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Flipped Classroom in Physical Education: Pedagogical Models and Possible Implementation through Web 2.0

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Abstract: *Flipped Classroom in Physical Education (PE) is a topic scarcely examined by scholars. It is an educational methodology that interchanges the general organization of the lessons and can be used to rethink from both an epistemological and didactical point of view the traditional way of conceiving of and teaching PE as a subject matter in the school. In Flipped Classroom, the instruction is developed out of the classroom while the homework is completed in the school. To do so, Information and Communication Technologies (ICT) and all e-tools provided by Web. 2.0 are an essential component of this methodology because they enable the students to access the content previously prepared by the PE teacher. The main aim of this paper is to briefly present the Flipped Classroom methodology and to identify and critically examine the main pedagogical models on which it is based. This will allow us to determine the methods and e-tools from ICT and Web. 2.0 as an online learning environment that may better support and implement the content of PE and motivate students in the classroom. This first part of our research will be conducted through the review of the scholarly literature dealing with the main issues of Flipped Classroom as both general topic and methodology of teaching PE in the school. After identifying and critically examining these methods and tools, we will sketch, using a hermeneutical research approach, a flexible model of “flipped learning” in PE classroom based on the use of the new e-tools provided by Web 2.0. In conclusion, we will offer a possible scheme for teaching PE using the Flipped Classroom as a practical methodology and means to motivate the pupils.*

Keywords: *Physical Education; Flipped Classroom; Web 2.0, ICT; Pedagogy.*

I. INTRODUCTION

Innovation in the educational field has become a must because it is thanks to new approaches and ideas that students can develop even more their learning. The only way to progress is trying to continually improve, but taking into account the social context in which we are. Therefore, it seems

appropriate trying to introduce different pedagogical methods to better prepare our students to face the challenges that they are due to find out of the school. In this paper, we propose the use of Flipped Classroom methodology through the Physical Education subject.

The Flipped Classroom methodology finds in the ICT and Web 2.0-based technologies a pillar for its implementation. In fact, they are Web and IC Technologies that enable the shift from the traditional organization of the lessons to an individual learning space [1]. This shift means that the teaching action is developed out of the classroom, whereas homework is conducted/carried out at school [2]. The essential idea is to renew the traditional structure of the lessons to help the students to better understand the contents. Also, this change enables the pupils to become agents of their learning and, therefore, they gain autonomy.

Flipped Classroom could be described as a pedagogical method in which teaching is developed in an out-of-school context and through audio-visual materials that have been prepared or selected in advance by the teacher. Videos or other resources are available for students to watch whenever and wherever it is convenient and so many times as they like. Then, the homework is brought and completed in the classroom, making it possible for the teacher to guide, coach and help the students when it is necessary. Moreover, since students come prepared to class, educators can devote more time to integrate and apply pupils' newly acquired knowledge through a range of active learning and student-centred strategies.

The flipped classroom has been given different names in literature such as "flipped teaching," "flipped education" or "mixt learning." However, this should not be confused with "distance learning" or "online teaching" because although through these methods learners also watch videos, they do not involve the educator and pupil necessarily meeting and working together during the learning process [3]. As aforementioned, the Flipped Classroom method involves student-centred learning activities which are carried out at school side by side with the teacher.

II. THE ADVANTAGES OF FLIPPED LEARNING

One advantage of this pedagogical method is the fact that through Flipped Classroom information transmission is optimized. Direct explanations are complicated because of interruptions, lack of interest or disruptive behaviours which entail misunderstandings of the contents explained. This innovative methodology leaves behind the traditional time-space scenario where teaching used to be developed and provides the students with more freedom and unlimited access to the contents. In this sense, it might be argued that Flipped Classroom methodology fosters learners' self-organization.

Also, this novel way of learning may generate an increase in the students' motivation [4] because now they are in charge of taking decisions which usually were in the teacher's hands. For example, pupils can decide when they want to watch the lesson or stop it at any time, which makes them feel more active in their learning. It is important to bear in mind the fact that the teacher's role is still critical since they are those helping the learners at school. Also, the preparation and selection of the materials must be taken very carefully. Another motivational factor linked to this methodology is the use of ICT, which is a common element for the youth. Students usually feel comfortable with the ICT, and the incorporation of these type of resources may make them change their perception towards learning and, therefore, facilitate their learning.

