

# Students' Autobiographical Memory of Participation in Multiple Sport Education Seasons

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This study examines the recollections of the Sport Education experiences of a cohort of students (15 boys and 19 girls) who had participated in seasons of basketball, soccer and badminton across grades six through eight (average age at data collection = 15.6 years). Using autobiographic memory theory techniques, the students completed surveys and interviews that asked them to recall what they remembered about the Sport Education seasons in which they had participated. Student responses were mostly from the “general” and more precise “event specific” levels of recall, and their strongest and most detailed memories were of those features that provide Sport Education participants with what is termed authentic experiences. For example, Sport Education was considered different from regular physical education in that it was more serious and organized. Further, students claimed they had a deeper understanding of these sports as a result of their participation, and in particular, as a result of their officiating roles. The findings provide evidence that the features of affiliation, authentic competition and perceived learning that students find so attractive, last well beyond initial exposure to the model, and that future delivery of the model should strongly adhere to these basic tenets.

**Keywords:** sport education, physical education, autobiographical memory theory

The Sport Education curriculum and instruction model was designed to provide positive sporting experiences for children and youth in school physical education (Siedentop, Hastie, & van der Mars, 2004). With its aim of producing competent, literate and enthusiastic sports players, the model has been trialed in a number of settings including Australia (Alexander, Taggart, & Luckman, 1998; Alexander, Taggart, & Thorpe, 1996), New Zealand (Grant, 1992), the United States (Hastie, 1996, 1998a, b, 2000), the United Kingdom (Kinchin, Quill, & Clarke, 2002; Wallhead & Ntoumanis, 2004), and more recently in Korea (Kim, Penney, Cho, & Choi, 2006) and Russia (Sinelnikov & Hastie, 2008). The model has also been investigated with different age groups, including elementary (e.g., MacPhail, Kirk, & Kinchin, 2004), middle and secondary (e.g., Brunton, 2003; Carlson & Hastie,

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1997) and university aged students (Bennett & Hastie, 1997). Moreover, while most seasons have focused on invasion games such as basketball (Wallhead & Ntoumanis, 2004) and hockey (Hastie, 2000), there have also been instances where other activities such as dance (e.g., Richardson & Oslin, 2003) or fitness activities (e.g., Hastie, Sluder, Buchanan, & Wadsworth, 2009) have served as the content.

The summary of research on Sport Education (see reviews by Wallhead & O'Sullivan, 2005; and Curtner-Smith & Sofo, 2004) demonstrates that Sport Education is particularly effective in two areas. These are (i) facilitating student engagement within student-centered learning tasks of the curriculum, and (ii) promoting personal and social development in the form of student responsibility, cooperation and trust skills. It is important to note however, that in nearly all cases of the reported research, the participant students were engaged in their first experiences with Sport Education. While this does not diminish the value of these findings, these papers do not allow us to make judgments concerning Siedentop's long-term implications for participating within the model. Siedentop lists these as the "contribution to a sound, sane and humane sport culture that maximizes participation" (Siedentop, 1994, p. 5). The purpose of this study then, was to examine students' recollections of their participation in Sport Education over an extended period of time. From these recollections, we might be better able to gauge whether students in Sport Education have developed a sense of themselves as competent, literate and enthusiastic sportspeople, which Siedentop et al. (2004) note are prerequisites for the achievement of ambitious goals of Sport Education.

## Theoretical Framework

The theoretical framework in which this study is grounded is autobiographical memory theory. Autobiographical memory is the memory for the events that occur in one's life (Conway & Rubin, 1993). The distinction between autobiographical memory and other types of memory is conceptualized through understanding that autobiographical memories are linked to a specific time and place (Rubin, 1986; Tulving, 2002). Burt (2008) describes autobiographical memories as temporally definable since they can be dated ("when it happened"). The temporally definable feature of autobiographical memory makes it easy to distinguish from other memories. Another critical concept of autobiographical memory theory is the notion that autobiographical memories are related to the self and have personal significance (Conway, 2005; Conway & Rubin, 1993). The relational nature of the self and autobiographical memories is important because "autobiographical memories define who the person is, rather than what they know" (Burt, 2008, p. 124).

