material and databases in the PE context must be available at the university.

Concerns about equipment result in the ability to purchase desirable equipment and software to use for ISB. The amount of equipment UIs require for maximal student searching parallels their IS practices. The average number of computers located in computer sites does not allow IT integration using computer programs for ISB. Accessibility of other tools in university was low and reasonably affected the low percentage of use for searching. Barriers reported in the literature were consistent with those reported by instructors in this study (4, 16, 19), which stated that instructors find English language skill concerns as most problematic, which led to limited equipment and/or resources. Constraints on use certainly affect the extent to which instructors can use IT for ISB, regardless of their attitude. Due to the cessation of use by barriers, it may be wise for universities to advise both candidates and practitioners who need to seek information about their careers to combat costs and devise alternative means to increase their IT accessibility and/or functionality.

The results did not show a strong indication that instructors are aware of other physical instructors who use IT for ISB. Instructors typically interact most with physical instructors in the same university or district, so they are likely to have limited resources for IS. This can influence the use of IT for ISB by the participant as use by other physical instructors can directly affect an individual's views and behaviors (19). Instructors using IT for ISB do not mean that they use it positively or productively. More exposure, however, could be a beneficial subsidiary. Interestingly, PEUIs reported being familiar with other instructors outside the PE

context who use IT for ISB to a much greater degree. IT use for ISB in PE is being accepted at a generally slow rate, so it is practical to investigate why this is the case (4, 6).

About IS training and workshops

IS training was predominantly a positive experience for instructors, and although the quality of the training was not examined, instructors were likely to hold a positive attitude about IT when their training experiences for IS were positive. Quality of training and workshops like searching in PE-related databases encourage meaningful use (6). Several participants reported self-taught skills, which likely require a great deal of practice time. Those who have high computer skills tend to spend twice as much time working on computers for ISB in university as other instructors. It is clear from the literature that if there is an expectation for UIs to use IT for ISB, it is critical to start IS training and workshops during pre-service fieldwork (4, 10).

IT use for IS

The participants had an overall positive attitude about IT use for ISB. The results demonstrated that if instructors with positive attitudes have more access to information technology, they will likely use it for ISB about PE. If instructors with poor attitudes have access to information technology, it is unlikely they will use IT for ISB because an instructors' decision typically reflects their feelings over simply having the equipment available (13, 18, 19). The amount of IT use can depend on an individual's purpose and available equipment (4). The most frequently used items are computers, email, and the Internet, so most UIs are likely to use these items for personal use or teaching preparation and not for instruction.

PE instructors did not seem to continue using IT for ISB after attending, so lack of peer support may have affected low IT usage for ISB in university. The attendance at IT workshops for the participants in this study also did not dictate IT use by physical instructors for ISB, class assignments, or homework. Attending workshops does not guarantee that instructors will use IT for ISB (4, 10).

About instructors' attitudes toward IS

Participants acknowledged a willingness to use IT for ISB. This is in line with previous studies showing that perceived value and relevancy of IT use for IS affecting instructors' use (17-19). Theoretically, individuals were expected to use information that reinforced previous choices, opinions, and attitudes. This study supports this theory since these UIs tended to have a greater inclination to use IT, and they stated that this technology helped them find the information they needed. Other research has demonstrated that the main requirement for ISB is for instructors to have a philosophy of adapting their ISB strategies to the differing needs of their class and students (4). Thus, participants' beliefs influence IS practices.

About relationships between use and attitude

There was a positive relationship between the factors of IT use and participants' attitudes about IS. Among the factors for attitude and IT use, the strongest correlations were found between IT use and participants' perception of importance/relevance of IT for ISB and between IT proficiency and participants' perception of importance/relevance of IT for ISB. Positive attitudes about IS training tend to lead to IT use, whereas increased use encourages improved technical proficiency (4). Positive attitudes about the value of IT and IS can be related to the amount of training and workshops an individual participates in and increases use as both attitude and proficiency are positively correlated with amounts of training or workshops (4, 10). Therefore, the results indicate that IT training and higher levels of computer skill competency were associated

with positive attitudes about IT use for IS for instructors who used computers for personal use (2, 4). In this study, almost 92% of participants reported using a computer for personal use, and about 78% use a computer at home. Therefore, previous research would support that participants are likely competent in their computer skills.

The priority of IT for IS depends on instructors' decisions about the degree of applicability of IT and usability of PE information databases (4, 10). PE instructors' application of IT is effective when they are interested in developing technology integration for IS within curricula (20). Participants had an interest in using IT to seek information. For curriculum and teaching to be influenced by IT, it will take more than instructors' interest. However, being interested in the topic does not seem to be a challenge to overcome for these individuals. In general, as IT use increases, most instructors become interested in learning about instructional uses of IT for IS because they recognize its value (6). PE instructors' perceptions of the relevance or importance of IT for IS in curricula have been shown to predict computer use (4). It was not unexpected; therefore, the overall positive attitude of participants extended into an inclination to consider courses to teach searching information in databases during curriculum changes.

It is important to understand what They think to develop instructor training and workshops, curriculum plans, and teaching tools to increase and improve their use of IT for IS in PE. If it is deemed desirable for physical instructors to integrate IT into their IS, an analysis of instructors' feelings and contextual factors influencing use is necessary. PE instructors in this study expressed positive attitudes toward seeking information, even though they are reported IT use was not prominent. It is promising that PE instructors are likely to learn and apply IT for IS if allowed to prepare themselves and if supplied with appropriate resources. Although these instructors are confident about their skills and perceive IT use to be important for IS, increased usage of IT during IS process PE is not likely, unless implementation and facilities barriers are removed. These findings are very much supported by other literature and are likely that most UIs will be challenged with barriers when attempting or continuing to integrate IT for IS (4, 20). Some barriers involve equipment like internet access or availability of computers, or training limitations. The main concern is that PEUIs prepared to face these barriers are more likely to overcome them by signing in IT workshops and database searching workshops.

Conclusion

This study found that what PE instructors think about IT use for IS and how they are currently using IT through a reliable and valid instrument designed from the theoretical framework. These findings are similar to past research in other areas of education; however, PE has discipline-specific challenges. These challenges make it necessary to pursue this initial investigation with PE as a unique context. This study has added to the body of research regarding conditions for IS and provides further knowledge of attitude components and current practices about physical instructors' views and IS practices.

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