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ANALYSIS OF VERBAL PEER FEEDBACK IN HIGH SCHOOL
PHYSICAL EDUCATION

A Manuscript Style Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Exercise and Sports Science – Physical Education Teaching

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College of Science and Health
Physical Education

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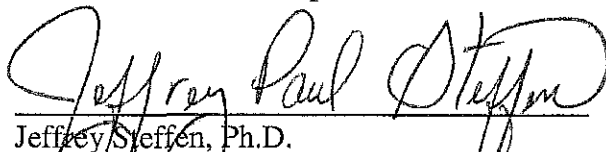
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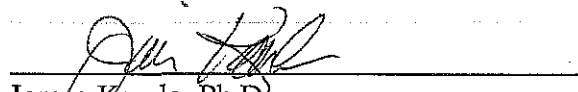
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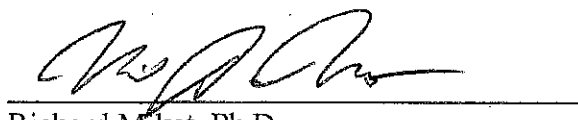
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ABSTRACT

Brasil, K. Analysis of verbal peer feedback in high school physical education. MS in Exercise and Sport Science: Physical Education, August 2012, 43pp. (J. Steffen)

The purpose of this study was to determine the frequency of verbal peer feedback amongst high school students (N=27) in an adventure education unit and compare it to the frequency of verbal peer feedback in a sport-specific unit. All verbal feedback heard by the principal investigator was tallied for a total of ten classes – five lessons from an adventure education unit (Rock Climbing) and five from a sport-specific unit (Badminton). Feedback was categorized by performance feedback, motivation feedback, and suggestive feedback. Motivation feedback was additionally categorized by positive motivation feedback and negative motivation feedback. The results of the independent samples t-tests comparing performance and motivation feedback in the two different environments showed no statistical difference (performance feedback, p-value = .157 and motivation feedback, p-value = .806). Similarly, no statistical difference was found for suggestive feedback in the two different environments using the non-parametric independent samples Mann-Whitney test (p-value = .044). In addition to these results, the independent samples t-tests comparing positive motivation and negative motivation feedback showed no statistically difference (positive motivation feedback, p-value = .173 and negative motivation feedback, p-value = .122).

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INTRODUCTION

The utility of teacher feedback has been demonstrated from a pedagogical perspective and researchers have found it to be an effective way to communicate critical information to students related to their performance compared to the actual goal of a skill and/or task. The best feedback has been described as that which gives an explanation as to what is accurate and what is inaccurate in terms of student responses and given immediately following the performance of a skill and/or task (Marzano, Pickering, & Pollock, 2001). A decreased delay between execution of skill and/or task and feedback has been demonstrated in research to increase student achievement (Marzano et al., 2001). Therefore, it is not only desirable that all students receive feedback related to performance at some point, but rather that they receive it in the shortest time possible upon completion of a skill and/or task. Despite a teacher's ability to provide effective feedback to a student, the conflict arises that reveals the teacher's lack of time to provide enough feedback to all students (Himberg, Hutchinson, & Roussell, 2003). If we associate this conflict with what we know about the relationship between feedback and student achievement, we can understand that the teacher's inability to provide enough feedback to all students is a road block to potentially higher levels of student achievement.

Seeking a solution to this conflict, researchers have suggested the introduction and use of peer feedback. Although highly underused, peer feedback has been seen to be highly effective, quite flexible (Marzano et al., 2001), and have many desirable effects

(Marzano, Norford, Paynter, Pickering, & Gaddy, 2001). One of the potentially desirable effects is that it allows students to receive more feedback than when solely relying on the teacher as the source for feedback. Although students may not be as knowledgeable as teachers about the accurate performance execution of a skill and/or task, they are capable in many ways to provide fundamental feedback to their peers. In order to make use of peer feedback in an educational setting, students must be in an environment where they feel comfortable and capable of giving and receiving peer feedback. Environment variation in physical education can occur in many ways. The environment may change with a shift in the teaching styles used, the process in which students are arranged in pairs or groups, and/or the focus on the lesson and/or unit. With the desire to increase the frequency of peer feedback, it is desirable to determine in which environment students are more likely to give and receive feedback more often. In this study, the physical education environment will vary as a result of a shift in unit focus from adventure education to sport-specific.

John Dewey, who is commonly considered the founding father of progressive education, expresses a vision of education which enables students to be situated in real-world experiences and activities that center on real lives of students (Dewey, 1938). The vision of Dewey is connected with the goals of adventure learning which is becoming increasing popular in physical education. Adventure learning seeks to challenge students with real-world problems, guiding them to identify and pose questions, analyze data, interact and collaborate with colleagues and experts, and take action within their own community (Doering & Veletsianos, 2008). In the goals of adventure learning, peer feedback falls under interaction and collaboration with colleagues. Despite knowing the

goals of adventure learning, it is ideal that we understand how effective this approach to learning is in achieving them. Therefore, the purpose of this study was to determine the frequency of verbal peer feedback in an adventure education unit and compare it to the frequency of verbal peer feedback in a sport-specific unit. By analyzing the frequency of feedback in both environments, we can discover which environment better fosters verbal feedback between peers.