According to Cohen (1996), autobiographical memory has six functions, namely, (1) the construction and maintenance of the personal identity, (2) mood regulation, (3) the development of friendships and relationships, (4) problem solving based upon previous experiences, (5) shaping likes, dislikes, enthusiasms, beliefs and prejudices, based on remembered experiences, and (6) helping to predict the future. For this study, the focus was on the fifth of these functions, that is, investigating the attraction or distaste of the students' experiences with Sport Education.

Conway and Pleydell-Pearce (2000) note that autobiographical memory operates on three levels of specificity. The first includes "lifetime periods," that is memory about the duration of a certain period and thematic knowledge about

common features of this period. These periods can last a number of years (such as in this case, from grades 6–9). The second level includes “general events” that are either repeated or single events that may last for days up to months (such as a specific Sport Education season). The third level includes “event-specific knowledge” that provides information exclusive to a single event lasting seconds or hours (such as a particular Sport Education lesson or event). As van den Hoven and Eggen (2008, p. 435) note, event specific knowledges “are often accompanied by ‘images that pop into mind’ and are presumably used to convince listeners that the speaker really remembers.”

Studying autobiographical memories from adolescent years seems to be particularly fruitful, since there is a tendency to recall more autobiographical memories from the teenage years (Conway, 1992; Conway & Rubin, 1993; Fitzgerald, 1988; Nelson, 1993). The degree of specificity observed in adolescence may also be greater than in adulthood (Swales, Williams, & Wood, 2001). This is attributed to significance of events occurring during adolescence in terms of personality, social development, and self-concept formation (Conway, 1992; Fitzgerald, 1988; Nelson, 1993).

van den Hoven and Eggen (2008) note that research on autobiographical memory is principally based on a methodology where participants deliberately recall personally experienced past events in response to a particular word or phrase provided by the experimenter (the so-called word-cue technique; see Conway & Bekerian, 1987; Rubin, 2005). Alternatively, participants may be asked to recall their most vivid or most important memories (Rubin & Kozin, 1984; Rubin & Schulkind, 1997). The critical point is that autobiographical memory represents interpretations or meanings of experienced events (Conway, 1990).

## Method

### Participants and Context

The participants in this study were 34 students (15 boys and 19 girls) from a school in Central Chernozem region of Russia. At the time of data collection, the students were in the ninth grade (average age = 15.6 years) and had participated in seasons of Sport Education each year since the sixth grade. Each season lasted for one academic quarter (18–20 lessons) with lessons taking place twice per week. The remainder of the physical education units and lessons were taught using the traditional multi activity model. The class remained as an intact cohort throughout the years (which is typical for Russian schools) and the only change was the attrition of one student who transferred after grade 6.

All students participated in three seasons of Sport Education (basketball, soccer and badminton). Although team membership changed each season, consistent with the affiliation postulate of Sport Education (Siedentop et al., 2004), students remained on the same team during each Sport Education season. However, since the sporting context was different each year, and students had varying skill proficiency levels in each of the contexts, each season began with team selection procedures that followed Siedentop et al.’s (2004) recommendations.

Across the years, the nonplaying roles of the students within the seasons were expanded and less time was dedicated to the explanation of the model and its features

in subsequent seasons. Table 1 provides a summary of the students' experiences within the various seasons. School physical education teachers trained in using Sport Education taught students in grades six and seven and visiting teachers also experienced with the model taught the students in grade eight. Each season followed the format suggested by Siedentop et al. (2004) and was organized around the model's six central features (seasons, affiliation, formal competition, record keeping, festivity and culminating event).

