

THE EFFICACIOUS RESPONSES OF UNIVERSITY STUDENTS DURING A SEASON OF SPORT EDUCATION

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ABSTRACT

The purpose of this study was to examine the influence of the Sport Education Model (SEM) on students' physical self-efficacy (PSE), perceived physical ability (PPA) and perceived self-presentation (PSP) in physical education. Two intact heterogeneous university classes were engaged in 16 lessons of a volleyball unit, using either the SEM or Traditional approach (Skill-Drill-Game). Data were collected using a pretest/posttest design measuring PSE, PPA and PSP. Analysis of data utilized three separate repeated measures ANOVA calculations. Results indicated significant increases in PPA for students engaged in the SEM.

Keywords: Curriculum Models, Physical Self-Efficacy, Instructional Models, Volleyball

INTRODUCTION

From a social cognitive perspective, self-efficacy is an interdisciplinary concept associated with an individual's conception of ability to successfully change or continue a desired behavior (Bandura, 1977). Accordingly, perceptions of self-efficacy have been associated with a variety of behaviors including, but not limited to effort and perseverance (Bandura, 1986). Behaviors such as effort and perseverance are important student characteristics in physical education, especially since literature has identified a lack of student involvement, boredom and desire to quit during lessons as problem-

atic (Himberg, Hutch-inson, & Rousell, 2002; Siedentop & Tannehill, 2000). McAuley and Blissmer (2000) suggest that examination of self-efficacy within an activity setting, such as physical education, should focus on the concept of physical self-efficacy (PSE). PSE refers to one's confidence in situations that require physical ability (Ryckman, Robbins, Thornton & Cantrell, 1982), as in sport, games and physical education. Accordingly, psychology related research in physical education would benefit from studies focused on implementation of instructional approaches which can positively influence PSE. The Sport Education



Model (SEM) with goals “to educate students to be players in the fullest sense and to help them develop as competent, literate, and enthuseiastic sportspeople” (Siedentop, Hastie, & van der Mars, 2004, p.7) could be an effective instructional approach in crea-ting an environment for facilita-ting student’s PSE. To assess this we examine the influence of the SEM on students perceived PSE. In order to do this, we will first discuss the self-efficacy framework used to inform this study and then explain the SEM in relation to PSE.

Self-Efficacy Framework

Self-efficacy is grounded in the original works of Albert Bandura (1977). Of importance to this study is the literature which illustrates how individual’s perceptions of efficacy are developed or enhanced. Accordingly Bandura (1977; 1986) proposed four themes for influencing self-efficacy: past performance, vicarious experiences, social persuasion, and affective state. Past performance is influenced through interpretation of previous performance or mastery experience. To further explain mastery

experience, students will engage in activity, interpret results of their actions and deduce individual capabilities. As a result, students will develop individual beliefs to continue or engage in similar activities.

Vicarious experiences occur when a student observes significant others performing a task. Students who are uncertain about their abilities (e.g. limited experience) use others as a source of measuring adequate performance. Commonly termed “modeling”, students look for others as a measurement gauge. Students will diagnose their abilities through evaluation of similarities with others. For instance, a female student will rate her level of efficacy when observing another female student effectively perform a volleyball spike. In this case, the student uses the success demonstrated by another female as her judgment of success. Observing successes of models contributes to students’ beliefs about their capabilities. Exemplifying vicarious experience can be viewed as a student who rationalizes behaviors through an “I can do it because he/she can do it” attitude.



Social persuasion is influenced through exposure to verbal judgments of others. Effective persuasion must facilitate student beliefs that he / she can achieve and be successful. For instance, social persuasion occurs when a teammate, who a student values, makes a positive comment such as “that was a perfect forearm pass”. It should be noted that persuasion should be meaningful to the student and not an empty inspiration (e.g., good job).

