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**Manifestations of Critical Thinking in Health and Physical Education Teachers:
An Examination of Three Case Studies**

Les manifestations de la pensée critique déployée par des enseignants d'éducation physique et à la santé : Un examen de trois études de cas.

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This study investigated the critical thinking manifestations of three Health and Physical Education (HPE) Teachers during the teaching/learning process in three elementary school HPE classes. Based on the conceptual framework of critical thinking developed by Lipman (1991, 1995, 2006), the present study describes and interprets the elements of this form of thinking in Physical Education Teachers. The results of the present study indicate that although critical thinking is not manifested in the same manner in all three teachers, it does however appear as a problem-solving process with the objective of optimizing students' learning.

Cette étude examine les manifestations de la pensée critique chez trois enseignants d'éducation physique et à la santé lors du processus enseignement-apprentissage dans trois écoles primaires. Se basant sur la conception de la pensée critique mise de l'avant par Lipman (1991, 1995, 2006), la présente étude décrit et interprète les éléments de cette forme de pensée chez des enseignants d'éducation physique et santé. Les résultats obtenus révèlent que bien que la pensée critique ne s'exprime pas de la même manière chez tous ces trois enseignants, elle apparaît toutefois comme un processus de résolution de problème avec pour principal objectif l'optimisation de l'apprentissage des élèves.

Introduction

There is currently a recrudescence or rebirth of the thematic of critical thinking in the curricula of many countries. For these countries, promoting the development of critical thinking skills has become a primary objective in educational settings (Bucy, 2007; Hemming, 2000; Ministry of Education of British Columbia, 2002; Ministry of Education of Québec, 2001; 2004). Critical thinking is presented as an essential tool vital for all learners because it favours the acquisition of various skills required to face a changing world. Critical thinking better equips an individual to handle a growing volume of information (Howe, 2004, Lipman, 1995, 2006; Nickerson, 1987; Pithers, 2000). The International Commission on Education affirms that the development of critical thinking in pupils is now required if teachers want to affect a real understanding of events rather than develop and maintain a simplified vision of the information related to those events (Delors, 1996 as cited in Daniel & al., 2005, p.336). For some scholars, the development of critical thinking in individuals is the supreme pathway to creating independent individuals capable of adapting to various situations (Bergman-Drewe & Daniel, 1998; Daniel, 2001; Ennis, 1991; Lodewyk, 2009). For instance, the government of Québec has expressed, in its mission statement, its desire to orient new educational programs within this perspective:

> All school establishments have as a primary responsibility to develop critical thinking in each student. (...) The school must favour the development of intellectual skills required in an ever changing "society of knowledge" (…) This approach invites schools to reaffirm and reinforce cognition by situating itself in its aim to build cognitive thinking (MEQ, 2001, p. 3).

Pallascio, Daniel and Lafortune (2004) indicate that the development of critical thinking has become not only the real stakes for achieving school success, but also for achieving educational success. Although most scholars working in this field agree on the nature and function of critical thinking, they do not agree on the definition. It is therefore apparent that even today, the notion of critical thinking remains undefined (Daniel et al., 2005; Daniel et al., 2004; Lipman, 1995, 2006; McBride, 1991; McBride & Xiang, 2004; Pallascio et al., 2004). Due to the lack of definition, it is difficult to measure this notion, to evaluate it, or teach it. If we want teachers to foster the development of critical thinking skills in students we must establish a clear conceptualization of the manifestations of critical thinking so that teachers may evaluate the results and identify the favourable conditions required for its development. Many research initiatives have sought to better understand, define, and develop this type of thinking in learners (students, pre-service teachers, etc.) (Daniel, 2001; Daniel al., 2000, 2004, 2005; Gagnon, 2010; Kpazaï & Attiklémé, 2009, 2008; McBride, Xiang & Wittenhug., 2002; Pallascio, 2000; Pallascio & al., 2004; Zohar & Schwartzer, 2005). However, there have been a limited number of studies examining the manifestation of critical thinking skills in HPE teachers during the teaching-learning process (Donnelly, Hellion et Fry, 1999; Kpazaï, 2005; Kpazaï & Attiklémé, 2009). According to several researchers, the development of solid critical thinking skills in students is, in large part, a function of the teacher's influence (Daniel, 1998; Ennis, 1991, Knight, 1992; McBride, 1999, 1990). The teacher's role in fostering strong critical thinking skills is emphasized in the following statement by Newman (1990): "If we expect our students to become

effective critical thinkers, then we as teachers must become models of thoughtfulness" (p.2)