**Table 1 Team and Duty Team Roles Across Sport Education Seasons**

Grade	Content/ team size	Season length/ Number of 45 min. lessons	Team roles	Duty team roles
6	Basketball (4–5 per team)	18	Coach Statistician Equipment manager	Referee Scorekeeper
7	Soccer (5–6 per team)	18	Coach Statistician Equipment manager T-shirt designer	Referee Scorekeeper
8	Badminton (4–5 per team)	20	Coach Strength & Conditioning coach Statistician Equipment manager Awards committee member	Referee Scorekeeper Timekeeper Ball retriever

## Data Collection

Data concerning the students' responses to and recollections of Sport Education were gathered through surveys and interviews. These surveys and interviews took place in the gymnasium where all Sport Education seasons were conducted. This was done in accordance with the encoding-specificity principle (Tulving, 1983) which suggests that memory is easier to retrieve if the physical context during retrieval is (at least partly) the same as the physical context during encoding. The memory cues used were stimulus phrases such as "sport education" and "physical education." Since a combination of cues increases the chance of retrieving a memory (Baddeley, 1999; Engelkamp, 1998), the students were also shown a series of photographs from their previous seasons.

This was done through the use of a digital photo browser which served to cue personal recollection and facilitates story-telling and recollection. van den Hoven and Eggen (2008) describe this as an augmented memory system. Thirty-five randomly arranged action snap shots of different seasons were displayed on a laptop with photographs automatically advancing every four seconds. Students had a chance to look at photographs and pause them for closer examination if

desired before completing surveys and during the interviews. In addition, fair play posters used in previous Sport Education seasons were present on the walls of the gymnasium.

Both the written surveys and oral interviews were conducted in Russian language, with the interviews being recorded on a digital recorder for later transcription. The researchers' Institutional Review Boards approved the procedures and protocols for the study and the informed consent was secured from participants' parents/legal guardians. Pseudonyms were used to protect student identities. The school administration allowed the researchers to conduct research on school premises.

**Survey.** The students were asked to complete a survey soliciting their recollections of the Sport Education seasons in which they had participated. The survey contained two memory cues: (a) write everything you remember about your Sport Education seasons, and (b) list five items that you remember the most about Sport Education. Apart from these directions, students were not given any other guidelines as what to write. The survey took approximately 30 minutes to complete and all participants in the study turned in their surveys.

The form of writing was not specified, but most students chose to answer the first cue in the form of essays and the second cue in the numbered format. During survey administration, a small number of students asked questions that mostly dealt with procedural elements of the task (i.e., how much time we have to write) with few questions about the content (i.e., what should I write about it?). When content questions arose, students were encouraged to write anything that they remembered about their seasons. This procedural element in administering the survey was purposefully carried out to mitigate the researcher's influence on students' potential responses. Furthermore, students were assured of the confidentiality of their answers.

**Focus Group Interviews.** A focus group format of interviewing was adopted (see Fontana & Frey, 1994), with students being interviewed in pairs or threes. Thirteen interviews each lasting 30–45 minutes were conducted three days after the surveys. This allowed all participants to be interviewed. The interview script (see Appendix A) included questions about students' background, presentation of cue words and open-ended questions that aimed to elicit recollection of the students' most vivid memories. The same memory cues were used for all groups, although the conversation was sometimes diverted because the group initiated a new topic, or to allow the interviewer to seek clarification of an issue.

Group interviews were used in preference to individual interviews for a number of reasons. These included (a) the interactions between students, which would have been absent in a one-on-one situation, (b) the social support peers could provide during the interview, (c) the development of a positive attitude toward interviews because the students were accompanied by their friends, and (d) the possibility of expressions emerging that probably would not have if individual interviews had been conducted (see Tammivaara & Enright, 1986). The group interview format may have also aided recollection by providing additional memory cues arising from other participants' answers during the interview process. The group interview technique was also considered appropriate given McQuarrie and McIntyre's (1990) suggestion that group interviews are preferable to individual interviews when the objective is examination of commonly held attitudes, beliefs and behaviors.

## Data Analysis

The data were analyzed using constant comparison (Lincoln & Guba, 1985) and analytic induction methods (Patton, 1990) to identify and extract common themes and patterns. Firstly, the interview transcripts and original answers to surveys were read and reread. Secondly, constructs from autobiographical memory theory such as levels of specificity drove the data analysis. The researchers assigned a level of specificity of memory recollection (first level—lifetime, second level—general events, or third level—event specific knowledge) to each quote or informational item. Thirdly, common themes were generated by clustering quotes or survey sentences from each level of specificity to form a category. If data did not fit into an already existing category, a new category was created. Finally, identified themes were then compared and contrasted and the data were reexamined.

