Video-based Analysis for Teacher Development in Physical Education

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ABSTRACT

The world in the 21st century is a world of technology and revolution in different aspects of life. The increasing desire of young people to use technology (van Laarhoven & van Laarhoven-Myers, 2006) at home, at work, and during leisure time has made industry come up with a variety of tools to be used. In such a scenario, the video recording analysis method has become a helpful tool in researchers’ and educators’ hands, allowing them to observe and assess a class, conduct pedagogy research, and so forth. For some time, video has been used to record and analyze human movement for health issues. Physical education professionals and coaches took advantage of technology to improve their athletes’ performance using video capture. The video gave them the opportunity to analyze and inform their athletes for better performance during competition. Video-based observation has been used in several studies conducted in schools, for different disciplines and for different reasons, such as to compare different teaching styles, to compare teaching behaviors of teachers, to compare student participation in class, or teaching effectiveness (Constantinides et al., 2013). In physical education, there is a growing interest among physical educators to incorporate digital technology in their teaching (Pyle & Esslinger, 2014; Thomas & Stratton, 2006). In this paper, however, the focus of the discussion is on how this technology may help the teacher develop and provide more effective lessons to the students. Therefore, the process of video recording is analyzed, the value-based observation is thoroughly discussed, as well as the value for the teacher who wants to develop his teaching. Furthermore, suggestions are made for physical education teachers who may use this method in the future for their own development in teaching physical education.

Keywords: Physical education, teacher development, video analysis, video-based observation.

I. INTRODUCTION

The technological revolution, especially in the 21st century, has reached around the world, with important consequences for government, business, the labor market, and others. Technology affects almost all aspects of life, from transport efficiency and safety to access to food and healthcare, socialization, productivity, and others. Today’s technology is becoming more and more scientific. Not only is it created and developed on a scientific base, but it also generates fundamental scientific knowledge. The development of artificial intelligence, for example, demonstrates the increasingly scientific nature of technology; this effort requires the cooperation of a variety of disciplines and, in turn, holds the potential for application in a wide variety of fields. This example illustrates how problems are approached today, with a more global approach that breaks down the barriers of single disciplines to obtain a unified, interdisciplinary vision (National Academy of Sciences, 2023, National Academies of Sciences, Engineering, and Medicine, 1988). The field of education could not be an exception to the technological revolution. Considering the development of the classroom environment with a blackboard, then with an interactive whiteboard, the overhead projector and then the projector for PowerPoint presentations, one may easily understand the changes in the 21st century. Furthermore, the electronic platforms used in education, and all the electronic tools introduced from time to time, which make things easier in education and help teachers and students communicate their work and get feedback efficiently. In addition, during the pandemic, the use of Zoom, Teams, and other means of teaching and learning electronically, were really helpful and supported education, in these difficult times. One method that could be used by teachers of all disciplines, is the video-based observation for teacher development. This process engages teachers in video recording a lesson, which can be viewed afterwards and provide valuable information, in the area of pedagogy. For example, in physical education, a teacher gets the opportunity to have his lesson video-recorded and then analyze the lesson to see if the lesson plan was followed accordingly and if the lesson was taught effectively. Although physical education involves movement, as opposed to other classes, and one may

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think that it might be more difficult to video-record the lesson, the lesson can easily be video-recorded, following specific protocols to make sure that the whole area used for physical education is constantly seen on the screen. The procedure is simple, and it’s described below.

II. VIDEO RECORDING OF A PHYSICAL EDUCATION LESSON

In the past, the procedure was complicated since the researcher needed specific equipment for that, such as two video cameras (at least), one monitor (screen), one sound and vision mixer connected to the screen, a timer on the screen, a portable microphone for the teacher (to be able to hear his voice and the directions given to the students), colored and numbered pinnies for each student. Half an hour before the lesson, a system check would verify if everything was ready for recording. Today, using the latest technology, cell phones, video recording has become easier. One may video-record a lesson, save the video on his computer, and then sit comfortably and analyze the lesson.