Finally, affective state is a student’s emotional state influenced by mood, arousal and stress. Students gauge their confidence within a setting by the emotional states they experience. For instance, strong emotional reactions facilitate anticipated success levels and trigger mood responses (e.g., increased heart rate). Positively influencing the affective state is to reduce the negative emotional responses through creating a caring and inclusive environment (Bandura, 1977; 1986). It is the combination of these four aspects that influence an individual’s overall level of self-efficacy.

Facilitation of self-efficacy is a global concept in which the four

themes proposed by Bandura (1977) work within a variety of contexts (e.g. health care, sport, etc.). As such, translating the global aspects of self-efficacy into a context specific setting (i.e. physical education) should be meaningful and relevant (McAuley & Mihalko, 1998). Within physical education, physical self-efficacy (PSE) is highly regarded as an appropriate lens to investigate perceived efficacy (Ryckman, et al., 1982; McAuley & Mihalko, 1998).

Physical Self-Efficacy

PSE refers to one’s confidence in situations that require physical ability (Ryckman, Robbins, Thornton & Cantrell, 1982), such as in sport and physical education. High levels of PSE have been linked with students reporting increased levels of effort and engagement within activity even when confronted with adversity (Schunk, 2005). In addition, aspects influencing PSE have been identified as physical self-presentation (PSP) and perception of physical ability (PPA) (Ryckman, et al., 1982). PSP refers to the confidence an individual has in displaying his/her physical skills and presenting him/herself to others (Gayton, Matthews, &



Burchstead, 1986). For instance, a student who possess a high level of PSP will be feel more selfassured about his/her appearance of being successful, thus will be more likely to engage in activity. The next aspect, PPA, reflects the competence an individual has in performing tasks using physical skill (Ryckman, et al., 1982). For example, while playing a game of volleyball, students must execute a variety of skills (e.g. forearm pass, set, spike, serve, etc) to effectively perform. Each student possesses a level of confidence in performing a distinct skill. If a student's level of PPA is high, s/he will feel more confident and competent in performing such skills. PSP, PPA and PSE are important psychological aspects which guide activity-related behavior, thus no one measure should be deemed most important (Ryckman, et al., 1982). Thus providing students with educational experiences which assist in the development of PSE remains important. A model of instruction within physical education that provides support for PSE through alignment with Bandura's (1977) themes is the Sport Education

Model (SEM) (Siedentop, 1994; Siedentop, Hastie & van der Mars, 2004; Kinchin, 2006).

Sport Education Model

Kinchin (2006) offers a complete review of the features, goals, and research outcomes related to the SEM. To date, no studies have specifically examined the SEM in relation to efficacious responses of students. Of importance to this study is the SEM literature which demonstrates a connection with Banduras' (1977) themes for facilitating efficacy (i.e. PSE, PPA and PSP).

Physical education experiences using traditional approaches have provided many students with negative experiences and perceptions (Lake, 2001). Negative perceptions have been facilitated through focus on elite competition and highly-skilled students, which tend to marginalize many (Lake, 2001). Within the SEM, unlike other approaches, Siedentop (1994) acknowledged this concern and believed it was important to provide students "an authentic sport experience" beyond that of effective game play. Accordingly, students and teachers have



reported the effectiveness of the SEM as influencing a variety of performance related to cognitive, psychomotor and affective learning (Wallhead & O'Sullivan, 2005; Kinchin, 2006). For instance, students perceive an enhanced level of skill development and knowledge of sport (Pritchard, et al., 2008) within the SEM when compared with traditional approaches. In addition, Alexander et al. (1993) found significant skill development for low-skilled students through a widespread implementation of the SEM in Australia. Previous SEM literature indicates that, although prior experiences cannot be changed and are beyond the scope of this current study, experiences within the SEM may contribute to positive performances within the unit.

Vicarious experiences are influenced by providing students opportunities to witness and experience success (Bandura, 1986). Opportunities for success within traditional sports teaching have been relegated to game play which commonly highlights the highly-skilled student (Lake, 2001). In the SEM, chances for students to witness and experience success involve what

Siedentop (1994) identified as providing a more robust educational experience that includes aspects such as game play, diverse roles, fair play and sportspersonship. Notably traditional approaches toward sport prioritize game play and may implement aspects of fair play or diverse roles, but not to the degree or level reported within the SEM (Siedentop, Hastie & van der Mars, 2004). As such, students in the SEM become more engaged in both game and non game play related roles (Hastie, 1996).