A search by researchers for disconfirming or negative evidence (Miles & Huberman, 1994) was also conducted. This process involved researchers searching through the data for evidence that was consistent with or disconfirmed the preliminarily established themes. In addition, comments listed by students as most memorable in response to the memory cues were categorized into one of the seven categories. The number of student responses that fit in each category was calculated.

## Trustworthiness

In an effort to improve trustworthiness, researchers considered rival explanations and checked for relationships across data sources. To further the confidence in data interpretation, researchers employed the investigator triangulation technique i.e., “the use of several different researchers or evaluators” (Denzin & Lincoln, 2003, p. 215). The researchers were familiar with qualitative techniques and participated in data collection and analysis which allowed for the findings to be identified through a consensus. Member checks were also conducted (Denzin & Lincoln, 2003). Participants were given copies of their interview transcripts. The interview transcript accuracy was verified and no substantial changes were noted by participants.

Data analysis was performed in Russian language and the resulting themes were later translated into English for the purposes of reporting. The analysis before translation approach (analyze-translate-report cycle instead of translate-analyze-report) was used to reduce the possibility of inconsistencies that may arise from translation.

## Results

### Most Memorable Events in Sport Education

Table 2 illustrates the most memorable student events of Sport Education seasons by categories and subcategories. The most remembered categories by students were: seasons, team affiliation, formal competition, culminating event, record keeping, festivity, and opportunity to converse with the PE teacher. With the exception of the last category, the students’ responses almost identically matched the key features of Sport Education identified by Siedentop (1994).

**Table 2 Student Recollection of Sport Education Seasons by Categories**

<b>Category</b>	<b>Total Number of Comments</b>
<b>Seasons</b>	<b>20</b>
Training/practice/games	20
<b>Team Affiliation</b>	<b>26</b>
Work in teams	20
Team name	6
<b>Formal Competition</b>	<b>40</b>
Officiating	24
Matches	10
Rules/Learn rules	6
<b>Culminating Events</b>	<b>34</b>
Awards and certificates	23
Championship	11
<b>Record keeping</b>	<b>14</b>
Team place in standings	9
Victory	2
Keeping statistics	3
<b>Festivity</b>	<b>26</b>
Making game t-shirts	26
<b>Opportunity to converse with PE teachers</b>	<b>21</b>

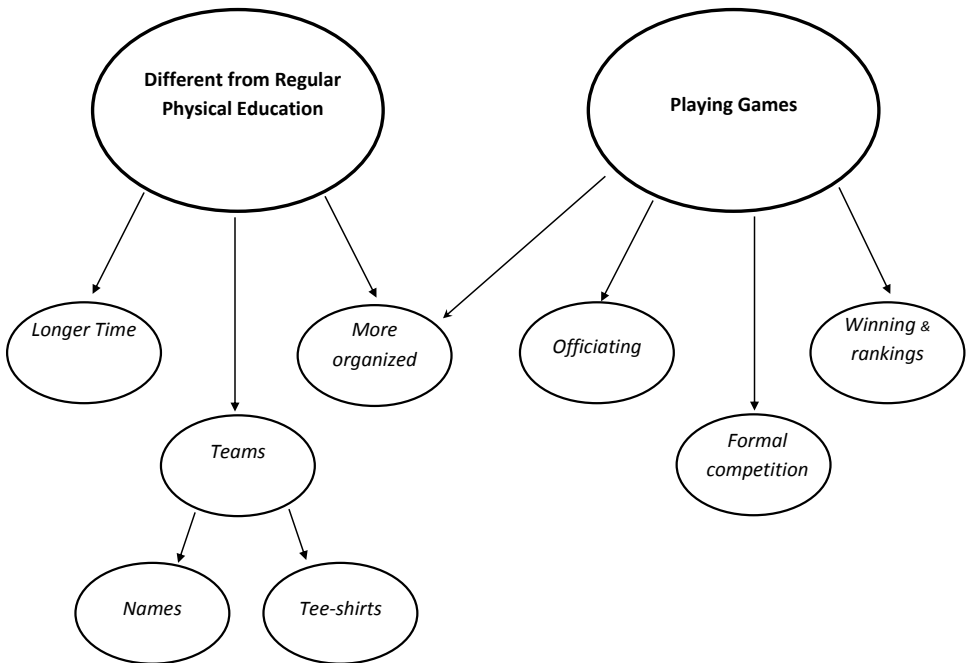
The most frequently recalled feature of Sport Education was formal competition, which was identified 40 times. Comments like “I remember competitive games the most” and “I remember games that counted” were representative of this category. Responses about the culminating events were the second most frequently remembered (34 times), with awards and certificates being mentioned 23 times. For example, Elena commented that her “most memorable moment was the awards ceremony when I received my certificate.” Festivity and team affiliation categories accounted for 26 comments each. The single most memorable event of Sport Education seasons that students were able to recall was the making of game t-shirts that identified them as being a part of the particular team (26 times). Aleksey’s comment was representative of this category when he said, “I remember the most how we made our team t-shirts in our chosen colors so everyone knew what team we were on.” An interesting finding of this study that has not been previously reported was the student comments of the available “opportunity to converse with the teacher,” a category which included 21 specific comments when recalling the most memorable events in Sport Education seasons. Students did not report the content of conversations, but the meaningful memory for them was “having a conversation” with a teacher. A good example of this finding was the following observation made by Ivan, “I remember that I was able to talk a lot with Aleksey