This study examines the gestalt of the manifestations of critical thinking that fall within this perspective. It proposes to answer two questions: 1) what is the gestalt of critical thinking in the instructional practice of HPE Teachers? 2) How can critical thinking be more precisely defined based on its manifestations in HPE teachers?

Conceptual Framework

The conceptual framework for this study is based on Lipman's (1991, 1995, 2006) theories of critical thinking. Researchers and specialists in this field such as Daniel & Bergman-Drewe (1998), and Lafortune & Robertson (2004) have noted that Lipman was strongly influenced by Dewey's (1933) epistemological conception of critical thinking. Lipman's (1991, 1995, 2006) model presents indicators for critical thinking skills unlike other scholars, such as Ennis (1991), McPeck (1991), Paul (1992), Siegel (1988), Beyer (1987), Brookfield (1987) and Sternberg (1985).

As Daniel (2001) stated: "...the aim of the approach conceived by Matthew Lipman and Ann Margaret Sharp of Montclair State University (New Jersey) in the 1970s is to favour the cognitive, affective and social development of youngsters aged 5 to 15. This approach is now established in 50 countries, and its pedagogical material has been translated into 20 different languages. Research has led us to recognize the positive impacts of this approach on pupils' cognitive development and on the quality of teaching provided by the teachers" (p.51). However, few researchers have attempted to apply this approach to the Health and Physical Education setting.

Lipman (1991, 1995, 2006) postulates that individuals use critical thinking in a given context in order to discern pertinent information among all information received, with the purpose of reaching a given goal. Critical thinking is therefore a tool needed to counter uncritical thinking and thoughtless action. For Lipman (1991, 1995, 2006), critical thinking is a complex thought process that takes into account hypotheses and their implications, as well as the justifications needed for reasoning. Thus, "thinking critically" involves thinking about the process of thoughts, as well as their objectives. Critical thinking brings about good judgment and is identifiable by 1) the presence of criteria, 2) the sensitivity to context, and by 3) the thinker's ability to demonstrate self-correction.

According to Lipman (1991, 1995, 2006), the presence of criteria is essential because criteria govern critical thinking. They are the rules and principles that provide critical thinkers with the opportunity to adequately assess a situation. Without criteria, critical thinking would only be arbitrary, non-structured thinking that is left to chance. Therefore, the presence of criteria tested in a community of thinkers or specific context makes judgments defendable. Criteria are variable, and concepts may be formal or informal, but are always directed toward an objective, or at least, a defendable outcome. For Lipman (1991, 1995, 2006), engaging in the process of critical thinking is a cognitive responsibility for every teacher. In view of this, Gagnon (2010) indicates that any teacher who openly states the criteria used encourages their students to do likewise, thus offering a model of intellectual responsibility. The teacher invites the students to become

responsible for their own thought processes, and to a greater extent, for their own education.

Critical thinking is sensitive to context because it recognizes the specificity of each case, and from each context it must provide an appropriate and viable answer. The characteristic of "sensitivity to context" suggests that thinking is bound to its environment both physically and conceptually, therefore flexibility is required in its application to real life situations. Thus, for Lipman (1991, 1995, 2006), critical thinking is not a mechanism of thoughts, but more an adaptation of thoughts to an environment and its main variables.

Critical thinking is self-correcting because it invites individuals to evaluate their own weaknesses, become sensitive to their limits, and be inclined to correct their mistakes. Self-correction is not spontaneous; it is a progressive reflective process of research. It is important to remember that using self-correction as a process for critical thinking does not always produce a favourable outcome. It could fail in its fulfillment (Lipman, 1991, 1995, 2006).

According to Lipman (1995), these three characteristics of critical thinking need to be precise, defined and operational if society is looking to encourage "effective thinking skills in the classroom."