Social persuasion within the SEM can be influenced through implementation of key features such as team affiliation and fair play (Siedentop, Hastie & van der Mars, 2004; Kinchin, 2006). MacPhail, et al. (2004) reported team affiliation as facilitating higher levels of communication among peers due to an increased focus on the team. Within a team, students must utilize effective communication to aid in overall team success, due to the need for all teammates to contribute (e.g. completion of diverse roles) and engage within each lesson (Hastie, 1996; Alexander, et al., 1993). Social aspects, such as



team affiliation, provided within the SEM have accounted for students perceiving an increased sense of inclusion of less-skilled (Clarke & Quill, 2003) and greater socialization between students (Carlson & Hastie, 1997). In addition, students perceive implementation of fair play and sportspersonship guidelines as critical for facilitating positive social peer interactions (Hastie & Sharpe, 1999) and feeling comfortable to voice relevant opinions within a sporting context (O'Donovan, 2003).

Providing a sense of caring and inclusion within an educational environment is crucial for developing and supporting positive affect (Bandura, 1977). Accordingly, the SEM maintains the importance of consistent teams for the length of the season, which tends to reinforce the sense of caring and family (Carlson & Hastie, 1997; MacPhail, et al., 2004). Students have reported feelings of inclusion as high-skilled students appreciate the involvement of the lower-skilled (Kinchin, 2001) and lessable (Clarke & Quill, 2003). In addition, at-risk students who engaged in the SEM learned to act in a

personally responsible manner, reducing the feeling of fear which tends to separate students within a physical education setting (Hastie & Sharpe, 1999).

SEM literature indicates support of student efficacy through Bandura's (1977) themes, yet further investigation is needed. The review of literature has demonstrated how an inference can be made that engagement in the SEM can facilitate outcomes associated with high levels of PSE (e.g. positive interaction, inclusion), yet no evidence to date on PSE, PPA or PSP measures have been examined. It should be noted, that this study is solely focused on the underpinning of self-efficacy and not the specific outcomes related to efficacious behaviors (e.g. effort). In addition, the use of post secondary students is important as it is likely their final physical education experience aimed at promoting a physically active lifestyle. Examination of PSE may help physical educators understand the psychological influence of the SEM. Therefore the purpose of this study is to examine the influence of the SEM on student's PSE, PPA and PSP in physical education. It is



hypothesized that students engaged in a season of the SEM will significantly improve their level of PSE, PPA and PSP when compared to the traditionally taught course.

Method

Participants & Setting

Students within this study were university students (N=80) enrolled in one of two sections of a three-credit physical education course. The university is a liberal-arts college that required students to enroll in one semester of physical education to complete their degree. Each section was assigned to one of two treatment groups; Traditional (N=40; Male=30, Female=8) or Sport Education (N=40; Male=32, Female=8). Classes met twice per week for 50 minutes. During the 16 week course, students were exposed to an eight week unit each of volleyball and basketball. For the purpose of this study, data were collected during the volleyball unit which was conducted during the initial eight weeks of the semester. The teacher utilized within the study was the same for both classes. He possessed twelve years of

teaching experience. In addition, he was a high school (Year 9-12) volleyball coach with 15 years experience which provided an extensive level of sport-specific content knowledge.

Teaching Models & Implementation

Before beginning the study, both researcher and teacher collaborated to develop block and lesson plans for each class (SEM and Traditional), aligning each lesson focus to alleviate any issue associated with delivery of different volleyball content. Investigating the experiences of students with different models of instruction utilized guidelines outlined in previous work examining the SEM and traditional approaches (Browne, Carlson & Hastie, 2004). Table 1 provides information about the volleyball units using both approaches. Class lessons were videotaped and analyzed on a daily basis to check for (a) implementation which aligned with both teaching approaches and (b) to identify and alleviate any crossover teaching (e.g., implementation of aspects of the SEM in the traditional class).