Petrovich [the PE teacher]. I mean... we had conversations... and that was not just him telling me what to do.”

## Specificity Levels of Student Recollections of Sport Education

The following results of the data analysis are organized according to the level of storage and retrieval of recollections. Although the analysis was conducted according to the three specificity levels of recollection, very few of the responses were reflective of the lifetime periods. While students indicated their general positive attitude toward physical activity and sport (e.g., “Firstly, I like sport in general. It was a great luck that we were able to participate in professional training for basketball, soccer and badminton.”) both written and interview responses were more representative of general and event specific knowledge.

**Second Level of Specificity—General Events.** Figure 1 provides a diagrammatical representation of the major themes and subthemes of the second level of specificity—general events. The two major themes were “different from regular physical education” and “playing games.” The theme of “different from regular physical education” had three subthemes and the theme of “playing games” had four subthemes. As can be seen from the diagram, the subtheme of “more organized” had a relationship with both of the major themes.



**Figure 1** — Students’ Memories of Sport Education at the Second Level of Specificity—General Events

When able to recollect general events, a number of students said that participating in Sport Education was different from their regular physical education. Sport Education was different because it was for “a long time,” with each season “lasting more than two months.” Almost every student recalled “being and staying in teams” and some students remembered “dividing themselves into equal teams.” In addition, most students were able to recall their respective team names. Comments like “our team name was ‘Cobras’” and “we chose Dolphins as our team name for badminton” were typical. Many students were also able to recall that they “painted t-shirts” for themselves and their team before the beginning of the season.

When reflecting upon the differences between regular physical education and Sport Education, a number of students commented on being “more organized and serious” for Sport Education. As Lena noted, “during regular physical education we just play amateur games where some play and others do not.” Conversely, during the Sport Education season “everything was serious,” and training and competition (game play) “was organized with coaches warming the team up, officials filling protocols, and playing professional games.” The game play was “for real” and “very organized” with students responsible for most of the lesson structure.

The second major second level recollection was that of “playing games.” The notion of game play was strongly associated with formal competition. Students commented that “we remember the games and competition,” and “remember the competition itself.” Each interviewed student recalled “games,” “competition in basketball,” “badminton competition,” and “soccer games” as one of the main elements of Sport Education. For some students game play was the most memorable and recognized event, with Aleksey’s comment that “what I remember the most is our basketball matches” being a typical response.

Within the theme of “playing games” a subtheme of “winning and rankings” also evoked strong recollection from many students. Many students recalled what place their teams took in each season and the recollection of team ranking was strong even in cases when teams finished out of the first place. For example, comments like “my team came in third” and “we were second” were typical recollection responses. Some students offered their recollection of team placing in multiple Sport Education seasons. For example, Dima commented that “our team in the soccer competition took the third place and we finished first in basketball.” Another student noted “our team took the first place in basketball, and in the beginning I did not even know how to play at all but at the end my team was first.”