METHODS

Participants

A total of 27 participants (male = 25, female = 2) ranging in age from 15 to 18 years volunteered for this study. Participants were all sophomore, junior, or senior high school students enrolled in a physical education at Holmen High School in Holmen, Wisconsin. Students enrolled in the class based on the mandatory physical education requirement of the academic curriculum and were not recruited until after enrollment so as to avoid motivating participation factors. In the process of recruitment, all participants were informed of the purpose and general procedure of the study, foreseeable risks and/or discomforts associated with participation, and potential benefits gained as a result of the data collection. However, they were not made aware of the specific topic being studied in order to avoid intentional behavior modification. The study was approved by the University of Wisconsin-La Crosse Institutional Review Board and the principal investigator followed all procedures. The principal investigator was not required to obtain informed consent from participants due to an exemption received from the Institutional Review Board. The students' involvement in the study required their regular attendance and participation over ten 60 minute physical education classes over four weeks.

Adventure Education (Rock Climbing) Unit

Five out of the ten physical education classes observed and recorded were lessons from an adventure education unit on rock climbing. All adventure education lesson

observations and coding took place in the gymnasium at Holmen High School at the same time for all five occurrences. The five adventure education lessons observed and coded for data collection were labeled AE 1, AE 2, AE 3, AE 4, and AE 5. Brief descriptions of the adventure education lessons are included in Table 1. The number associated with each lesson title indicated its position in the sequence of the unit. The time-length of each lesson was 60 minutes. Each lesson excluded dress out time and a fitness game/activity. Only time spent on the lesson focus was recorded.

Table 1. Adventure Education Lesson Breakdown

Lesson	Lesson Title	Brief Description
AE 1	Harnesses and Mock Belaying	Students learned how to properly put on their own harness, how to check that their peers' harnesses were on correctly, and the basic belay technique.
AE 2	Mock Belaying and Belayer and Climber Communication	Students practiced their belaying technique on a mock set-up. Students learned safety checklist procedure and climber's contract.
AE 3	Belaying and Rock Climbing	Students took turns belaying and climbing on the wall. Back up belayers were used during all climbs.
AE 4	Belaying and Rock Climbing	Students took turns belaying and climbing on the wall. Back up belayers were used during all climbs.
AE 5	Belaying and Rock Climbing	Students took turns belaying and climbing on the wall. Back up belayers were used during all climbs.

Sport-Specific (Badminton) Unit

Five out of the ten physical education classes observed and recorded were lessons from a sport-specific on badminton. All sport-specific lesson observations and recording also took place in the gymnasium at Holmen High School at the same time for all five occurrences. The five sport-specific lessons observed and coded for data collection were

labeled SS 1, SS 2, SS 3, SS 4, and SS 5. Brief descriptions of the sport-specific lessons are included in Table 2. The number associated with each lesson title indicated its position in the sequence of the unit. The time-length of each lesson was 60 minutes. Each lesson excluded dress out time and a fitness game/activity. Only time spent on the lesson focus was recorded.

Table 2. Sport-Specific Lesson Breakdown

Lesson	Lesson Title	Brief Description
SS 1	Rules, Rotation, and Doubles Badminton Practice	Students learned the rules and rotation for doubles and singles badminton. Students practiced doubles badminton with a variety of partners and opponents.
SS 2	Offensive and Defensive Strategies and Doubles Badminton	Students learned a variety of offensive and defensive strategies. Students played doubles badminton against multiple opponents. Students kept their same badminton partner for the entire duration.
SS 3	Doubles Badminton	Students played doubles badminton against multiple opponents. Students kept their same badminton partner for the entire duration.
SS 4	Doubles Badminton	Students played doubles badminton against multiple opponents. Students kept their same badminton partner for the entire duration.
SS 5	Doubles and Singles Badminton	Students played doubles and singles badminton against multiple opponents. Students kept their same doubles badminton partner for the entire duration.

Observation and Event Recording

The principal investigator was present and observed all ten of the physical education classes and was the independent source of event recording. The principal investigator was not otherwise involved in the physical education class in any way. The students were aware of the principal investigator's presence and of the observations taking place. During all observations, the principal investigator was positioned close to

the class and recorded all verbal peer feedback. The verbal peer feedback was tallied in a verbal peer feedback table using eCove Observation Software, see Figure 1. The data was not associated with the specific students giving and receiving feedback. The verbal peer feedback was categorized by three feedback types; performance feedback, motivation feedback and suggestive feedback. Additionally, motivation feedback was categorized by two types; positive motivation feedback and negative motivation feedback. The tally was recorded in the appropriate category box. Upon the completion of each class, the total number of verbal peer feedback was calculated. Upon completion of tallying each of the ten verbal peer feedback tables, a report was created using eCove Observation Software. Also, prior to any formal observation and event recording for the study, a pilot observation took place in order to assure effectiveness in data collection methods and technology.

Table 3. Verbal Peer Feedback Data Sample Table

Performance	IIIIII		
Motivation	IIII	Positive: III	Negative: I
Suggestive	II		
Total Feedback Frequency	12		

Verbal Peer Feedback

The data collected from the study was the frequency of verbal peer feedback during ten physical education classes. In this study, the term verbal peer feedback describes all dialogue verbally communicated from one student to another student that supports learning in a formal and informal situation (Askew & Lodge, 2000). In this study, verbal peer feedback is the term used to describe the general feedback. Moving from general to specific, the verbal peer feedback was organized into three specific

categories; motivation feedback, performance feedback, and suggestive feedback.

Additionally, motivation feedback was divided into one of two sub categories; positive motivation feedback or negative motivation feedback.