A. The Value of Video-based Observation

Using this method, teachers can view their teaching and watch what students receive during class. Many times, during a conversation, a teacher states what he believes occurred during the lesson; for example, a physical education teacher may say that he provided equal opportunities for practice to all his students. Watching the lesson video, however, he may withdraw his point of view since what he believed occurred during the lesson might not be what occurred. Sometimes, observing this in a recorded video might be shocking for a teacher who believed he was compelling enough, but the video proves him wrong! This “shock” is strong enough to make teachers abandon ineffective practices for their classes and think of new ones—especially most of them who care about their students and their learning.

Video-based observation allows the physical education teacher to view specific components of the lesson, such as the presentation of a skill, a strategy taught, the organization of students and equipment, and criticize his teaching. The video offers varied opportunities as it allows the lesson to be paused, repeated, and played in slow motion for discussion purposes and to verify what occurred during the lesson. In other words, the lesson, or specific parts of it, may be observed more than once, which permits in-depth analysis in a way that direct observation does not. The information collected is beneficial both for novice teachers and experienced ones. The observer may see the progress made over time or specific components of teaching that still need to be worked on and improved.

Watching the video of the lesson, teachers can tell how their students respond to the lesson and if they are enjoying it or not since the video allows going back and forth and watching each student separately. As mentioned before, students wear colored and numbered pinnies so that the teacher will recognize them at all times. In addition, they can verify if they provide equal opportunities for practice, if some students are “hiding” behind the others when the teacher is not looking, and if the skill taught is executed in the same way it was demonstrated in class.

Teachers often find out things that might not be noticed during the lesson. Either pedagogy-oriented or organization-oriented. For example, teachers may believe they provide feedback to students during practice. However, when they watch the video, they may realize they encourage and support them, but feedback is missing. Similarly, teachers may find out how they organized their students for practice. However, during planning, it seemed to be okay. The video revealed that not all students had the same opportunities for practice.

For novice physical education teachers or student-teachers, video analysis provides an unusual but fair opportunity to help them grow by watching their teaching and reflecting on it. For example, if a student-teacher understands that organizing the students in two groups did not allow all students to get the ball when practicing a passing game in soccer and suggests during reflection that smaller groups would work better in the next lesson, you can tell that the student is on the right track and expect him to develop. In addition, a college professor may demonstrate the limitations of a student teacher’s practices, allow the student to reflect on them, and then discuss them with him, providing his suggestions to the student.

As one realizes, video-based observation provides time for reflection. Teachers who use this method might be helped to develop in their teaching and strategies used. It is one thing to believe that you are an influential teacher and another to watch that what you believe is not what happens during the lesson.

B. Video-observation versus Direct Observation

The benefits of video-observation are multi-dimensional, and the main ones are described below:

1) Evaluation of the Teacher’s Observation, Reflection, and Critical Thinking Skills

The video may be used to open up a discussion between the teacher and the observer, to evaluate the teacher’s observation skills and pedagogical understanding of his teaching. For example, an observer’s question could be: “You have explained the skill to the students and then organized them in pairs to practice it. However, there was some kind of confusion during practice. What do you think of that?” At this point, you expect the teacher to discuss the fact he did not demonstrate the skill but only explained it to the students and come up to the conclusion that probably that was the reason for the confusion. Obviously, during skill or strategy presentation, you expect the teacher to explain and demonstrate the skill so that the students get to know the key points of the skill and the same time get a picture of the skill itself and how it looks when executed correctly. As mentioned before, the purpose of this procedure is not to offend the teacher’s practices but to help him develop. If the teacher understands that demonstration of the skill is an important component of skill presentation, then he will probably remember that every time he’s presenting a skill or a strategy. That’s quite a benefit that the teacher gains in his teaching. Especially if it comes through observation, reflection, and critical thinking of his own teaching, direct observation may help the teacher benefit as well if the discussion is scheduled right after the lesson when people have all the information fresh in their minds. However, there will be no picture of what actually occurred in class, but only what the teacher and the observer remember about it.
2) Evidence of the Applied Teaching Strategies

The recorded video may provide evidence of what occurred during the lesson. Many times, although the observer’s effort is to help the teacher develop in his teaching, many misunderstandings may occur, even among friends. For example, the observer may open up the discussion by saying: “As I observed during the skill presentation, you avoided demonstrating it.” The teacher may deny that, saying that he did, which makes it challenging to have a constructive discussion and analysis of the lesson. The video demonstrates what occurred, which means what the observer states is correct. There is no doubt he commented that for any other reason (e.g., to purposely show the teacher that his teaching practices are not practical), but only because this occurred during the lesson.