The third subtheme of “playing games” was “officiating.” Many students recalled participating in officiating roles as an integral part of their Sport Education experiences. Further, many students remembered repeated engagement in officiating. “I remember how we officiated when other teams played. We did it many times.” Students associated such repeated engagement in officiating to improvements in their ability to officiate (e.g., “it is a good thing that we officiated many times, it helped us get better at it”) and how it allowed for “better understanding of the rules” (e.g., “I did not quite know how to keep score in badminton, but after officiating several games I learned the correct rules.”)

**Third Level of Specificity—Event Specific Knowledge.** The two major themes and subthemes of the third level of specificity are represented in Figure 2. The two major themes were labeled “deeper understanding” and “officiating.” As can be

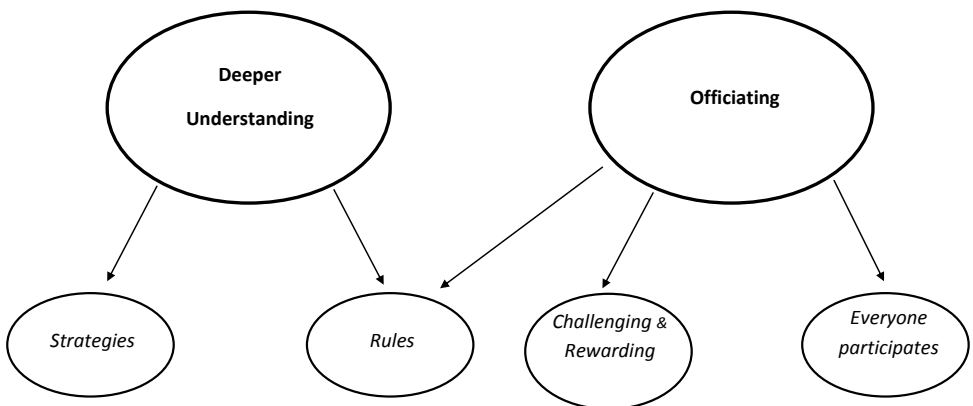
seen from Figure 2, the theme of “officiating” was connected to “understanding of rules.”

The theme of “deeper understanding” referred to student understanding of “strategies” and “rules” of the sporting context. Some students remembered a specific event in great detail and were able to recall the event sequence and the strategy used to be successful. Below is an example of Natasha’s recollection of a particular game:

I remember my game with Sasha Volkov very well. He tried to make me ‘run around the court’ [by altering his shot placement on the court]. I really put up a tremendous resistance with my defensive skills of being able to return a shuttlecock. I always returned quickly to the middle [of the court] to put myself in the position to return any shot.

Other students mentioned the specific strategies used in competition for each sport. For example, students commented that in badminton “it is better to return to middle of the court after each shot” and “try to attack by sending the shuttlecock to the spot furthest away from your opponent or smash it directly into her.” Students also noted that they “were looking for fast breaks and to inbound quickly before the other team was able to set up” in basketball and “progressing toward the goal to take a shot before passing” in soccer.

The subtheme of “rules” was manifested by numerous students recalling and writing down specific rules of the activities they performed during Sport Education seasons. The following is a sample description of rules for serve in badminton offered by one of the students: “(1) serve diagonally in a designated service area, (2) if shuttlecock does not land in it, one point goes to your opponent, (3) after each winning point the server changes the serving side on his court.” In addition, several other students drew diagrams illustrating their statements and provided different scenarios that might develop during a game and subsequent actions of what an official might do in each of the scenarios. For example, Sasha drew a sample game scenario with the badminton court divided into four rectangle, two



**Figure 2** — Students’ Memories of Sport Education at the Third Level of Specificity—Event Specific Knowledge

opponents, several potential pathways for a shuttlecock after a smash and provided the following instructions for the official:

Situation 1—when the shuttlecock hits the net, the official has to watch on which side it landed and give a point to the other player. Situation 2—you give a point to the hitter if the shuttlecock lands in the opponent's court. Situation 3—the opponent gets the point if the shuttlecock lands outside the line of his side of the court.