Method

This study examines the manifestations of critical thinking in Health and Physical Education (HPE) settings. The epistemological framework of this study represents qualitative hermeneutic research based on the analysis of multiple cases.

Participants and research setting

Three teachers, (two men and one woman) who specialize in the instruction of HPE volunteered to participate in this research study. These teachers were employed in three different public schools located within an urban community in Montreal and all had varying years of teaching experience (eight, twelve and nineteen years). These *a priori* differences (age, sex, and years of experience) allowed for a better understanding of critical thinking in the practice of teaching (Beau, 1995; Van der Maren, 1995). The characteristics of the participants are illustrated in Table 1

Table 1:
Characteristics of the teachers

	Teacher 1: B1	Teacher 2: B2	Teacher 3: B3
Sex	Male	Female	Male
Age	38	42	42
Years of experience	8	12	19

Data collection

To determine the presence of critical thinking in these three teachers, many strategies were used to collect data from each participant: 1) a pre-class and post-class interview, 2) observation of three HPE classes, 3) video recordings of the three teaching sessions, 4) a semi-directed interview with each participant using the stimulated-recall technique, 5) an audio recording of the stimulated-recall

interviews, and 6) an integral transcription of the interviews validated by the participants (*feed-back* from participants). The nine semi-directed interviews were based on a prepared interview grid made up of elements related to the three characteristics for critical thinking as defined by Lipman (1991, 1995, 2006). This afforded the researchers the ability to cover all aspects of the research themes during the interviews. Examples of interview questions were as follows: 1) For self-correcting: What are the limiting factors associated with this way of teaching or this way of proceeding? Why did you change the tone after a few minutes of practice with the students? What motivated you to make these changes, and what led you to the proposed choice of educational tasks that were not previously planned? 2) For sensitivity to the context: Why did you perform in this particular action when you had previously behaved in a different manner? At that precise moment, why did you use that method, was there a particular reason? Do you always act in the same manner? 3) For criteria: On what criteria do you base your pedagogical actions? Why have you done this, what were your reasons?

Coding strategies and data analysis

The data collected was strategically analysed according to procedures applicable to multiple case studies. It was therefore done using a three-step approach: coding of the data, vertical analysis of each site (data issued from each participant), and horizontal analysis of all sites. At the end of the process, we used the inductive method to highlight the elements of the definition of critical thinking in the HPE setting.

Coding of the sample was mainly based on an evaluation grid that considered Lipman's (1991, 1995, 2006) characteristics of critical thinking. However, the indicative elements of the characteristic "presence of criteria" were accounted for through elements based on the practice of teaching.

Once the integral transcriptions of the nine semi-directed interviews were completed and validated by the participants, we transcribed the interviews in order to retain the general ideas without looking at qualifying the data. Then, we proceeded to the second step where the data was coded in order to link ideas with the process of critical thinking.

The theorization of manifestations of critical thinking was completed in a two-step process as we proceeded with the analysis and treatment of data. Firstly, at the level of each case study, we tried to understand the functions of critical thinking in teachers by highlighting the concrete manifestations of elements of critical thinking while explaining them as they appeared. Following this process of interpretation of data for each site, we proceeded to conduct a horizontal analysis. At this level, we were looking to highlight the manifestations of critical thinking by comparing the sites for elements that were similar and different with regard to the manifestations of critical thinking. This two-step analysis allowed us to theorize about the nature and the manifestations of critical thinking skills during the teaching-learning process. Although a number of transcriptions were coded separately by both researchers, the level of inter-rater reliability was 90%, which is deemed acceptable according to Huberman & Miles (1991) who suggested a level of 85% inter-rater reliability as an appropriate threshold.