When referring to direct observation, the observer’s only proof is what is written in his notes. The teacher may deny that because he probably did not realize or believe that component was included in his teaching. Then, you have the teacher’s vs observer’s word in a discussion, which may not lead to the expected outcomes.

3) In-depth Analysis of the Lesson

The recorded video provides the opportunity to watch the lesson or parts of it multiple times, which allows for in-depth analysis and reflection of the lesson in a way that direct observation does not. This holds true for the observer and its intentions (if the observation is mandatory for any reason) so that the teacher may feel safe that the observer’s comments came out from the recorded video, which is evidence of the truth. In addition, if, for any reason, the observer does not provide the real picture of what he observed in his comments, then the teacher may object, providing evidence supporting his position. In this way, both the teacher and the observer are secured by the recorded video.

4) Evidence of the Teacher’s Growth

When video recording of a teacher’s class occurs regularly, it may provide evidence of the teacher’s development and can offer insights into the progress made. For example, you can watch the first video, help the teacher analyze the lesson by reflecting on his teaching, followed by a discussion, and then video-record another lesson to find out possible changes in teaching practices. By doing this several times, you can see the teacher’s progress. Similarly, when referring to student teachers, video recording across the stages of the student’s development can offer insights into progress. In addition, conference meetings may be organized in small groups to allow for critical thinking among student teachers on another student’s lesson. This could also be organized online, with the students using pseudonyms, where only the professor knows the real names. In such a way, all students benefit both by reflecting on their teaching and by getting feedback and new ideas from other students, as well as their professors.

5) Feedback

When referring to video analysis, feedback can be thoroughly given and explained to the teacher. The video makes it easier for the teacher to understand what was missing and explain why it was missing through a constructive discussion. In this way, more details on pedagogy can be discussed. Regarding time management, video analysis offers the opportunity to observe details on this component and provide valuable suggestions to the teacher. Feedback may be offered in detail for the context of the class as well. Components of this context that may inhibit student participation or put students in danger during the lesson may be discussed. In direct observation, feedback is offered in the gym immediately after the lesson based on what the observer has captured. Usually, an experienced observer will capture many details. However, the opportunity offered by video to watch the lesson again may show details not captured at first glance.

C. Acceptance of Video Recording by Physical Education Teachers

When referring to video recording of a lesson, some teachers feel like they are threatened. Teaching in the gym makes them feel safe because nobody’s watching the lesson. Only the thought that someone will be watching their lesson and probably will identify inefficient practices makes them feel uncomfortable. It’s like they are taking a field exam, where the observer will assess their teaching practices and give them a grade. In this case, the expected reactions of the teachers are the following:

a) The teacher denies signing consent for observation and video recording and is negative to any type of discussion for that.

b) The teacher is negative about video recording but discusses the option of direct observation upon asking a lot of questions. Usually, in this case, the teacher wants to make sure that no information will identify his identity or the name of the school.

c) The teacher consents immediately to have his class video-recorded and allows time for the observer to explain the whole procedure, which includes the protection of any personal information.

The first reaction, as mentioned before, comes out from fear that inefficient practices may be video recorded, which makes the teacher deny the recording. In addition, this reaction comes from teachers (usually a very low percentage) who do not follow efficient practices, do not plan for their lesson, or allow the students to decide what they want to do during the lesson. It’s the type of Physical Education teacher that wants to go along with the students and easily let the students make their own decisions as far as how to spend their time. In this case, you usually see the boys playing soccer or basketball and the girls playing volleyball. The problem, however, is that many students are missing a lot of fundamental skills to play these sports, so the students who possess the skills to play are the students who usually have fun and enjoy playing, as opposed to students who are struggling to touch the ball or give a pass, or to students who are just filling the space (Constantinides & Silverman, 2018; Constantinides et al., 2013).