Traditional Model. The traditional approach implemented structured lessons focusing on teaching game related skills (e.g. forearm pass, set). In addition, lessons utilized teacher developed warm-up activities; skill-related practices and finished with game play. Games were designed around “real volley ball” using six players per side and did not provide any rule modifications. Team members changed on a daily basis and allowed students to work with different peers. It should be noted that students were placed into a round robin tournament starting at lesson 12, which required assignment of students to team for the final five lessons. Team and individual statistics were not required or recorded within each lesson. The only information recorded was wins and losses during the final round-robin tournament. Games were self-officiated with the assistance of the teacher when conflict arose.

Sport Education Model. The season of volleyball followed a three section format beginning with development of games skills, followed by team game play and

concluding with a postseason tournament. Beginning skill lessons were primarily teacher-led with the focus on developing students’ skills (i.e. forearm pass, setting, etc). In the first segment of the SEM, the teacher reviewed the responsibilities for each role (e.g. captain, scorekeeper, duty team, official, and equipment manager) using a team contract. Individuals signed the contracts and earned points for effective completion of their responsibilities. Section two provided students with court setup, leading team practices and inter-team play. During this phase of game play, students developed a fair play / sports personship rubric. Assessment of teams and players focused on fair play in combination with game play and completion of responsibilities. The postseason phase of the SEM included a round-robin schedule for team competition. The final day included a championship game followed by an awards ceremony.

Verification of implementation

Verification of implementation began with identification of key components of the SEM (e.g. record keeping, affiliation) and



traditional approach (e.g. skills, drills and daily games) within each lesson (Siedentop 1994; Siedentop et al., 2004; Browne et al., 2004). Each aspect identified before the lesson was listed in a journal and checked off when implementation was observed within the lesson. In addition, components of the SEM were documented and reflected upon during post-lesson interviews and planning. Aspects of the SEM and Traditional approach are displayed in Table 2.

A secondary interrater reliability check was conducted through a review of six video-taped lessons, by the researcher and an individual unaffiliated with the research study. Results of the reliability checks indicated that all concepts developed and identified were implemented thus supporting implementation of the SEM (99%) and Traditional approach (98%).

Measurement of Physical Self-Efficacy: Perception of self-efficacy was assessed using the Physical Self-Efficacy Scale [PSES] (Ryckman, Robbins, Thornton & Cantrell, 1982). PSES requires subjects to respond to a 22-item questionnaire, which

provides three scores for each participant; Physical Self-Efficacy (PSE), Perceived Physical Ability (PPA) and Physical Self-Presentation (PSP). Answers are scored using a 6-point Likert scale ranging from 1= "strongly disagree" to 6= "strongly agree". Participant scores for each scale are calculated through summation of responses for each subscale (i.e. higher scores were associated with higher perceptions of efficacy). PPA is comprised of 10-items (e.g. because of my ability, I have been able to do things which many others could not do) with a range from 10-60, PSP has 12-items (e.g. sometimes I don't hold up well under stress) and provides a range from 12-72, while PSE is a summation of all questions and ranges from 22-132. A modification was made to the original PSES, as participants were required to answer each question as they related to their perceptions of volleyball. McAuley and Gill (1983) indicated the PSES possessed satisfactory validity and reliability within a physical activity setting.

Procedure & Data Collection: Before beginning the study,



permission was granted from the university Internal Review Board and all participants provided informed consent. All student information was kept confidential through the use of random identification numbers developed through a random number generation program. Use of two intact classes created an issue related to randomization of groups, which required the use of a non-equivalent design (Campbell & Stanley, 1963). Assignment of classes was conducted before the beginning of the study by a graduate student in physical education unaffiliated with the research.

