The Complexity of Online Discussion

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Abstract

This paper reports on a study that examined the National Association for Sport and Physical Education (NASPE) discussion forum. The study's purpose was to observe emergent phenomena within this discussion forum. Additionally, the study provided an assessment of these emergent phenomena and their effects on the overall survival and sustainability of this discussion forum. Examinations of participation, discussion topics, and discussion content were examined through the lens of complexity theory. Through this lens, emergent behaviors could be observed that indicated the NASPE forum had undergone extraordinary changes over the course of its operation. These changes included a dramatic drop off in participation, striking shifts in discussion topics, and fluctuating trends in discussion content. Overall, data demonstrated that this discussion forum underwent evolutionary adaptations in order to survive. These adaptations, however, were found to promote counterproductive discussions as a cost of survival. The study provides a cautionary tale of the application of discussion forums in physical education, and the need for continued examination and careful implementation of this technology.

Keywords: complexity theory, online discussion, emergent behavior, physical education

Introduction and Literature Review

It is widely recognized that practitioners of a given profession have a type of knowledge that is difficult to attain without practical experience. The notion of on the job training, internships, and student teaching are based on the principles that one must learn certain activities by doing. Practitioners, however, are rarely given the opportunity to share their experiences with a large audience. Often these professionals are resigned to discussing their practice with co-workers, creating a homogenous environment for instructional method development. Collaboration among colleagues and the establishment of communities of practice among a broad number of practitioners can provide a rich shared repertoire among professionals (Wenger, 1998). Collaborative environments may also allow insights that may not be available to a practitioner working without such collaboration. The field of physical education is particularly prone to having practitioners who are isolated in their school or separated by great geographical distance (Heider, 2005). Collaborations among physical education teachers may be limited to simple phone calls or to state or national professional conventions. With this in mind, the Internet has given rise to the possibility that professionals from around the world can meet and collaborate in real time. This has opened a larger world of collaboration to physical education instruction.

Internet discussion forums allow users from around the world to participate in discussions concerning current issues (BulletinBoards.com, 2011). Moreover, this type of collaborative environment allows other

key stakeholders to become part of these discussions. Parents and students alike can take part or become familiar with current issues in physical education. In many ways, these discussion forums provide communities of stakeholders a group location in the virtual world. For example, Wenger (1998) outlined how these communications can allow for the development of a regimen of competence through situated learning. In addition, some authors have discussed the ability of the existing computer globalization infrastructure to produce online communities of practice (Dubé, Bourhis, & Jacob, 2005; Hara & Hew, 2007; Murillo, 2008).

Online discussion forums allow participants to post inquiries about concerns they have within the context of the discussion forums' scope (BulletinBoards.com, 2011). Other users on the online discussion forum can post answers or solutions to the original inquiry. In general, three distinct display formats are used for online discussion forums: (1) non-thread; (2) semi-thread; and (3) fully-threaded (BulletinBoards.com, 2011). The non-thread format is used for posting statements, and no replies are allowed. This is not a discussion forum because communication occurs in only one direction. The semi-thread format allows for the creation of discussion topics or questions; these are referred to as discussion threads. Users create a topic thread and can provide a prompt for information. Users of the discussion forum are then free to reply to the topic thread, thereby creating a discussion. Discussions on semi-threaded formats are grouped into one conversation bundle, which consequently does not allow new topics to be explored. This limits participants in a semi-threaded discussion forum to the original topic of discussion within each thread. Finally, fully threaded format discussion forums allow for the authoring of topic threads and the expansion of those topics by other users. Members on a fully threaded discussion forum can create their own discussion trajectories within the original discussion thread (BulletinBoards.com, 2011). The fully threaded format allows for the nesting of responses as new areas of interest emerge out of the original author's thread.

Regardless of the format, online discussion forums provide a medium for collaborative efforts (BulletinBoards.com, 2011). These collaborations are achieved through the posting of inquiries for the solicitation of discussion. Typically, threads prompt replies through the posting of questions, statements, or even electronic documents explicitly intended to stimulate discussion. This prompt-and-response mechanism could be considered a central premise of computer-mediated communication. In addition, this mechanism allows for a network of communication to be established through the continual process of prompts and replies (BulletinBoards.com, 2011). Discussions through computer-mediated communication have been examined through content analysis and have been the topic of several investigations (Hara, Bonk, & Angeli, 2000; Marra, Moore, & Klimczak, 2004; Pena-Shaff & Nicholls, 2004). Social network analysis of online discussion forums has also become an area of great interest over the past 20 years (Garton, Haythornthwaite, & Wellman, 1997). However, despite extensive review no literature could be located that examined, through either content or structural analysis, computer-mediated communication in physical education.

Several discussion forums are currently available for physical education professionals. Prominently, the National Association for Sport and Physical Education (NASPE) discussion forum is one of the longest running physical education related online discussion forums. Additionally, Facebook and Twitter also have recently become popular media for the discussion of physical education issues. While currently online communications are somewhat widely available for physical educators, few discussion media have been in operation for more than five years (PE Central, 2012). Essentially, the application of this technology for professionals in physical education remains in its infancy.