The second reaction comes partially from fear of video recording inefficient practices. However, the teacher discusses the option of direct observation when the observer reassures the teacher that no personal data will appear in a conference presentation or a published paper. Teachers ask a million questions to ensure their teaching practices will not affect their jobs. If it appears negative, the school principal or the Ministry of Education will not receive this picture, and
parents will not find out about possible inefficiencies in his teaching. In this case, the teacher stressed the previous days to ensure the practices to be used were the expected ones. The teacher may discuss the lesson plan with other colleagues, go back to his college notes, or surf the web to identify effective practices for teaching the planned content of the lesson. As soon as the lesson ends, the anxiety will sky-high determine if everything observed was on the right track.

The third reaction comes from most physical education teachers who feel confident about the teaching practices they use in class. They are not afraid to make "pedagogy mistakes." However, they can correct them during the lesson, make quick decisions, or find alternatives if a teaching method is not effective enough, if the way students are organized does not allow for multiple practice opportunities, and so forth. They are experienced enough to plan and apply decisions made effectively. They know their students. They know high, middle, and low-skilled students in their classes and provide them with appropriate experiences according to their abilities, always challenging for higher achievements (Constantinides et al., 2013).

Students in their classes can engage in developmentally appropriate physical activities designed specifically for them to develop their fitness, motor skills, and health (Robinson & Goodway, 2009; Sallis et al., 2000). In addition, students in their classes are more likely to develop positive attitudes toward physical education and physical activity. Research suggests that students with positive attitudes are more likely to participate in physical activity outside of school (McKenzie, 2003; Portman, 2003; Solmon & Lee, 1996; Wallhead & Buckworth, 2004).

III. DISCUSSION

Although some physical education teachers may feel insecure about consenting to video recording, most have no problem understanding the purpose of the recording, which will work for their benefit. Video recording is a useful way for teacher development. When teachers understand how it works, and trust is built between the observer and the teacher, it may help the teacher reflect on his teaching practices and improve or modify his teaching to be more effective. For example, teachers may believe that they provide appropriate time for practice during the lesson. However, watching the video, they may find out that time given to students for practice might not be enough. Or they may insist on using a teaching style that works for their students, but when using a different one, it might be proven to work even better. Sometimes, through discussion with the observer, teachers may realize that they could use different teaching styles to teach specific topics. They may find out that a different teaching style may look more interesting for students and the teacher as well. It might have proved more effective in many aspects of pedagogy, but the teacher could not see it.

In physical education, the researchers usually have to do with the third reaction, which makes it easier to collaborate and proceed with the purpose of the recording (Constantinides et al., 2013). Physical education teachers will deny video recordings for research, although they want to ensure that all legal procedures are followed, according to the Ministry of Education. In the case of teacher development, physical education teachers feel confident enough to accept video recordings despite the anxiety at the end of the recording to find out if everything went well.

Video recording of a lesson could be easily used in schools between novice physical education teachers and their mentors. The lack of experience does not necessarily mean that novice teachers cannot teach their classes effectively. However, thoroughly discussing the recording with their mentor could prove beneficial and allow them to develop as teachers. In addition, during teaching observation by an inspector from the Ministry of Education for assessment purposes, video recording could be a valuable tool in the inspector’s hands. Assessment is based on video observation and not on the inspector’s word, based on what he remembers.

Regarding physical education teacher development, effective teaching practices recorded could be used in seminars and staff development workshops to demonstrate effective and ineffective practices for critical thinking development. When observing ineffective practices, teachers tend to avoid them and adopt effective practices seen and analyzed upon video observation and analysis.

In closure, teacher development in the 21st century may take advantage of technology, which is easy to use by everyone. By using a simple cell phone, a teacher may get feed back on their own by watching the video recording of his lesson (self-recording) or have somebody else video-record the lesson, watch the video with him, discuss the teaching practices observed, and come up with a constructive discussion, which will benefit the teacher and will help him develop.

CONFICT OF INTEREST

The authors declare that they do not have any conflict of interest.

REFERENCES