The personal experiences of repeated engagement in officiating tasks that were public in nature contributed to students' understanding of the rules of the games. For example, during an interview Yula commented, "Everyone knew the rules because everyone had to officiate. Each one of us officiated several times. This way you remember the rules much quicker feeling a heightened sense of responsibility before others when you officiate."

A considerable number of students commented on having to perform officiating duties during their seasons of Sport Education resulting in the "officiating" theme being developed. Officiating was seen as both "challenging and rewarding" with every student having to repeatedly "participate as an official" at several points in the season. This is how one of the students remembered officiating:

Everyone was an official at one point or another. It was not an easy thing to do in the beginning, but after a few times (being an official) you learned how to officiate, rules and such, and then I felt good about being in charge of a real game.

Students also remembered the inclusiveness of officiating roles commenting that during the seasons "everyone tried a role of an official." Being an official and taking charge of games was remembered as challenging but also a rewarding task resulting in a better understanding of the game. Sveta summarized it well in the following excerpt from an interview:

It was an uneasy proposition, I'd say a challenge, to officiate. But when everything (the game, the players, the statistics) went well, I had a real sense of joy and accomplishment, a type of an internal joy that signified that I was able to overcome these difficulties. Personally I have improved my knowledge of basketball. I am not alone, all students in the class improved.

## Summary and Discussion

This study makes a contribution to the Sport Education literature because it is the first study that has examined elements of student recollections of participation in multiple Sport Education seasons. Furthermore, this is the only study that examines elements of the episodic autobiographical memory of student engagement in Sport Education over the period of several years. Through deliberate recollection of personally experienced past events aided by an augmented memory system, selected cue words, and an encoding specific environment, a strong picture of student memories of their participation in multiple Sport Education seasons was reconstructed.

Before we discuss the findings of the study, we acknowledge the limitations within the design of the study. As the case with most qualitative research, the findings of our study cannot be directly generalized to the larger population and are limited to the participants, context, and settings in which the study took place. Moreover, all participants in this study had similar experiences with Sport Education by the virtue of taking part in same seasons taught by the same teachers. Future researchers may consider investigating and cross-referencing the autobiographical memories of students who participated in different Sport Education seasons taught by different teachers. The semistructured interview format, deemed appropriate for this study, may have contributed to enhanced student interactions but at the same time it may have also reduced the response time of those students who were less verbal and able to share their memories and experiences (Patton, 1990).

The students' strongest and most detailed memories were of those features that provide Sport Education participants with what is termed "authentic experiences." For example, with competition being central to Sport Education it was also prominently featured in students' recollections in this study. As Alexander and Luckman (2001, p. 247) note, students commit "themselves to winning games within their sport education." From an examination of Figures 1 and 2, and Table 2, numerous references to the structural components of Sport Education that separate it from the more common multiactivity format of games and sports in physical education are evident. Indeed, Sport Education was designed "to make the educational sport experience for boys and girls in physical education more authentic and complete" (Siedentop, 1994, p. 8). What was particularly noticeable in the written surveys and interviews in this study was the richness of the descriptions of some of the salient features of Sport Education.

Memory research has established that lifetime periods and general events are remembered better than event specific knowledge (Conway & Pleydell-Pearce, 2000). However in the case of Sport Education the recollection depth and details of event specific memories suggest noteworthy ways of what features and how identifiable particulars of the model resonated with students. Other studies in physical education also report event specific memories of participation. However in contrast to our study which reports positive outcomes of participation (indeed there were no cases of negative experiences), authors including Ennis (2000), Portman (2003), and Sykes and McPhail (2008) include rich descriptions from students who found physical education to be exclusionary or humiliating. The group of students in this study found their Sport Education experiences to be different from regular physical education and more rewarding, which can explain the lack of data on students' distaste of the model.