Performance Feedback

General verbal peer feedback data collected from the study could also be categorized as performance feedback. In this study, performance feedback is feedback given by one student to another directly relating to the performance of a skill or task. This feedback in most cases is more specific than general and may provide the student with an affirmative and/or corrective statement in response in their performance (Tunstall & Gipps, 1996). Examples of performance feedback are included in Table 4 under performance feedback.

Motivation Feedback

General verbal peer feedback data collected from the study could be categorized as motivation feedback. In this study, motivation feedback is feedback given by one student to another that is either positive or negative and has the potential to encourage or discourage the student. This feedback in most cases is more general than specific and may or may not provide the student with affirmation (Tunstall & Gipps, 1996). Examples of motivation feedback, including positive and negative are included in Table 4 under motivation feedback.

Suggestive Feedback

General verbal peer feedback data collected from the study could also be categorized as suggestive feedback. In this study, suggestive feedback is feedback given by one student to another that proposes an idea directly relating to the skill or task at

hand. Suggestive ideas may involve strategy, approach, and/or perceptive (Tunstall & Gipps, 1996). Examples of suggestive feedback are included in Table 4 under suggestive feedback.

Table 4. Types and Examples of Verbal Peer Feedback

Type of Feedback	Examples of Feedback
Performance Feedback	"Your positioning on the court was perfect for side-by-side defense" "You need to make sure that you keep your eye on the birdie" "I like the way you used your legs for that move"
Motivation Feedback: Positive	"Good job" "You can do it" "Wow, that was great" "You're almost there, keep it up"
Motivation Feedback: Negative	"Terrible job" "Face it, you cannot do it" "Wow, that was awful" "Just give up"
Suggestive Feedback	"What if you tried to...?" "What do you think about...?" "Maybe try..."

Analysis

Standard descriptive statistics techniques, including means and standard deviations were utilized to compare data. Statistically, an independent sample t-test was used to compare performance feedback, motivation feedback, positive motivation feedback, as well as negative motivation feedback in the adventure education unit and the sport specific unit. For suggestive feedback, a non-parametric independent samples Mann-Whitney test was used to determine significance.

Frequency totals for all categories of feedback are displayed in Table 5. Overall, there was a difference of 60 between total feedback frequency in adventure education and

the sport specific with adventure education yielding a total of 100 feedbacks. For adventure education, performance feedback yielded the highest feedback frequency and for sport specific, motivation feedback yielded the higher feedback frequency.

Table 5. Descriptive Statistics: Feedback Frequency Total

Environment	Feedback Frequency Total			Total
	Performance	Motivation	Suggestive	
Adventure Education	39	35	26	100
Sport-Specific	7	32	1	40

Additionally, frequency totals for positive motivation feedback and negative motivational are displayed in Table 6.

Table 6. Descriptive Statistics: Motivation Feedback

Environment	Motivation Feedback		Total
	Positive Motivation	Negative Motivation	
Adventure Education	33	2	35
Sport-Specific	15	17	32

The total percentages for adventure education feedback are displayed in Figure 1 and the total percentages for sport specific feedback are displayed in Figure 2.