Complex Adaptive Systems

Complexity theory has become increasingly utilized to explain emergent behaviors of complex adaptive systems (CAS) (Davis & Simmt, 2003; McMurtry, 2008). CASs are comprised of agents acting in a self-organized fashion to produce system behaviors. One of the major concepts within the study of CASs is that complex systems are more than the sum of their component parts (Morrison, 2008). The networked interaction among agents thus becomes an area of great interest within CASs. Furthermore, along with the study of complexity, networks have become a ubiquitous facet of science; nearly every level of the natural world has a systematic and networked existence. Networks are becoming increasingly visible even in chaotic systems like weather patterns and insect swarms (Davis & Simmt, 2003; McMurtry, 2008).

Similar to natural systems, computer-mediated communications, have a networked and systematic structure. Open systems, like the NASPE forum, allow an exchange of information among agents from

within the system and with the external environment. It is through these exchanges that agents within the system tend to self-organize and produce emergent behaviors that allow the system to adapt to its environment (Morrison, 2008). Discussion forums like the NASPE forum promote the exchanging of information among agents. Additionally, the open nature of the NASPE forum allows for the addition of new agents. It is for these reasons that discussion forums can be viewed as CASs. The present study will allow for a greater understanding of how discussion forums in physical education might adapt and how the adaptations might promote collaboration among professionals.

Networks

The prevalence of network research has allowed several methods for the systematic analysis of interacting networked components to be developed. In social network analysis, this examination is concerned with interactions between network agents (Freeman, 2004; Knoke & Yang, 2008). A network examination of the NASPE forum would assess prompting and reply network relationships between participants. Individuals on the NASPE forum elicit information from other users; in turn, participants attempt to answer the questions, and thus, network bridging between participants is established. These interactions allow the determination of network connections between individuals who communicate through the NASPE forum. These communications can be illustrated through the development of sociometric graphs.

Sociometric graphs illustrate network actors as vertices and edges (Wasserman & Faust, 1994). Vertices are the representation of individual participants and edges illustrate the connections or bridges between these participants. Through algorithmic analysis of complex networks, like the NASPE forum, key actors can be determined and identified; this process is known as the determination of centrality. A prominent form of centrality analysis is betweenness centrality (Hansen, Shneiderman, & Smith, 2011; Knoke & Yang, 2008). This analysis identifies those members in a network who facilitate the shortest pathways, or shortest geodesic distance, between nodes within a network (Brandes, 2001). As such, the identification of these members becomes important in the understanding of the functioning of any given network.

Background and Purpose of the Study

The NASPE forum is an online discussion forum that has been in operation since early 2004. This forum has been widely promoted by PE Central, a physical education professional development website, which has been in operation since 1995 (Manross, 2009). The format of the NASPE forum is semi-thread. The first level of this discussion forum is the topic grouping; these topic groupings are predetermined by the NASPE forum staff and are hardwritten into the website. Consequently, the topic groupings are not modifiable. A potential participant selects one of these topic groups, which encompass broad themes related to physical education, health, sport, and related areas. Once the participant chooses a group in which to participate, he or she is given the option of authoring a discussion thread or replying to other users' threads in the chosen topic grouping. All contributed information for each thread is displayed.

The semi-thread structure of the NASPE forum is essentially a communication network. Specifically, the prompting-and-reply between participants establishes a network of communication and information exchange. The network established through the NASPE forum has two distinct traits. First, participants are continually added over the course of the forum's operations. Participants are free to join throughout the life of the discussion forum. Secondly, information about participant contributions is displayed throughout the message-forum website. Participants are able to see which threads or topics are the most heavily trafficked. In network analysis, these two traits indicate that the network formed by the NASPE forum is a scale-free network. In scale-free networks, members can join throughout the network formation process (Amaral, Scala, Barthélémy, & Stanley, 2000; Barabási & Albert, 1999). As a result, older members are able to accumulate more interactions over time while new members are limited in their total interactions by the lack of time they have spent in the network. This phenomenon of early membership accumulating more communications explains why scale-free networks typically display a power-law distribution (Amaral et al., 2000; Barabási & Albert, 1999).

CASs produce, through their self-organization, emergent behaviors that arise in an effort to allow the systems to survive. Though systems strive for survival, in many cases systems fail to produce successful emergent behaviors. This study sought to examine the NASPE forum to examine any emergent behaviors that have arisen during the course of its operation. Specifically, this study sought to determine emergent behaviors, which may have assisted in either the success or failure of the NASPE discussion forum as a CAS.