According to some authors [5], this methodology increases the interaction between teacher and students. Furthermore, these authors highlight the fact that teachers adopt the role of guides, moving from teacher-driven instruction to student-centred learning, and that this teaching is developed from a socio-constructivist perspective. Moreover, the educative act is more personalized and pays more significant attention to diversity since teachers have more in-class-time to be working side by side with the children and, therefore, they can provide the learners with individualized support. The Flipped Classroom method consists of four essential elements [6]:

1) Flexible environments: It allows for a variety of learning models, and students can decide when and where they learn, which means that each student works at his or her own pace. This favours meaningful learning and generates an increase in attention to diversity.

2) Learning culture: Flipped Classroom is a student-centred approach. Students are responsible for their learning, in other words, they are actively involved in knowledge formation.

3) Intentional content: Teachers have to maximize classroom time. Therefore, careful selection and preparation of the materials are critical. In this sense, teachers have to decide what content they need to teach directly, and what resources students should be allowed to explore by themselves.

4) Professional educators: Teachers are in charge of providing students with feedback and guiding their learning process. Therefore, educators' role is more critical than ever because they have to adapt the learning process to the characteristics of the learners, decide when to shift from group to individual instruction and try to maximize the face-to-face time with every single pupil.

Since the relation between educator-learner is closer, the former can be more aware of the learning rhythm of the students. This shift has entailed that students show greater commitment towards learning, even those who used to misbehave in class [7]. Obviously, Flipped Classroom is just another resource because dealing with these situations is incredibly complex. The effects of Flipped Classroom method are summarised in the following lines:

1) It increases opportunities for in-class educator-student interaction. Teachers understand better their pupils and, therefore, they can adapt the teaching and learning process to the student's emotional and learning needs [3]. By this fact, some authors [4] argue that responding to students' emotional and social necessities is as relevant as the teaching practice itself.

2) It lets teachers devote more time to coach their students and give them feedback on their progress [5]. The in-time class is optimized generating more possibilities of face-face interaction, which entail a more personalized learning process.

3) Homework is more significant since students have to apply and practice in front of the teacher what they have learned. For this reason, having the educator as a guide presents more significant effect than learning traditionally.

III. MAIN ISSUES OF FLIPPED LEARNING APPLIED TO PE

We have seen above how Flipped Learning is a pedagogical approach to learning focused at the same time on the group and the individual, or better, on the two different learning spaces to which both are engaged with. The objective of this learning is to transform this space into an interactive and creative environment capable of stimulating social and individual learning, innovating and using it – under the guidance of the teacher/instructor – for being creatively engaged in the subject matter. Nowadays, new media and technologies based on web 2.0 can play a fundamental role in the development of the pedagogical model.

Indeed, Physical Education (PE) as subject matter taught in all the schools worldwide can benefit from Flipped Learning and its application in the classroom. This benefit can be seen at different levels. That is to say, not only regarding methodology of teaching but also the enrichment of its content and motivation for pupils. Physical Education is still a sort of Cinderella among school subject matters. The lack of innovation and creativity in the delivery of its contents is, in our opinion, one of the most relevant problems which affect it.

Flipped Learning (FL) in PE can motivate the students to be more engaged in the activities of the curriculum and to use its specific content for a lifelong healthy lifestyle. Flipped learning is a way of teaching and learning that enriches PE as both a subject matter and particular classroom in the school. Moreover, CLIL can be useful to conceptualize in a new way and rethink of the concept of PE going beyond its until now restricted traditional conceiving of the discipline and the places where it is taught. PE is not only – like most of the people think – gymnastics or sports games taught in the gym, that is to say, a set of practical activities and contents. PE is also an academic discipline whose aim is to help pupils develop their critical thinking using all tools and methodologies at their disposal, or better to say, made available by their teachers/tutors.

The core problem and primary challenge of the application of FL to PE are how to couple the theoretical content of the discipline and the practical one in places which are not only the gym and the classroom. The research on the application of FL to PE is still limited to few examples, mainly focused on the use of video-recording/making educational methodology as a tool to promote the active participation and creative involvement of pupils in the achievement of a more in-depth understanding and better learning outcome of PE [7].