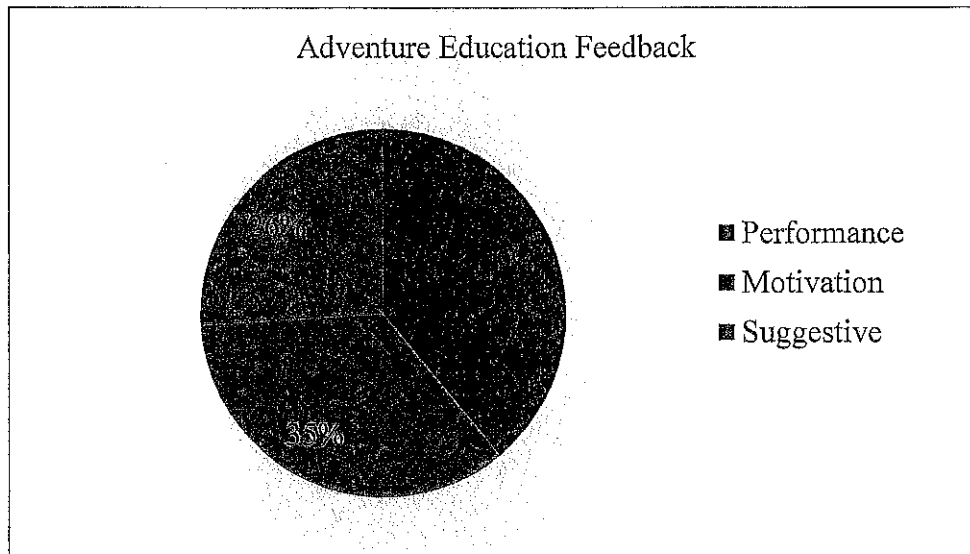


Figure 1. Adventure Education Feedback

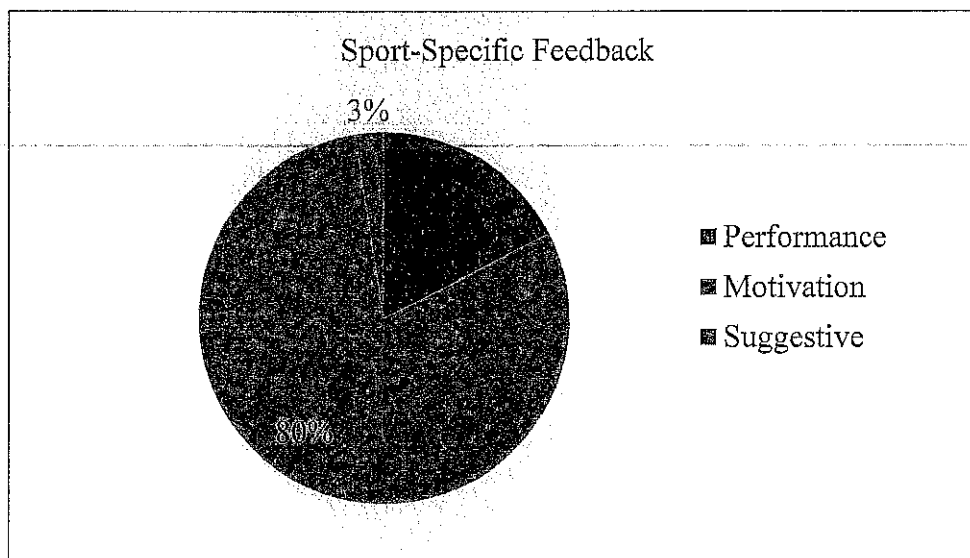


Figure 2. Sport-Specific Feedback

For motivation feedback specifically, the total percentages for adventure education feedback are displayed in Figure 3 and the total percentages for sport specific feedback are displayed in Figure 4.

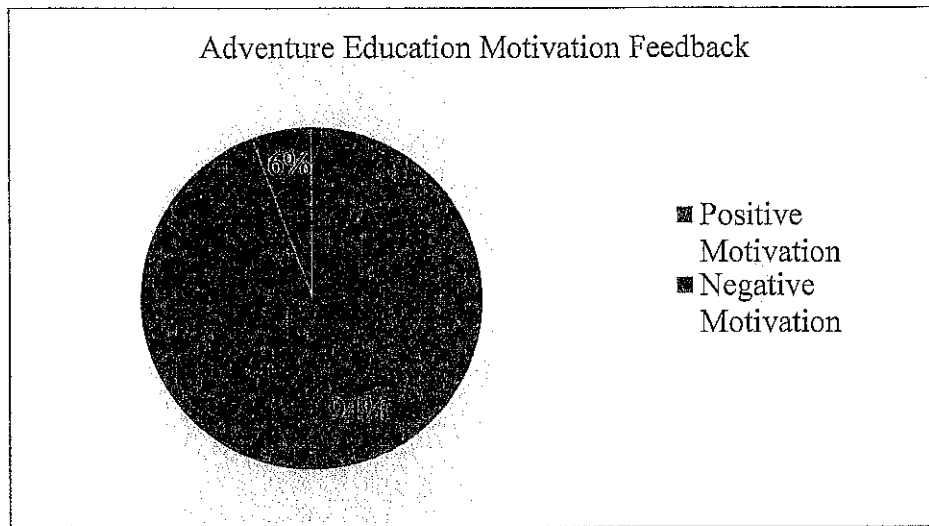


Figure 3. Adventure Education Motivation Feedback

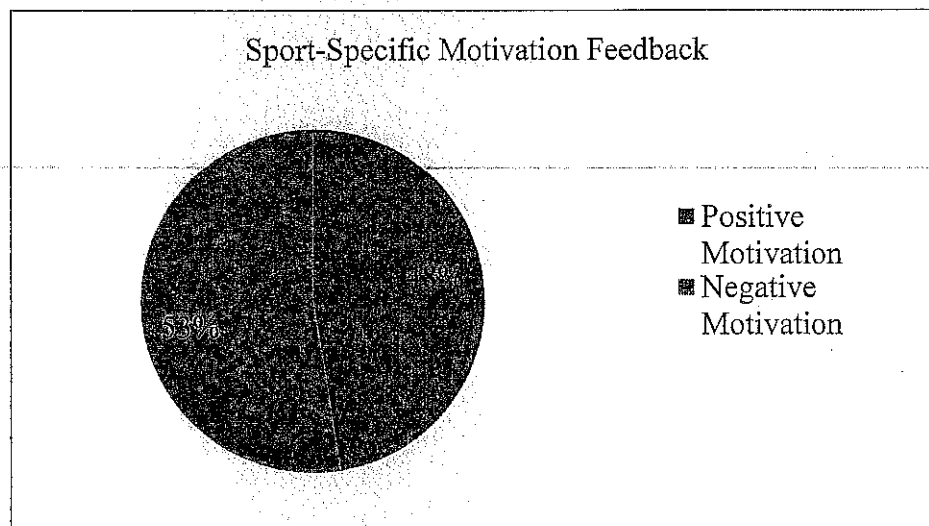


Figure 4. Sport Specific Motivation Feedback

Demonstrated in Table 7, performance feedback in adventure education yielded the highest mean and standard deviation of 7.8 and 9.01 respectively. Suggestive feedback in sport specific yielded the lowest mean and standard deviations of 0.2 and 0.45 respectively. In all three categories of feedback, the means and standard deviations were larger for adventure education than for sport specific. For total feedback, there was

a mean difference of 12 and a standard deviation difference of 6.74 with adventure education yielding a total mean of 20 and standard deviation of 11.79.

Table 7. Feedback Means and Standard Deviations

Mean and SD	Performance	Motivation	Suggestive	Total
AE Mean	7.8	7	5.2	20
AE SD	9.01	3.94	6.61	11.79
SS Mean	1.4	6.4	0.2	8
SS SD	1.67	3.51	0.45	5.05

Demonstrated in Table 8, positive motivation feedback in adventure education yielded the highest mean and standard deviation of 6.6 and 3.91 respectively. Negative motivation in adventure education yielded the lowest mean and standard deviation of 0.4 and 0.89 respectively. In comparison of the two environments, positive motivation was higher in adventure education and negative motivation was higher in sport specific.