Methods

Data Collection

This study examined the NASPE discussion forum through the lens of complexity theory. Specifically, this theoretical framework necessitates the examination of agents within the CAS, and system behaviors over time. The study employed a case-study methodology that incorporated various aspects of quantitative and qualitative analysis. First, usernames, posting dates, posting topics, and thread titles were collected through copy and paste extraction, insuring accuracy. These data were used to understand agent interactions within the NASPE discussion system. Second, researchers undertook an extensive content gathering effort. Collection of content data was achieved by extracting messages manually, from the discussion website, through copy and paste from threads on the NASPE forum. Copy and paste allowed for the identical replication of words appearing on the discussion forum for verbatim coding of posted information. In an effort to isolate threads that contained two-way discussion, only threads that contained four or more messages were considered for data analysis. In all, 452 threads met this selection criterion. Each extracted discussion thread was saved in its own Microsoft Word document to allow ease of filing and later coding. Content data allowed for the description of emergent behaviors within threads. Third, network data were extracted by documenting connections between users. These interactions were expressed as simple dyadic relationships. These dyadic relationships represented the prompt-reply mechanism of the NASPE discussion forum and were subsequently used for later network analysis.

Data Analysis

Data analysis took place in three phases. First, participation data were descriptively analyzed. Second content analyses were performed to examine any emergent content behavior that may have occurred. Finally, a network analysis was conducted to examine changes in network behavior over the operation of the NASPE discussion forum.

- *Descriptive statistics.* The authors performed a descriptive statistical analysis of participation patterns during the course of the forum's operation using Statistical Package for the Social Sciences (SPSS) version 17. This analysis examined the frequency of contributions for each participant, total participation for the NASPE forum per year, and participation trends for topic grouping.

- *Content analysis.* Content data were analyzed using a coding system developed by the researchers. This system used the paragraph, for each message on the discussion forum, as the level of analysis. During development of this coding system, the researchers attempted to create categories, which were easy to code with the least amount of subjectivity. Additionally, faculty in physical education at the University of North Dakota were consulted during the development of this coding system to have a wide range of perspectives on the type of posts within this discussion forum. The following categories emerged as a product of the development process: (1) Prompting Questions; (2) Prompting Statements; (3) Prompting Events; (4) Response with Opinion; (5) Response with Practical Knowledge; (6) Response with Digital Artifact; (7) Off-Topic Comment; and (8) Miscellaneous Comment. It was the researchers' determination that this coding system constituted a system that was both simple enough to be used reliably and specific enough to capture all posting types on the NASPE forum.

- *Reliability of the coding system.* In an effort to establish reliability of the coding system, inter/intra-rater reliability was calculated for coding. In the current study the first researcher took the primary role of coding all 452 threads, while the second researcher assisted in the establishment of inter-rater reliability. In an effort to establish inter-rater reliability, 10% of the 452 threads were randomly selected for coding by both researchers. Inter-rater agreement was found to be 81% with a Kappa coefficient of .768. Additionally, the first researcher coded the randomly selected 10% one additional time in an effort to establish intra-rater agreement, which was found to be 78% with a Kappa coefficient of .743. These percentages of inter/intra-rater reliability as well as Kappa coefficients represented a "substantial agreement" between observers, indicating that this coding system was reliable for the determination of posting types on this discussion forum (Landis & Koch, 1977).

- *Network analysis.* Network data were analyzed using NodeXL. This program uses data gleaned from interactions and allows for the creation of sociometric graphs (Hansen et al., 2011). In order to give an accurate illustration of interactions within this network, all threads that contained only

one message were eliminated from the compiled network. This action was taken because by definition these threads did not represent a valid network connection. Additionally, all anonymous messages were eliminated from the data, as they could not be conclusively attributed to any one author within the network. As such, these anonymous messages could not be considered to give an accurate portrayal of their contribution to the overall network. The elimination of single-message threads and anonymous messages allowed for a clearer and more accurate image of the interactions in this network. After this process, 1,382 participants were left for a complete network analysis.

Additionally, NodeXL allowed for a centrality examination of NASPE networks, making possible the determination of betweenness centrality for all vertices in the message-forum network (Hansen et al., 2011, Knoke & Yang, 2008). The current study employed Brandes's (2001) algorithm through NodeXL as a means by which to calculate betweenness centrality for each of the vertices in the message-forum network (Hansen et al., 2011). After betweenness values were assigned to each vertex in the network, the most influential vertices could be determined.