Dependent variables were PSE, PPA and PSP and were assessed using a pretest/posttest design. Data were collected with the administration of the PSES on the second day of class. Participants completed the PSES in a classroom setting which required fifteen minutes for completion. During the next eight weeks, students were exposed to one of two models of teaching volleyball. Upon completion of the eight week volleyball unit, students completed the PSES for a second time. During the administration of the PSES,

students were instructed that the information provided would be used to help develop the physical education experiences and survey responses would have no impact on their course evaluation.

Data Analysis

Initial Analysis

Raw score data were entered using a third party and double-checked for accuracy before completing all calculations. Data were analyzed using SPSS 15.0.01 (SPSS, Chicago, IL). Reliability analysis was conducted using the Cronbach alpha calculation and deemed acceptable at or above the .70 level (Nunnally, 1978). Next, descriptive statistics (Mean and Standard Deviation) were calculated for both groups (traditional and SEM), measures (PSE, PPA and PSP) on pretest and posttest scores.

Change in PSE, PPA and PSP

The primary research question examined whether the PSE, PPA and PSP responses of students in the SEM would be larger than students engaged in the traditional class. Three separate repeated measures ANOVAs



for each dependent variable (i.e. PSE, PPA and PSP) were calculated. Due to the use of multiple ANOVA calculations a Bonferroni level adjustment was conducted and accepted at or below the .017 level. The focus of the ANOVA calculations were a significant (Group X Time) interaction effect. In addition, due to the use of intact classes homogeneity of groups was examined using the Levene test for equality.

Results

Table 3 provides results of the alpha analysis and descriptive statistics for the SEM and traditional approach on both pretest and posttest data. In addition, the lack of significance on each Levene test and the high degree of similarity of pretest means for PSE, PPA and PSP provides support for equality of means between groups.

Repeated measure ANOVA calculations revealed significant main (Time) and interaction (Time X Treatment) effects for PPA (Time) $F(1,38) = 47.05$, $p \leq .0125$, $\eta^2 = .556$, PPA (Time X Treatment) $F(1,38) = 14.06$, $p \leq .0125$, $\eta^2 = .270$ with students involved in the SEM demon-

strating higher posttest scores when compared with students in the traditional group. In addition, results indicated a lack of significance in regards to perceptions of PSE (Time) $F(1,38) = 3.99$, $p \geq .0125$, $\eta^2 = .323$, PSE (Time X Treatment) $F(1,38) = 1.174$, $p \geq .0125$, $\eta^2 = .030$ and PSP (Time) $F(1,38) = .020$, $p \geq .0125$, $\eta^2 = .001$, PSP (Time X Treatment) $F(1,38) = 2.28$, $p \geq .0125$, $\eta^2 = .057$

Discussion & Conclusion

The purpose of this study was to examine the influence of the SEM on student's PSE, PPA and PSP in physical education. Results showed students engaged in the SEM reported higher levels of PPA than students in the traditional approach. On the contrary, students engaged in the traditional sport approach did not demonstrate any significant change on all three efficacy measures. In addition, no significant changes were revealed within either group for PSE and PSP. Finally, Levene test results indicated no significant group differences on all three pretest scores, which is important due to lack of randomization of students within each instructional approach.



The SEM effectively brought about positive changes in students' self-perceptions of physical ability within a sport-based physical education class. This further illustrates the positive potential the SEM has on teaching sport within physical education (Pritchard, et al., 2008; Browne et. al, 2003; Wallhead & Ntoumanis, 2004; Kinchin, 2006). From a self-efficacy perspective, there is a strong correlation between levels of self-efficacy and increased levels of effort, competence and engagement (Bandura, 1986; 2000). Accordingly, the significant changes in perceived efficacy are supportive of previous SEM literature that revealed students reported higher levels of effort (Wallhead & Ntoumanis, 2004; Carlson & Hastie, 1997; Alexander, et al., 1993), perceived competence (Browne, Carlson, & Hastie, 2004) and engagement in activity (Strikwerda-Brown & Taggart, 2001; Hastie, 1996, 1998, 2000; Bennett & Hastie, 1997). On the contrary, these results differ from the study conducted by Wallhead & Ntoumanis (2004) who found a lack of significant change of male students' perceived competence within a basketball