Table 8. Motivation Feedback Means and Standard Deviations

Mean and SD	Positive Motivation	Negative Motivation
AE Mean	6.6	0.4
AE SD	3.91	0.89
SS Mean	3	3.4
SS SD	4	3.51

RESULTS

The results of the independent samples t-test comparing performance feedback showed no statistical difference ($p = .157$). Similarly, the results of the independent samples t-test comparing motivation feedback showed no statistically difference ($p = .806$). In comparing suggestive feedback, the results of the non-parametric independent samples Mann-Whitney test showed no statistical difference ($p = .044$). Additionally, the results of the independent sample t-test comparing positive motivation feedback showed no statistically difference ($p = .173$). Similarly, the results of the independent sample t-test comparing negative motivation feedback showed no statistically difference ($p = .122$).

DISCUSSION

No statistically differences were found between verbal peer feedback frequencies in adventure education unit and sport-specific unit environments. Although there seems to be a trend demonstrating that there is greater verbal peer feedback frequency in an adventure education unit than in sport-specific unit, the differences were not statistically significant. Since there has been minimum research done in this specific area of physical education, it would be ideal if the trend was further explored. For future research, it would be beneficial to increase the number of observations in order to better test the comparison between the two environments. The importance of discovering this trend comes with the desire to solve the conflict that Himberg et al., (2003) reveal which is that although teacher's have the ability to provide effective feedback to students, lack of time hinders them from providing enough feedback to all students. Therefore, it is beneficial to know in which type of environment students are likely to provide feedback to their peers so that overall more students are receiving more feedback related to their skill and/or task.

Further reason for a need to increase the amount of research on this topic is because of the advantages relating to peer feedback explored by Grabe and Kaplan (1996). Not only is the idea of feedback beneficial to the student who is receiving it, but rather the student who is giving the feedback has the potential to benefit as well. Especially for students who are visual learners, watching their peer perform and providing verbal feedback to them allows them to become overall more familiar with the

skill and/or task and engages them in a different type of learning. Rather than simply being given performance cues from the teacher and asked to perform the skill and/or task with success, the student is able to verbally identify correct and incorrect parts of their peer's execution and relate to their own.

Rollinson (2005) also provides greater reason to explore the idea of peer feedback by looking past the potential benefits it has for students individually, but rather looking to how it has the potential the class as a whole. With an increase in peer feedback, there also comes an increase in levels of replies and interactions amongst classmates which is shown to improve the karma of the class. When students are engaged in collaborative and friendly dialogue, their level of confidence tends to increase. With increased confidence, they are more willing to contribute positively to the class and overall a positive, emotionally safe atmosphere is created. This is ideal because as Lin and Chien (2009) reveal the better students feel in a learning environment, the more positive attitude towards the subject area, and as a result, the more likely they will strive to be successful which is the ultimate goal learning in physical education.

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APPENDIX
REVIEW OF RELATED LITERATURE

INTRODUCTION

History of Adventure Education

The origins of adventure education can be traced back to the early 1940s when Kurt Hahn, a German philosopher established the first Outward Bound School at Aberdovey, Wales (Hopkins & Putnam, 1993). Biographers have revealed that even though Hahn designed Outward Bound as a program for survival training for British seamen, he had much deeper educational intentions (Smith, Roland, Havens, & Hoyt, 1992). These alternative intentions included “the desire to create educational programs which would stimulate students to a passion for life and growth, and would also cultivate social vision” (Smith et al., 1992, pp. 8-9). In the early 1960s, almost twenty years after World War II, Hahn’s program was introduced to the United States with the establishment of the Colorado Outward Bound School under the leadership of F. Charles Froelicher (Miles & Priest, 1999; Smith et al., 1992). Moving away from the objective to teach individuals about and guide them in developing survival skills, the Colorado program was focused around using the mountains and the Outward Bound sequence to build character in order to produce better people (Smith et al., 1992). Green and Thompson (1990, pp. 5-6) describe this objective transition stating that, “what began as a wartime school for survival has evolved into an action-orientated program for personal growth, service to others and physical preparedness. In short, Outward Bound is learning about oneself and the world through adventure and service to others. Outward Bound has

created a sophisticated adventure-based education program to stimulate personal growth” (Miles & Priest, 1999).

Upon the establishment of the Outward Bound program in Colorado, its popularity and expansion increased which has lead to it becoming the largest and most widespread adventure-based education institution in the United States (Miles & Priest, 1999). Today, there are schools and centers worldwide and Outward Bound programs have broadened to include various populations including adjudicated youth, city gangs, youth-at risk, special education students, mentally dysfunctional adults, and college level leaders (Hopkins & Putnam, 1993; Smith et al., 1992). The Outward Bound curriculum which involves “initial experiences for group building, physical conditioning, goal setting, basic skill training and basecamp utilization of ropes and teams courses” (Smith et al., 1992, pp.10) has and continues to inspire educators to introduce and make use of experiential methods (Miles & Priest, 1999). It is because of inspiration from Outward Bound that Project Adventure was established. In the early 1970s, a group of educators in Hamilton, Massachusetts, whom had prior involvement with Outward Bound, developed an experiential, school-based program which applied Outward Bound concepts to the classroom (Miles & Priest, 1999; Smith et al., 1992). Although a full Outward Bound program could not be established due to lack of time and finances, these educators developed a similar sequence of “adventure activities” which has become the sample model for adventure education programs across the nation (Smith et al., 1992). Miner and Bolt (1981, pp. ?) state that “no other innovative educational proposal spinning off from Outward Bound has enjoyed a greater success with the educational establishment than Project Adventure” (Smith et al., 1992).