Results

Participation

The NASPE discussion forum produced 5,038 messages between the years of 2004 and 2010; 1,567 individuals posted these messages. However, 88 participants had posted anonymously which prevented accurate tracking of these participants; as a result, these participants were dropped from analysis. Consequently, the remaining 4,950 messages posted by 1,479 individuals became the focus of the present study. Descriptive statistics demonstrated that during the seven years of operation, participation peaked in 2006 and dramatically dropped to a plateau in 2008, 2009, and 2010. Illustrated in Figure 1 are participation statistics for years 2004 through 2010.
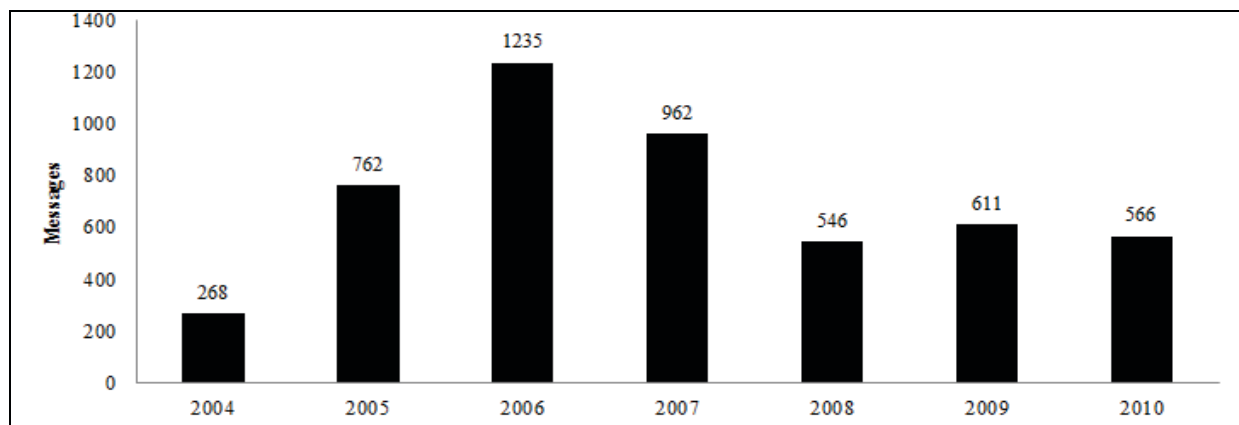

Figure 1. *NASPE forum participation by year*

Interestingly, 653 of the 1,479 participants posted only one message between the years of 2004 and 2010. These participants represented 41.7% of the total participants over the seven-year period. When single participation was examined by year it was found that in 2004, nearly 47% of NASPE discussions only posted once in 2004 and never contributed again in any of the preceding years. An interesting trend emerged in this data: periphery participation (only posting once) reduced by an average of 31% for each year the forum was in operation. Consequently, in 2010 only 3.9% of participants were periphery members (see Figure 2).

Topic Trends

Topic participation was also analyzed using descriptive statistics. This analysis allowed a view of the most used discussion topics. Of the 29 topic forums supported by the NASPE discussion forum, seven represented nearly 75% of overall activity, leaving 22 topic forums that only represent 25% of the overall postings. The seven most used discussion forums were: (1) Coaching and Sport; (2) Elementary Physical Education; (3) Health, Fitness, and Nutrition; (4) Middle/JH Physical Education; (5) Secondary Physical

Education; (6) Sport, Activity, Dress Code; and (7) Technology in Physical Education. Displayed in Figure 3 are the overall forum topic statistics.
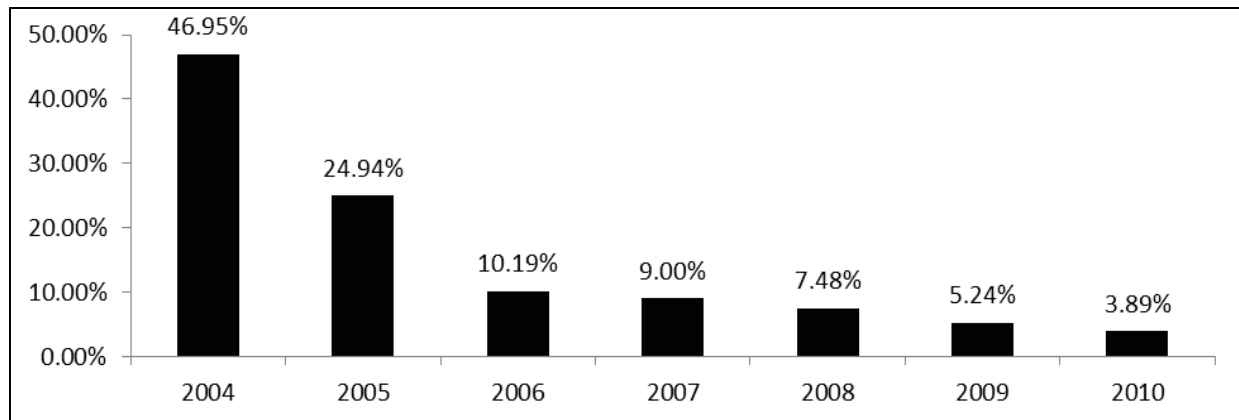