Results

The presentation and analysis of data was done according to sites, or teachers. The critical thinking characteristics of each teacher is illustrated in Figure 1.
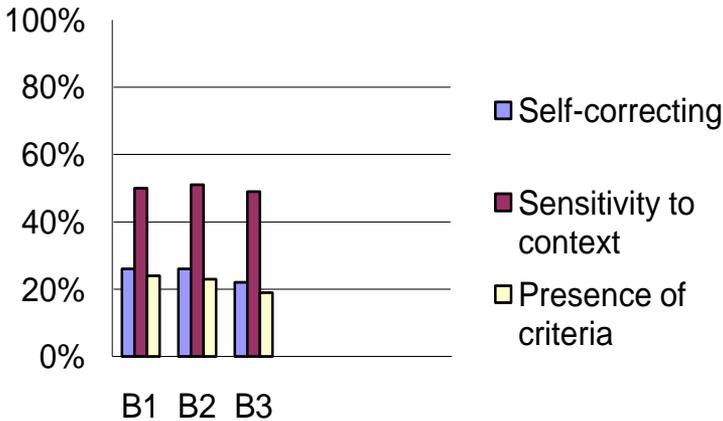
Figure 1. Characteristics of Critical Thinking

Case 1: Manifestations of the critical thinking for Teacher 1 (B1)

The three Lipman (1991, 1995, 2006) critical thinking characteristics were noted in varying degrees in Teacher B1.

The characteristic of "self-correcting" in the manifestation of critical thinking for B1 was seen through the adoption of flexible thinking. Throughout the course of the study, the observed teacher demonstrated sensitivity not only to his own limitations in terms of the ability to think critically, but was inclined to self-correct in order to try new unplanned activities with students.

When I say who wants to be the leader, everyone wants to be the leader. But it is essential to give each the opportunity of being a leader. Before, we had an established schedule of when each would be the leader, but now I have changed the rule, and during each lesson we have new leaders.

Here, B1 deliberately chose to break with established pedagogical routines after seeing the negative impact it had on his students. In fact, he considered that the pedagogical disposition was incongruent with an equitable climate in HPE class whereby each student should have the opportunity to assume the same responsibility as his or her peers. Achieving equality in the classroom, for him, was accomplished not only by an evaluation of the relevancy of the first disposition, but also by the application of a new pedagogical practice.

The characteristic of "sensitivity to the context" was manifested in B1 during his interaction with his students through a thought process influenced by variables linked to his teaching environment. The excerpt below offered an example of this characteristic "sensitivity to the context".

Once again, we are in Health and Physical Education class; we are there to learn. As a teacher, I do not referee, in the sense of refereeing for a

basketball game outside the school. We are in an educational learning context.

Here, the nature of the course influenced the decisions of participant B1. In fact, B1 based his pedagogical activities on his understanding of the essence of HPE. Thus, for him, it was imperative to anchor his pedagogical practice in the distinction between sport activities and "Health and Physical Education", a subject matter where physical and sport activities are the means to learning. It is within this framework, described in the excerpt above, where basketball was a pedagogical means, and B1 would not make the same decisions as a sports referee when his students violated the rules during a game. For B1, the HPE course is a "practice of physical activities" that applies to all. It represents the true essence of the school; in other words, it is for all students an educational and learning setting. This particular element of "setting" for the teacher's interactions and the nature of the course itself are undeniable elements for pedagogical interventions.

In terms of the characteristic of "presence of criteria" in the manifestation of critical thinking of B1, the reading of the transcript of his interactions revealed the existence of two kinds of criteria: technical nature (how to dribble a ball, the quality in a technique) and socio-ethical nature (mixed principles or the alternating of girls and boys during the planning of teams and the learning activities).

I always say boy/girl; it is a principle that I established at the beginning of the year. If in a first instance you have chosen a girl for your team, in the second round you must choose a boy, then again a girl, and so forth. (...) The teams must always be mixed, alternating girl/boy. By doing so, this eliminates disagreements among students. At that age, for me, there are no real differences between girls and boys. Teams must always be mixed.

In this excerpt, Teacher B1 revealed the existence of criteria of a socio-ethical nature: the mixing of teams. The respect for this principle allows students, according to B1, the opportunity to learn to respect the opposite sex and the opportunity to function harmoniously within a team. For B1, the criteria "socio-ethical nature" supported his pedagogical intervention as a normative characteristic.