Among the basic learning goals of Project Adventure summarized by Karl Rohnke, a desire to increase mutual support within a group is included (Smith et al., 1992). Objectives of Outdoor Education relating to others (such as other members of a group) are also extracted from the report of the Dartington Conference, such as to evaluate progress, communicate effectively, counsel individuals, and help others learn (D.E.S., 1975; Hopkins & Putnam, 1993). It is also written in the report that outdoor education "activities are selected and designed to achieve objectives within aims which are concerned primarily with developing attitudes and relationships" (D.E.S., 1975, pp. 9; Hopkins & Putnam, 1993). These common objectives outlined in adventure education programs promote interaction between individuals and the creation of a peer support system. Although the benefits that have been discovered in research findings linked to peer support systems will not be thoroughly discussed, it is key to understand that adventure education settings are "experimental social laboratories," (Hopkins & Putnam, 1993, pp. 13) which have been shown to not only foster social interaction amongst peers, but also provide individuals with opportunity to assume various social roles, understand their ability to have an impact on others, as well as experience what it is like to be supported and supportive in a community (Hopkins & Putnam, 1993). Although social interaction and its consequential benefits exist beyond the adventure education settings, it has been demonstrated in research that these types of environments tend to initiate and develop this concept (Hopkins & Putnam, 1993).

Social Interaction and Feedback

Social interaction used as a broad term can include many episodes which vary in the way that they occur, who is involved and in what capacity, as well as the benefits that

are experienced as a result. In the education setting, social interaction may occur in many forms. Some examples may include on the playground between students, in the classroom between a teacher and a student, or on the court between a coach and an athlete. Just as location and participants of social interaction may vary, the way in which social interaction actually occurs may vary as well. The subcategory of educational social interaction which is the focus of this study is feedback. In literature, varying definitions of feedback exist. Some of these definitions describe feedback on a more broad scale whereas, others describe it quite specifically. Askew and Lodge (2000, pp. 1) adopt a broad definition of feedback stating that it includes “all dialogue which supports learning in both formal and informal situations, which by definition would include instruction” (Knight, 2003). In this definition, Askew and Lodge (2000) are general in the terms dialogue and learning representing that dialogue can potentially be presented in various forms and focus is on overall learning. Alternative definitions for feedback seek to define those terms more directly.

Carlson (1979) and Ramaprasad (1983) are more specific in their definitions of feedback. Carlson (1979, pp. 4) defines feedback as “authoritative information students receive that will reinforce or modify responses to instruction and guide them more efficiently in attaining the goals of the course” (Ovando, 1992; Knight, 2003). Here, feedback is described as responsive information students receive from a trustworthy source that will guide them towards greater success. In understanding the correlation between the information received and increased success, it is essential to note the characteristics of the information or as Askew and Lodge (2000) term it, ‘the dialogue’, (Knight, 2003). Rather than classifying all dialogue as feedback, Carlson (1979) gives

the underlying message that feedback is motivational and/or corrective in nature. These characteristics make it possible for students' responses to be reinforced or modified and as a result, initiate progress towards the end goal. It is desirable that all students understand where their performance of a skill or task compares to that of the goal or reference criterion performance therefore; feedback is that which provides students with insight into that knowledge. Ramaprasad's (1983) definition of feedback makes this concept even more understandable. Ramaprasad (1983. pp. 4) describes feedback as "information about the gap between the actual level and the reference level of a system parameter which is used to alter the gap in some way" (Knight, 2003).

Effective Feedback

Just as varying definitions of feedback occur in literature, variation in defining effective feedback exists as well, although the majority of the descriptions are somewhat relatable. Robert Marzano, one of the leaders in the area of feedback in education and his colleagues reveal that effective feedback is corrective in nature (Marzano, Pickering, & Pallock, 2001). His literature emphasizes the necessity that feedback provides students with an explanation as to what is correct and not correct in relation to their performance. Additional literature supports this same idea adding the idea that feedback should discuss strengths and weaknesses of a specific performance at length and indicate suggestions for further improvement (Gielen, Tops, Dochy, Onghena, & Smeets, 2010). Both these views reveal that feedback should be presented in such a way that students are able to respond to it, leading them to make adjustments in performance which will ultimately guide them closer towards success. Another characteristic identified by Marzano et al. (2001) and supported by alternate research is the idea that the timing of feedback is

essential to its effectiveness. The most effective feedback is provided immediately following the performance of a skill and/or task. In research studies, it has been revealed that the less time in between the execution of a skill and/or task and the deliverance/receiving of feedback, the greater increase in student achievement (Bangert-Downs, Kulik,, Kulick, & Morgan, 1991; Marzano et al., 2001).

In addition to feedback being corrective and timely, Marzano et al. (2001) continues on to state that effective feedback is specific to a criterion meaning it should be criterion-referenced, as opposed to norm-referenced. The term criterion-reference is being used to describe a rubric or set of goals which have been established relating to the performance of a skill and/or task in which students use as a guide to assess their actual performance. The term norm-reference here is used to describe the performances of the average students in which all other students are compared to. It is essential to note that a criterion-reference will remain the same regardless of the students performing the skill and/or task, but the norm-reference will differ therefore, criterion-reference is a more desirable form of reference. Although it may not be seen directly as a characteristic of effective feedback, Marzano et al. (2001) also adds that students are capable of providing their own feedback. They point out that despite the fact that providing feedback is generally seen as something done exclusively by teachers, research uncovers that students can effectively monitor their own progress. With this statement by Marzano et al (2001), it can begin to be understood that teacher feedback may not be the only type of effective feedback available to students. He reveals the idea of feedback given to self and continues on to introduce the idea of student-led feedback in education.