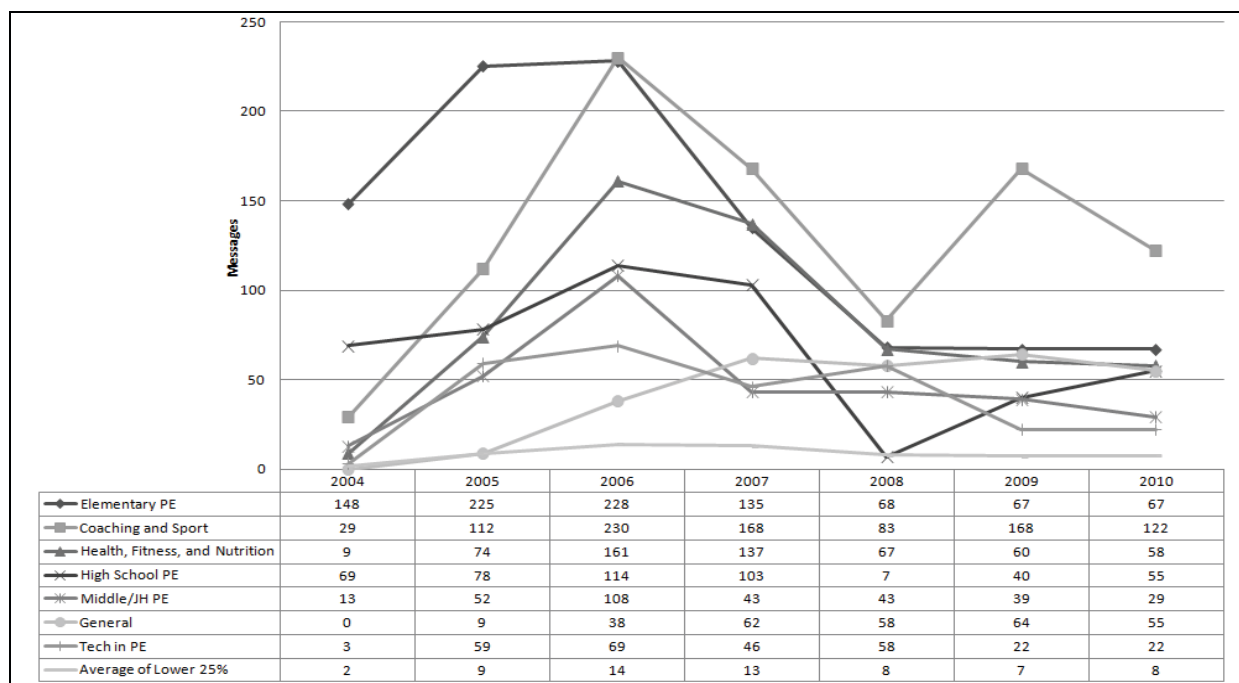Figure 2. *Periphery participant single-post percentages by year*

Figure 3. *Thread topic usage by year*

Year-by-year analysis revealed variations in discussion topics over the course of the discussion forums operation. One of the more notable variations in discussion participation was the increase in coaching and sport discussion as other discussion topics seem to drop and stabilize. This finding is even more profound when examining the topics of Elementary, High School, and Middle School PE. These three topical groupings went through a spike in participation followed by a sharp decline and stabilization; however, coaching and sport discussions did not totally follow this trend.

The NASPE Network

Analysis revealed that this discussion network consisted of 1,382 vertices, with the largest single component consisting of 1,349 connected vertices. In total, 97.6% of all participants had some communication traceable to other members within the network. The average geodesic distance was four linkages between participants, while the largest geodesic distance was 10 linkages.

- *Central network participation.* Betweenness centrality was used to determine the most central participants in the NASPE discussion network. Additionally, the top 10 most central participants were determined for each year of forum operation. This process allowed the authors to determine if central participation changed from year to year or remained stable. Data for the most central participants is illustrated in Figure 4. Data indicated that during 2006 and 2005 between 40% and 50% of the most central participants were central members in previous years. The percentage of repeated central participation decreased to 30% in 2008 and 20% in 2009, and subsequently spiked in 2006.
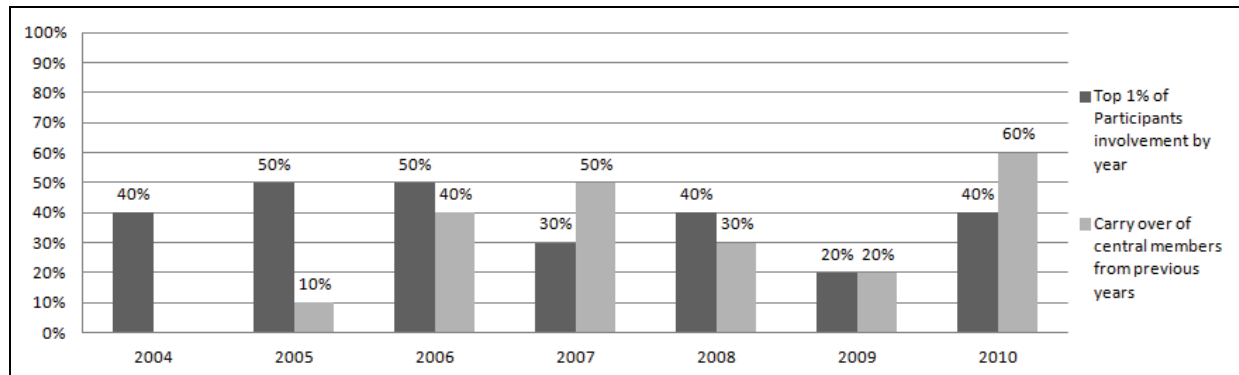

Figure 4. *Central participation/membership; top 1% involvement and carry over*

Finally, the NASPE discussion network for the entire seven years was examined through the development of a skeletal network based on the top 1% of overall participants on the NASPE discussion forum. This skeletal network represented the most central social structure existing in the NASPE forum. The process of finding this skeletal network entailed "peeling" away less central members from the network, based on betweenness centrality. After peeling away 99% of the less central membership, the resultant skeletal network consisted of 14 participants. These 14 participants represented the most central members in the network for the entire seven years of NASPE forum operation. This skeletal network is illustrated in Figure 5.