Case 2: Manifestations of critical thinking for Teacher 2 (B2)

According to the data relative to the manifestations of critical thinking mentioned for Teacher B2, the three characteristics of critical thinking (Lipman, 1991, 1995, 2006) were present.

The characteristic of "self-correcting" as a manifestation of critical thinking in B2 was understood in this case to be the modification in a given teaching strategy or in a pedagogical routine previously planned. This modification was made after a self-evaluation of pedagogical tools used in light of the results achieved by the students.

I have changed my initial objective because I wanted to make the course more interesting for the students. (...) When I see that all is well, that the students are enjoying the class and are participating, then I am satisfied with the results and I leave my teaching objective as is. But when I notice behaviours in students that indicate that they do not like the activity, or even some stop participating in the activity, then it makes me rethink my teaching

objective. I say to myself something is not working and I must find something to anchor the students. This brings me to find a new approach.

This excerpt demonstrated B2's awareness that the behaviour of the students indicated a failure to achieve the educational objective of the lesson. The teacher perceived that many students were not motivated and quit. This lack of interest from the students provoked a reassessment of the initial approach where new modifications were chosen in order to engage the students.

Lipman's (1991, 1995, 2006) "sensitivity to context" characteristic was manifested during interactions with students. In fact, B2 based her pedagogical actions on certain educational and environmental contents, in particular, the students' affective, cognitive and motor skills.

I have brought students to the centre of the playing area only to solve behavioural problems. They were extremely agitated during the warm-up period, and I could not continue nor could I present a new learning objective. I told myself if I were to present new learning objectives in their current state, I would not be able to handle them during the learning activities; therefore, it was essential that I stop the warm-up period and calm them down.

In this excerpt, the particular behaviour of the students was the basis for the pedagogical approach used by B2. In fact, the degree of agitation in the students was the determining factor that not only shortened the warm-up period, but also led to the implementation of the new pedagogical approach that involved regrouping the students in the centre of the playing field. For the teacher, this context element needed to be resolved before attending to the planned educational activity.

We also noted many incidents related to the "presence of criteria". In other words, the educational intervention of B2 was more reasoned than intuitive, although the nature of these characteristics was uniquely of a technical order.

Here I wanted this activity to run as I had planned it, and I wanted the students to respect the given instructions. I asked them to individually succeed in the cascade: juggling with both hands while using three scarves, but this is not what was happening. Not only did they not succeed in mastering the technique, but they were compelled to compete with themselves.

When we considered this excerpt, the criterion put forward by B2 was a criterion that was not only technical in nature, but also more specific. B2 was looking for the simulation of a technique involving motor skills, that is, the cascade. In fact, the students were expected to attempt to copy the action perfectly.

Case 3: Manifestation of critical thinking for Teacher 3 (B3)

All three of Lipman's (1991, 1995, 2006) characteristics of critical thinking were identified in Teacher B3.

The characteristic of "self-correcting" in B3 was manifested through the conscious evaluation of educational situations where pedagogical strategies were used by the teacher in order to offer a better understanding of learning objectives. That is, B3 recognized the ineffectiveness of his first attempt at delivering a teaching objective, or his choice of pedagogical strategy when he evaluated the motor skill responses or the resources mobilized by the students to solve

problems in these educational scenarios, Not only did he re-evaluate the situation, but he also presented new pedagogical strategies in order to correct the situation. The following excerpt represents this type of reassessment:

> *I have modified some of the rules for this game because I wanted to give a new challenge to the students when their team was in a defensive position. After a few minutes of play, I realized that the first objective of defensive positioning was quickly reached by the students, and that the allowed time to reach this objective had not yet run out. I told myself, that I had to add other skills to this task in order to get the students to question themselves on the task and to develop new defensive skills (...) In fact, I noticed that they were ready for these new skills when they played in a defensive position. (...) Maybe I was wrong right from the start when I assessed their initial skills, which rendered the first objective too easy for them.*

Therefore, after evaluating the objective initially planned, and noticing an error, B3 introduced a modified pedagogical objective to improve the primary objective. Since the students achieved the objective very quickly, B3 realized his planning mistake in respect to the students' abilities. He needed a new learning objective since the first one did not challenge the students, and left little room for learning. Following his evaluation of the situation, B3 did not wait for time to elapse before intervening and modifying the situation to present a more complex set of skills. This new situation created added strength to the first objective. B3 manifested self-correcting in his initial planning.