Students in Varying Feedback Roles

Current research exists that investigates the effectiveness of peer feedback as it relates to writing and language learners and has been proven to provide numerous advantages in these areas (Lin & Chien, 2009). Some of the advantages brought on as a result of peer feedback which have been identified include increase in student self-control. When a student receives feedback from a peer, he/she is granted with the opportunity to make a decision on whether or not they will respond to that feedback, adopt their peers' suggestions, and allow it to guide them in making alterations to their work (Mendonça & Johnson, 1994; Lin & Chien, 2009). An ideal characteristic of peer comments is that they can be accepted completely or partially meaning students receiving feedback not only have the opportunity to decide whether or not to accept feedback at all, but the opportunity to decide how much or how little (Rollinson, 2005; Lin & Chien, 2009).

Research has also demonstrated that advantages relating to peer feedback in these areas are not limited to those receiving the feedback, but rather extends to those individuals giving the feedback. Students who analyze their peers' work and provide feedback to them in response are able to identify similar problems and weaknesses in their own work; ones that they may not have been able to prior (Grabe & Kaplan, 1996; Lin & Chien, 2009). In this situation, students who are experiencing common difficulties may collaborate to discuss potential strategies to strive towards increased achievement and be of support to one another through the learning process. The process of discovering similar problems and weaknesses amongst the student population is also advantageous for the teacher because it will indicate the need to possibly revisit the

lesson and even potentially re-teach the concept using an alternate method. Moving forward, another advantage for students serving as the source of feedback is that they are able to become aware of different formats of thinking and arguing (Lin & Chien, 2009). When students review work other than their own, their perspective broadens because they are able to discover new thoughts, ideas, and opinions relating to the specific topic/area. Although these new discoveries may not be adopted by the students, they still benefit from being aware of opposing views.

Extending beyond the awareness of other students' thoughts, ideas, and opinions, literature also exists that uncovers the desire to have students participate in self-evaluations. The process of peer feedback has the potential to initiate and motivate self-evaluation because when students review their peers' work they get the idea about how much they need to progress in order to keep up with the learning pace of the class (Lin & Chien, 2009). Rather than having students assume they are on track with the learning process, by being able to see exactly where other students are at, they can gauge themselves and get a more realistic understanding.

It is argued that good feedback lies at the heart of good pedagogy with its source being of less importance than its validity (Sadler, 1998; Gielen et al., 2010). Therefore, this leads research to discover not only the possible sources of feedback, but rather the possible sources of valid feedback. This leads into the discussion of peer feedback. Despite the many advantages that have been demonstrated to be present in regards to students as feedback providers, a concern arises that questions whether or not students are capable of assuming and succeeding in this role. The concern specifically correlates to the depth, accuracy, and credibility of peer feedback (Gielen et al., 2010). In response to

this concern, research has attempted to not only reveal if students are proficient in providing feedback to other students, but also how the quality of peer feedback compares to that of teacher feedback. Again, with the majority of literature regarding peer feedback related to writing, research in the area has responded to this concern by determining that peer readers can provide useful feedback (Caulk, 1994; Mendonca and Johnson, 1994; Rollinson, 2005; Lin & Chien, 2009).

Another potential to also consider is the idea that similar to teachers being trained in providing feedback, students may also be trained in this area as well (Sadler, 1998; Gielen et al., 2010). If time and energy is spent training students in providing feedback, many may question why that time is not just used to train an increased number of teachers at a more extensive depth; however, research has been consistent in showcasing advantages of peer feedback that are not gained from teacher feedback. The research also extends beyond simply uncovering the advantage differences amongst the results of teacher and peer feedback to provide support that beneficial effects of peer comments may be of equal or even greater effect than teacher comments (Tsui & Ng, 2000; Gielen et al., 2010).

Beneficial advantages or effects lacking in teacher feedback which peer feedback provides, have been noted to have a positive effect on student learning in another, but equally effective way (Sadler, 1998; Gielen et al., 2010). Peer feedback introduces an increase in social pressure to perform well in order to avoid embarrassment in front of peers. To ensure quality performance, students generally increase the time and effort spent on an assignment (Tsui & Ng, 2000; Pope, 2001; Gibbs & Simpson, 2004; Gielen et al., 2010). Initially, this may be difficult to perceive as an advantage however, if the

focus is on the correlation between time and effort spent on an assignment and student achievement the advantage is potentially better understood. Another desirable effect of peer feedback that stands in isolation from teacher feedback is its potential to be more understandable and more useful because fellow students who serve as the feedback providers are on the same wave length (Topping, 2003; Gielen et al., 2010). In concentrating on ways in which feedback provided by an individual on the same wavelength could potentially differ from that provided from an individual who is not, focus can be on the use of terminology, past/relatable experiences, and/or familiarity with learning environment.