These overall central participants were compared with each year, to determine the percentage of each year's top 10 most central participants that were composed of the overall 1% of most central members. Results showed that for the years of 2004, 2005, and 2006 between 40% and 50% of their top 10 most central members were also identified as being in the top 1% of the most central participants to the overall NASPE network regardless of year. This percentage dropped to between 30% and 20% between 2007 and 2009 and spiked to 40% in 2010. These percentages are illustrated in Figure 4.

- *Content analysis.* Data analysis of the discussion forum content revealed that overall 12.2% of all posts were comprised of prompting questions. Prompting statements represented 4.2% of postings. Events were only posted 0.1% of the time on the NASPE forum. Unsupported opinions represented 37.9%, while practical experience comprised 33.4% of all posts. Posting of instructional artifacts constituted 6.1% of discussion posts. Finally, 1.1% of postings were off task, and 5.1% were miscellaneous. Additionally, content were analyzed by year; these data are displayed in Figure 6. From these data, it became obvious that unsupported opinions showed an upward trend during the seven years of NASPE forum operation while practical experience demonstrated an overall downward trend.

Discussion

Complexity theory explains that CASs will self-organize and produce emergent behaviors that subsequently adapt to the environment in which they exist. These adaptations are produced in an effort to promote survival. When examining a system like the NASPE forum, emergent system behaviors become of extreme importance, in examining successful and detrimental adaptations.

In the case of the NASPE forum the directors explicitly state that the "NASPE forum offers a convenient way to discuss topics in depth with others who share similar interests." By this assertion, success or

survival simply would mean the NASPE forum's ability to elicit discussions and maintain a participant base that is regularly active in discussion. However, a caveat to this success might be "meaningful" discussion. Quite simply, are the discussions professionally appropriate, and is the forum producing discussions that assist practitioners? Further, this caveat may in fact be a way of detecting the eminent demise of the NASPE forum, in that if discussions become unhelpful or unattractive participation will die off and consequently discussions will end. In the following sections, observed emergent behaviors of the NASPE forum will be discussed.
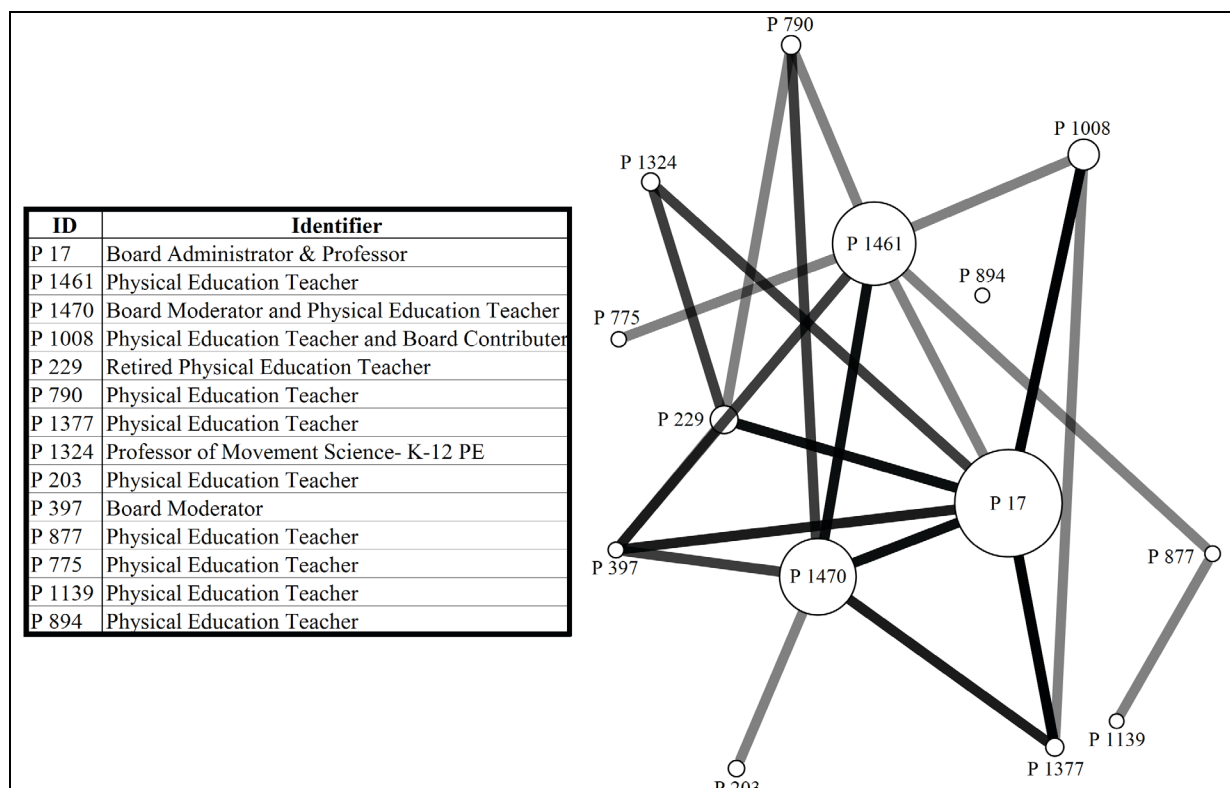