The characteristic of "sensitivity to context" in teacher B3 was illustrated during an interactive process where this individual considered the time of day when the lesson was delivered, or the time of year (beginning, middle or end of school year).

> *We are near the end of the school year, and I am with a group of Grade 6 students. At this time of year, these students are more like junior school students than primary school students. They quickly disassociate themselves from the task. I have to clearly explain the educational objective in detail so that they will engage in the presented educational situation.*

B3's statement reflected the educational situation in Quebec whereby the completion of grade six signals the end of the primary level of education. At this stage, the students are preparing for the transition to secondary school. B3 realized that by the end of the school year, these students no longer viewed themselves as primary school students. They were less attentive when objectives were simplistic, and therefore they became less engaged in the task at hand. This reality demanded that not only did B3 need to take more time to clearly explain the educational objective, but also had to find ways to clarify his explanation in order to engage the students.

B3's thinking during educational interaction with the students was based on criteria that served to draw a comparison between students in terms of their performance and behaviour. In reading the interview transcript from B3, it was evident that the nature of these criteria was twofold: technical in nature (individual or collective), and socio-ethical (respect for the principle of mixing teams and respect for peers). The following statement is an example of this characteristic of critical thinking in B3.

> *The criteria are variable, but here I have to congratulate the red team since the students produced great defensive skills. They organized themselves well*

and this type of behaviour is what I wanted to see in all the teams in defensive positioning.

In this excerpt, the criteria were non-specific and technical in nature. B3 did not expect this outcome. He did not expect the students to reproduce a motor behavioural skill or a specific technical skill, but when placed in these educational situations, the teams provided a collective appropriate strategy to counter the opposing team. For B3, the criteria on which the pedagogical intervention was based was the collective behaviour of the defensive team.

Discussion

How can manifestations of critical thinking be defined in light of the data collected? To answer this question, we must build our arguments on a double perspective: first, by basing them on the foundation of Lipman's (1991, 1995, 2006) characteristics; second, by presenting a theory whereby different manifestations of critical thinking are considered to be similar in nature, but expressed to varying degrees.

An analysis of the data gathered clearly indicates that the three teachers manifested the characteristics for critical thinking in their class interactions. In fact, for all three teachers, there is evidence of self-correcting, sensitivity to context, and presence of criteria. However, the degree to which these characteristics appear is highly variable. This reveals a double reality in critical thinking utilized by teachers in the HPE setting: a) there cannot be a binary vision in critical thinking and b) it is possible to postulate that critical thinking in HPE teachers is a contextual thought process since there is, in this study, a dominance of the characteristic "sensitivity to context" as represented in Figure 1 above.

The analysis of the transcripts reveals that critical thinking can be understood essentially as a means of maintaining equilibrium between an individual teacher and the educational environment. It is a dynamic cognitive process oriented towards the resolution of problematic situations. For this process to occur, the teacher must be placed in a situation which provokes a cognitive conflict. In the quest to re-establish cognitive equilibrium, critical thinking must be supported by one or more of Lipman's (1991, 1995, 2006) characteristics of critical thinking. It must call upon, to varying degrees, the characteristics of self-correcting, sensitivity to the context, and the presence of criteria, by which they may each become influenced by one or other characteristics, and be expressed to varying degrees. Therefore, we can hypothetically define three levels of strength of critical thinking in the professional actions of HPE teachers: 1) a basic level of strength of critical thinking, 2) an average level of strength of critical thinking, and 3) a high level of strength of critical thinking.