Teachers who in most cases are the primary source of feedback are the master in the specific area. Therefore, he/she may use mastery terminology in teaching and in providing feedback. Since students are generally not on the same knowledge and/or skill level of the teacher, the way teachers communicate may not be understandable to students (Gielen et al., 2010). Using peer feedback, students are able to communicate to other students in more simplistic terms which enable them to apply the feedback given to their work. In the same general category of mastery knowledge and skill, teacher's background is likely to be more sophisticated therefore feedback is generally viewed as more trustworthy (Sadler, 1998; Gielen et al., 2010). This does not make peer feedback not trustworthy, but rather simply emphasizes the importance of having teacher and peer feedback work intermittently.

Students being able to relate their experiences to those they are providing feedback to may also potentially be of advantage. In the situation where a student is having difficulty understanding a concept or seeing the concept used in an example, the

student in the role as the feedback provider may be able to come up with an example that will be more relatable. The student may reference something from another class that they have together, something in society that is popular amongst that age group of students, and/or something they did together in the past. Although teachers were once students as well and could have possibly had relatable experiences, since the teacher has not been in that student-like environment for awhile may have problems making connections to it.

Along the same lines as the feedback provider being able to share in understanding past/relatable experiences, another benefit to having students as feedback providers would be the fact that they are currently learning in the same learning environment as the feedback receiver. Learning in the same environment allows them to understand the pace at which learning is taking place, how challenging learning material may or may not be, as well as the overall confidence associated with the material. All of these things could influence the stress that a student is feeling in trying to succeed. If the feedback provider is aware of this, they are able to adjust their feedback accordingly which may mean avoiding too much feedback as to overwhelm the student. Teachers, because they are not learners in the environment, may be blind to this and not easily adapt to ensure their type and frequency of feedback is appropriate on that specific day or at that specific time.

Additional advantages of peer feedback are best described upon thoroughly understanding some of the disadvantages of teacher feedback. It is vital to remember that peer feedback is not being promoted as a replacement for teacher feedback, but rather an alternate source and/or counterpart of feedback and a tool to potentially assist in increasing student achievement (Lin & Chien, 2009; Gielen et al., 2010). Research has

showcased that both teacher and peer corrections in the form of feedback are imperative and supportive to language learners when learning and training in writing (Lin & Chien, 2009). A disadvantage of teacher feedback identified in research is the idea that teachers have to divide time for providing feedback amongst a large number of students which ultimately disables them from providing adequate amounts of feedback to every student. Therefore, peer feedback becomes an advantage because it can contribute to an increase in the frequency and amount of feedback given (Lin & Chien, 2009; Gielen et al., 2010). Although peer feedback may not make students improve much more than the teacher's corrections, students will benefit from an overall greater total number of feedback because it ultimately leads to providing them with greater insight and directions in which they can respond and apply to make adjustments to their work (Gielen et al., 2010).

Another advantage related to peer feedback and correlated to the teacher's inability to provide adequate feedback to all students is the individualization of feedback (Gielen et al., 2010). Although it has been shown that students can potentially benefit from general feedback provided to a class as a whole, literature reveals that the more specific the feedback is, the better (Marzano et al., 2001). In peer feedback, students gain the opportunity to communicate one-on-one in a more personal setting where time to provide more specific feedback is more readily available. Alternate issues that arise in using teacher feedback are also addressed in literature such as power issues, emotions, and identity which peer feedback has the potential to bypass (Gielen et al., 2010). Although these issues will not be discussed extensively, the general idea is that students may feel more comfortable in a learning setting where peer feedback is utilized. The idea

is that authoritative status of teachers may be a road block for students in effectively responding to feedback as an intimidation factor may be present. In this case, peer feedback again can be advantageous.

Peer Feedback, Social Setting, and Learning Environment

Not only has it been proven that peer feedback is advantageous for students regardless of their position as the receiver and/or provider of feedback, but it has also been shown to be beneficial to the class as a whole and the overall social setting in which learning takes place. In learning environments where peer feedback is present, there is potential for higher levels of replies and interactions among classmates (Rollinson, 2005; Lin & Chien, 2009). This social interaction between students has been seen in research to give the sense of greater confidence directly due to the collaborative and friendly dialogue in which two-way feedback is established and thinking is negotiated between two sides (Rollinson, 2005; Lin & Chien, 2009). Along with the benefit of greater confidence, many more benefits have been associated with social interaction. In order not to stray away from the focus on peer feedback and its positive effect on classroom settings, benefits of social interaction will not be extensively explored however, it is vital to acknowledge that the opening of one door (ex., peer feedback) leads to the opening of another door (ex., social interaction) which leads to the opening of many other doors (ex., greater confidence). The idea of initiating communication between students in the classroom setting is desirable because it enables students to connect, relate, and reflect with one another which can potentially lead them to engage in 'exploratory talk' (Barns, 1976; Lin & Chien, 2009). Having students engaged in exploratory talk will give them

the opportunity to ask questions, design methods and strategies, check for understanding, and teach and learn from peers, in a community setting.

Another important part shaping the atmosphere of the learning environment is the how the students within that learning environment feel. Their feeling can be affected by many different variables which will not be discussed in-depth however, it is important to point out here that the form in which feedback is given and received could potentially be one of these variables. Logically, the more positive feelings students experience in a learning environment the most desirable as they would probably be more likely to want to remain in that learning environment and as a result achieve greater overall success. In research, it has been found that per correction in writing has contributed to making students feel more relaxed, confident, and inspired and that students overall have a positive attitude towards the pedagogy of peer feedback (Lin & Chien, 2009).

Although research gives insight into the types of learning atmospheres created as a result of peer correction activities however, there is little research regarding which learning atmospheres promote peer correction, or more generally peer feedback. Therefore, the purpose of this study was to determine in which learning atmospheres the presence of peer feedback is more prevalent.

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