ID	Identifier
P 17	Board Administrator & Professor
P 1461	Physical Education Teacher
P 1470	Board Moderator and Physical Education Teacher
P 1008	Physical Education Teacher and Board Contributer
P 229	Retired Physical Education Teacher
P 790	Physical Education Teacher
P 1377	Physical Education Teacher
P 1324	Professor of Movement Science- K-12 PE
P 203	Physical Education Teacher
P 397	Board Moderator
P 877	Physical Education Teacher
P 775	Physical Education Teacher
P 1139	Physical Education Teacher
P 894	Physical Education Teacher

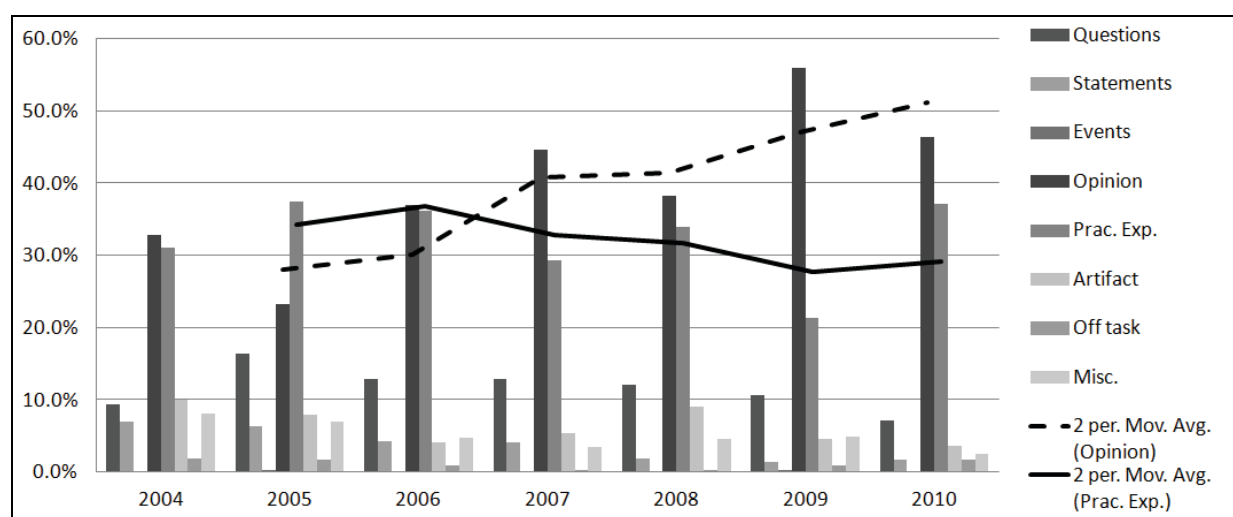Figure 5. *Skeletal network based on betweenness ranking*

Figure 6. *Content analysis of discussions by year*

Emergent System Behaviors

Three distinct system behaviors were examined in this study. First, participation was observed by descriptive analysis. Social network analysis was also used in the effort to describe participation. Second, discussion topics were examined for the seven years of NASPE forum operation. Finally, discussion content was examined. Through these observations, emergent system behaviors were detected. Specifically, a shift in discussion, shifts in central participation, and shifts in content were all observed.

- *Participation shifts.* The first and most obvious shift in participation occurred between the years of 2006 and 2008. During this time, there was a dramatic drop off in overall participation. This dramatic drop was subsequently met by a stable state. This drop off resulted in a 66% decline in participation. Additionally, following this large drop off in participation, central membership varied wildly. Central participants for the entire seven-year period were less involved in individual years after the dramatic collapse of discussion. Additionally, crossover central participation diminished, meaning that central participation cycled frequently in the preceding years. Finally, peripheral participation declined steadily. With this drop in peripheral membership, discussion participants during the final three years of operation participated in extra multiple discussions, indicating that this discussion forum was actually recruiting fewer new participants. These findings demonstrate that participation patterns changed dramatically.