According to the data collected from the three teachers who participated in this study, a "basic" level of strength of critical thinking is most often identified with the characteristic of "sensitivity to context" when it is utilized to resolve a problematic educational situation. Based on the ecological theory proposed by Doyle (1986), and studies illustrating the complex nature of the teaching process (Calderhead, 1987; McNamara, 1990; Shulman, 1987: Tardif & Lessard, 1999; Tsangaridou & Siedentop, 1995), teachers are called to consider not only the diversity in the skills of the students, but they also must account for the particularity of the environment when seeking an educational solution to a problem. The characteristic of "sensitivity to the context" in critical thinking

appears within the context of reconstruction of problematic situations in educational settings. For the teachers in this study, it was also a quest to find solutions that were appropriate for a specific educational context. Teachers who use this type of thinking demonstrate not only the capacity to appreciate individual differences among students, but also recognize that different contexts require the application of specific rules and principles. Appealing to the characteristic of "sensitivity to context" demonstrates that the teachers in this study were receptive to any alternatives coming from the students or the educational environment. According to Paul (1990), that is the expression of a strong sense of critical thought. In sum, the "basic level of strength of critical thinking" does not signify an "elementary" level of critical thought, but rather it is exhibited in the dynamic of critical thinking displayed by the teachers as the first step towards the culmination of an appropriate judgment within the teaching-learning context.

An "average" level of strength of critical thinking, according to the data collected, is demonstrated by teachers who tend to use self-correcting more frequently. Thus, the characteristic of "self-correcting" is the basis for all reflective critique. In addition to identifying the elements in a problematic situation and addressing a problem while considering the context, the critical thinking teacher must recognize his/her own fallibility, and must be willing to reconsider the problem-solving process if he/she wants to reach a viable and suitable solution. The teacher engages in an active search for solutions to correct his/her own mistakes while considering the context in which he/she finds himself/herself. This to-and-fro process is the characteristic of critical thinking, which according to Dewey (1933), is a non-mechanical process. Critical thinking cannot happen without the presence of the characteristic of "self-correcting". In fact, the presence of the "self-correction" characteristic suggests that the teachers in this study take into consideration the ideas and behaviours of their students. Therefore, they exhibit both dialogical thinking and a disassociation of egocentric or weak sense of critical thinking (Paul, 1992). Finally, as noted by Hemming (2000), the manifestation of "self-correction" by the teachers in this study does not mean that they are without notice or conviction, but rather this characteristic is exhibited for the purpose of achieving the ultimate goal of their instructional behaviours: educating students and ensuring that they learn the information that is conveyed. In short, this second category of critical thinking is of average strength because it appears, conceptually, following the "basic level of strength of critical thinking" (which primarily takes into account the features of the educational context) and precedes the "high level of strength of critical thinking".

A high level of strength in critical thinking skills, according to the data collected, is present when a critical thinker calls upon the "presence of criteria". In fact, in the quest to find solutions to a problematic situation, if critical thinking is implemented by the teacher who calls upon criteria, the critical thinking is done at a higher level and becomes more equitable, objective, justifiable, and responsible. For Lipman (1991, 1995, 2006), critical thinking based on criteria is reasoned and non-arbitrary; it can give reason to a judgment or to its utilization in an objective manner. Furthermore, the third category of critical thinking displayed by the teachers in this study is designated as a "high level of strength" because the first two characteristics of critical thinking (sensitivity and self-correction) are subject to the criteria.

Conclusion

The ultimate goal of this study was to examine manifestations of critical thinking in HPE Teachers. The data collected revealed that Lipman's (1991, 1995, 2006) characteristics of critical thinking, while present in the professional actions of these teachers, were markedly different in their nature and function. When a teacher calls upon the characteristic of "sensitivity to the context" to address a problematic situation, and when the characteristics of "self-correcting" and the "presence of criteria" respectively play a role in making the teacher aware of his or her own vulnerability, they are in a better position to make effective decisions. The teachers utilized critical thinking as a cognitive process for problem-solving in pedagogical situations to benefit students during instruction.

This study provided a better understanding of the critical thinking processes employed by three Health and Physical Education Teachers at the elementary school level. The purpose of this study was to shed light on the process of critical thinking and not to make judgments about the quality of their critical thinking skills given the small number of participants and the specific context in which the process of critical thinking was examined. Therefore, the results obtained from this study cannot be generalized to all HPE teachers. Further research with more HPE teachers at both the primary and secondary school levels is essential to achieving a better understanding of the nature of critical thinking and its role in the educational context.

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