unit using the SEM. Wallhead and Ntoumanis (2004) attributed the lack of significant change to the limited exposure with the SEM (i.e. nine lessons). These conflicting results illustrate the need identified by Siedentop (1994) in providing sufficient time for students within a sport-setting to grasp and understand the key features of the SEM. The process by which students adopt and integrate the learning experience created through engagement in the SEM can be heavily influenced by exposure (i.e. time). It should be noted, that students come to class with a variety of sport experiences that primarily focus on the elite or competitive form. As such, transformation of students from the elite mindset into a pedagogically appropriate and educationally rich sport experience may require more than a single season.

Students within the SEM demonstrated significant changes in their PPA in comparison to students exposed to the traditional approach. As such Moritz, et al. (2000) found that using appropriate efficacy measures (i.e. PSES within sport context) provides strong alignment with



actual performance. This study is the first examination of efficacious student responses within the SEM, as such an inference can be made that changes in PPA are supportive of previous literature revealing students developed higher levels of sport-related skills compared to other sport-based teaching approaches (Hastie & Trost, 2002; Ormond, DeMarco, Smith & Fisher, 1995; Hastie, 1996; Alexander, et al., 1993). For example, Hastie and Trost (2002) found that both high and low skilled students increased their ability to perform discrete skills during a unit of floor hockey. In addition, Pritchard et al., (2008) found that student's experiences within the SEM contributed to significant gains in actual game performance of volleyball. While skill and performance is not the sole learning goal of the SEM, previous exposure to volleyball inside and outside the educational setting may have focused on skill and game play. In addition, the use of modified games may have provided increased opportunities for students to develop their performance as games players and in turn their perception of ability.

Students within both approaches demonstrated a lack of change associated with PSP. Plausible reasons for the lack of change can be attributed to a weak relationship between PSP and PSE (Motl & Conroy, 2000) and the structural features of the SEM which focus more on the team and classmates (MacPhail et al., 2004; Siedentop, 1994). Motl and Conroy (2000) suggested that the measure of PSP has a weak influence on overall efficacy within a sport context, due to the increased focus on aspects such as skill development and execution within game play. As such, results provide further evidence of this claim, as PPA significantly improved without a significant change to PSP. As supportive of the latter claim, MacPhail, et al. (2004) suggests that the pedagogical aspects and features of the SEM allow students to invest more in the team and team identity than the individual. Accordingly, the concept of team in the SEM may have down-played the focus on presentation of the student (e.g. how will the student look when they try to perform a forearm pass during a game) and more on the success of the team.



The results of this study indicate that the key components of the SEM contribute to the development of positive self-efficacy in university students. Although infusion of a formal competition may have emphasized game play performance (e.g. winning) and in turn veered student focus away from other relevant aspects of the SEM (e.g. fair play). Increased emphasis on winning has the potential to align with traditional sport experiences which do not provide support for self-efficacy identified by Bandura (1977; 1986). The SEM is multidimensional (e.g. six key features), which is beneficial for the teacher who may emphasize one aspect, such as fair play, more than another to meet the educational needs of his/her student populations. From a self-efficacy perspective, teachers need to be cognizant and implement all SEM features to attempt in alleviating the desire of students to focus solely on winning during game play.

Although this study has contributed to the literature on how a unit of the SEM can facilitate positive psychological self perceptions, there were some limitations. The first is the small

sample size of two intact classes with group sizes between 19-21 students. A simple two group design does not provide robust data to generalize across diverse settings. There is also a concern associated with the limited exposure to the SEM. Longitudinal studies need to begin addressing aspects of model novelty and continuous maintenance or improvement of physical self-efficacy. In addition, implementation of the SEM with a population of university students is important as this could be the final physical education experience. Interventions that promote efficacious change may be better suited for younger ages, where the research supports the notion that early habits are more likely to continue throughout a lifetime. Despite the limitations, results of this study have shown that the SEM has many features which possess the potential to facilitate positive efficacy within physical education.

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