  Through the lens of complexity theory, these findings suggest that a major system change occurred after 2007. It is possible that this adaptation enabled the NASPE discussion system to stabilize, however, also become stagnate. Quite simply, systems that do not change, adapt, or create new behaviors atrophy and die (Morrison, 2008). A sudden drop in participation could have prompted a system adaptation enabling the NASPE forum to still produce discussions and maintain participation. Systems often experience wild turbulence that gives rise to new system behavior (Doll, 2008). A 66% drop in participation may have been the turbulence that was necessary to elicit dramatic system change. However, the observation of participation fluctuation and variable participation patterns only hint at a system change. In order to further examine systematic changes, the functioning of the agents within the system need to be observed. These observations can provide a valuable insight into the changes that occurred during the operation of this system. In this case, the functioning of the agents within the NASPE discussion system is characterized by the topics they discussed and the content of their discussions.

- *Shifts in discussion topics.* In the case of the NASPE forum, it could be expected that discussion topics would remain somewhat stable; however, in the case of the NASPE discussion system this was not observed. There was a shift in discussed topic behavior in that the NASPE forum in its initial years often produced discussions about physical education. These were primarily centered on elementary physical education during the years of 2004 and 2005. In these years elementary physical education was twice as likely to be discussed as any other topic. Starting in 2007, however, coaching and sports were discussed to a greater degree. This could mean that, either the same participants were discussing new topics or new participants were entering the system and changing the discussion. Essentially, the latter was found; carry over central participants varied wildly and overall central participants were less active during the years of 2008 and 2009. These findings suggest that the NASPE discussion forum was attracting participants who wanted to discuss athletics and sport rather than physical education. Additionally, peripheral participation was steadily decreasing, indicating that the discussion forum was recruiting fewer new participants, which could have subsequently added to a growing stagnation of discussion.

- *Shifts in discussion content.* A vast amount of the content examined for the NASPE forum was unsupported opinions, and related practical experience. Obviously, a discussion that espouses practical experience may be of higher quality to a discussion forum. The reason for this is that practical experience can add to the discussion and allow a group of professionals to develop group knowledge, based on real world experience. Typically, practical experience may be seen as better building blocks for group learning as opposed to unsupported opinions. A major finding in this study was that starting in 2006 unsupported opinions began an upward trend, while discussions espousing practical experience began a downward trend. These data once again support the assertion that there was system turbulence, followed by an emergent system adaptation, which resulted in the behaviors, which were observed after 2006. This system started producing fewer discussions, became stagnate, shifted topics, and began accumulating more

and more unsupported opinions. The content findings alone indicate that the NASPE system was under distress. It started producing lower quality discussion, and servicing a differing population.

The NASPE Discussion Forum as a Complex Adaptive System

These data support the notion that discussion forums can produce conversations that espouse practical experience. However, this case also demonstrates that they can degenerate into a system state that harbors less quality discussion. Data support the assertion that in 2006 at the height of this system it was producing discussions that contained a large quantity of both practical experience, as well as unsupported opinions. After this time, the system lost participants and discussions became more highly opinionated without support of practical experience. Further, discussions trended toward sport and athletics away from what had previously been discussions centered on physical education. Through the lens of complexity theory, these data indicate that some environmental change occurred, and as a result, emergent behaviors that allowed the system to survive arose. The issue with this discussion forum is that the observed emergent behaviors were not necessarily beneficial to physical education as a discipline. Promoting discussion that only elicits unsupported opinions is not necessarily as productive as discussions about practical experience. Overall, the NASPE discussion system seems on the precipice of collapse. It can be asserted that the system, while maintaining a level of survival, is not producing meaningful discussion, and as such is not a benefit to the profession of physical education.

CASs resist predictability (Davis & Simmt, 2003), and this is the inherent problem with discussion forums; their trajectories resist prediction. These systems will produce emergent behaviors that allow for the systems existence (Morrison, 2008). In the case of the NASPE discussion forum, it is obvious that within a few years this system could face its eminent demise. Interestingly however, the system has staved off its demise and stabilized at a low but stable participant base, entering what seems to be a stage of equilibrium. The major question, though, is, "Does this discussion forum in its current equilibrium help physical education as a discipline?"

Conclusion

Discussion is an important part of developing new skills and understanding our world. Within physical education, discussion could be a great asset in the development of effective teaching methods. The advent of the Internet has provided a new and exciting outlet for these discussions, however, as this study has shown, using discussion forums as a form of professional enrichment may be a dubious challenge. Simply put, the trajectory of discussions are not predictable, and when allowed a system will produce emergent behaviors that will alter the functioning of the system in order to allow the system to perpetuate. The issue is that this survival may come at the cost of our overall goal for the system. A professional discussion forum has the purpose of producing discussion that will aid practitioners in their daily practice. However, as the NASPE discussion forum has demonstrated, these systems may produce emergent behaviors that are less professionally beneficial in an effort to aid in the survival of the overall system. This study provides a cautionary tale about the limits of this technology. In the future, methods of top down control within online message forums that nurture the emergence of beneficial system behaviors need to be explored. Overall, the application of this technology in physical education is in its infancy; accordingly, it is necessary to take baby steps in order to assure that this technology is able to become an asset to physical education.

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