One of the preeminent features of Sport Education is that of students taking on nonplaying roles and responsibilities (Siedentop et al., 2004). Previous research suggested that students take their roles seriously, show high levels of enjoyment, and demonstrate significant competence in the officiating and coaching roles associated with the season (Hastie, 1996; Hastie & Sinelnikov, 2006). Arguably, most teachers would prefer that in three years time their students are able to recall officiating tasks blended together with specifics of sporting rules, proper etiquette, and tactics (event specific memory) rather than remembering the simple fact of officiating (general event knowledge). In this study, meaningful and personal experiences of episodic memory of taking on an officiating role (general event

level of hierarchical memory structure) was expounded on by deeper understanding of rules of the game as a result of repeated engagement in officiating task which was recalled from the event specific knowledge memory structure. This finding of strong impact and relevance of officiating in Sport Education seasons is particularly important given that general events are stored in a different structure in the brain compared with event specific knowledge (Conway & Pleydell-Pearce, 2000).

Autobiographical memory is the study of events that are meaningful for participants, and the participants in this study remembered features that are key elements of Sport Education. However, one of the findings of this study that has not been previously reported was students' high level of comfort of being able to talk with the teacher during Sport Education lessons. Given that physical education teachers have more time for individualized instruction during Sport Education (Grant, 1992) this finding illustrates the students' perspectives of their ability to spend more individual time with the teacher. Yet another explanation of this finding may be attributed to a gradual shift of power and responsibilities from the teacher to students present in each Sport Education season (Metzler, 2005). This gradual shift over each Sport Education season and over a course of several seasons may have contributed to the environment in which students feel more comfortable in many ways during physical education, including interactions with a teacher.

The content of event specific knowledge structure in this study seemed to provide evidence to support the notion of students' perceptions of their progress toward achieving elements of two goals of Sport Education, specifically, developing competent and literate players (Siedentop, 1994). In particular, students in this study identified understanding the strategies appropriate to the complexity of the activity (competency goal) and understanding the rules (literacy goal) as vital structures of their recollection across several Sport Education seasons. While this study provides evidence that students recognize, retain, and are able to recall key features of Sport Education experienced as part of their physical education curriculum, it is still unclear if developments in Sport Education relate to community and sporting contexts beyond schools. In fact, Penney, Clarke, and Kinchin (2002) suggested that Sport Education was limited in its ability to promote out of school participation in sport. There was a hint of continued participation by some students following their seasons in this study, but, further investigation is warranted on the potential of Sport Education to initiate and sustain changes within students that carry over to established practices in the community.

Previously not used in sport pedagogy, an autobiographical memory theory seemed to provide a useful theoretical framework suitable to investigate elements of the episodic memories of students that participated in multiple seasons of Sport Education. Further investigations into the fidelity of this theoretical framework and its relevance to the domain of physical education and physical activity are warranted. Since autobiographical memory is personally significant, concerned with episodes that that have personal meaning (Conway & Rubin, 1993), further examinations of students' autobiographical memories of physical education may help us understand what particular events have personal significance and personal meaning, as well as those that result in learning. Whether concerning experiences in elementary or secondary school physical education, or experiences with various curriculum models such as adventure education, multiactivity units, or cooperative learning, this knowledge may aid physical educators in constructing positive

experiences during physical education in such ways that are more meaningful to more students.

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## Appendix A

### Interview script

1. Background information (multiple prompts allowed)
  - a. How old are you?
  - b. What grade are you in?
  - c. How long have you been a student at this school?
  - d. Have you changed classes (cohorts)?
2. Augmented memory system introduction
  - a. Feel free to look at the pictures on the computer. You can pause, rewind or fast-forward the pictures if you wish. You can also walk around the gymnasium and look at the surroundings if you want.
3. Autobiographical memory—cue-word technique script (only cue words allowed)
 

I will provide you with a certain word or a phrase. After I say the word of a phrase, you can think about it and then begin to describe whatever comes to your mind. These are your personal experiences and reflections and each one of you may remember similar or different things. This is perfectly fine. Just tell me what you remember.

  - a. “Physical education”
  - b. “Sport education”

4. Autobiographical memory—recollection of most vivid or most important memories
  - a. Tell me about your most important memory about physical education? Please elaborate. What happened? Please describe.
  - b. Tell me about your most important memory about sport education? Please elaborate. What happened? Please describe.
  - c. What do you remember the most about physical education? Please elaborate. What happened? Please describe.
  - d. What do you remember the most about sport education? Please elaborate. What happened? Please describe.

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