Indeed, this methodology is useful and can be seen as a pillar for the application of FL to PE. It allows going beyond the traditional method of teaching PE, that is to say, explaining the new theory

and showing some examples in front of a passive group of students in a classroom or gym. Because of this method, on the one hand, students who need more supervision and explications may be not helped and tutored as they should deserve: when at home, they will be alone and have to repeat all the content of the lesson delivered by their teachers. On the other hand, students who have understood well the lesson do not need to repeat the content of experiences as their mates.

Through the filming of the lesson of PE in the gym, pupils can better repeat it as many times as necessary. When at school, in class, their PE teacher will have more time for student-centred learning activities and for playing the role of facilitator of their learning, in contrast to traditional teaching which is based on the teacher-centred pedagogical model.

Video recording (and video-making) made more accessible by new web technologies and new media, develop the potentialities of FL applied to PE creating a revolution in its traditional model of teaching and learning. Nevertheless, Video-recording is just one of several possible methods that, through new devices, FL can use to enhance the potentialities of PE as a subject matter. Thanks to high-speed internet connections and the use among pupils of mobile phones and tablets with video capabilities, the use of videos in the flipped classroom have become commonplace. There are dozens and dozens of system and channels for video recording or video repository that both teachers and students can use to flip their PE classroom. Video brings a completely new dimension to teaching methods of flipping PE in school. PE lessons in the gym usually involve a certain level of practical skill. A video is helpful to demonstrate the practice. When a PE teacher is teaching a new technique dealing with a sports game or showing a new exercise, these aspects of the lesson will benefit from being watched rather than merely explained (in text or static images like in the case of PE textbook). Videos also can help to add a feeling of personalization to a lesson of PE. Moreover, a video of the PE teacher giving her/his lecture helps the students to feel connected with her/him and perceive her/him as always present both at school and at home.

Physical Education is essential in everyday life, and the practice and explaining of the fundamental principles of exercise and training through video-recordings could not be enough to help pupils cognitively acquire its content and understand its importance for their life and learning. Indeed, contemporary new media can offer more possibilities for helping pupils understand this significance in a more attractive way.

We have affirmed above that FL has not to be confused with e-learning or distance learning. But, for sure, there exist other tools offered by web 2.0 which can be used to foster and enhance, the potentialities of PE in the school through its “flipping.” We could affirm that “flipping” speaks the language of today’s students and contemporary young generations. Flipping PE means to develop a new conceptualization of the subject matter and open its teaching to new ICT and the Internet technologies.

IV. TOWARDS A NEW E-PEDAGOGY MODEL FOR FLIPPING PE IN SCHOOL

What it is more critical when one flips PE is to keep students satisfied with activities and learning material providing them with instant grading and feedback. A successful flipped PE classroom is capable of maintaining students engaged and motivated to the subject matter. Materials used for FL always have to be capable of making students study harder and more and more committed to the tasks assigned.

Strategies and environments (both physical and virtual) must be fully functional to the classroom and strategies that teachers intend to utilize for delivering their lessons. In these situations, document, materials and media tools for producing other teaching and learning materials must be readily available to every student attending the course. These learning environments, which complement and boost flipped learning, must always include mobile devices such as tablets and smartphones.

To be better boosted by web 2.0 and new media technologies, the flipped classroom in Physical Education has to be based on and structured according to the following pedagogical strategies and learning models.

- To be based on collaborative learning, that is to say, developing a teaching and learning approach where students can socially interact with their mates as well as instructors. To be clear, pupils work together to expand their knowledge of PE and skills. This has to be done through live

communication experiences like chats or instant messaging (WhatsApp could be a useful e-tool to achieve this goal). Collaborative learning is based on the educational principle that each student can enrich her/his learning experiences through interaction with others and benefit from theirs. In flipped classroom based on collaborative learning, pupils are encouraged to teamwork.

- To include gamification strategies. Gamification in FL is the use of game-based mechanisms, to motivate action, promote learning and solve problems. There are several technologies which allow the gamification of the flipped classroom. A challenge is to find a way to gamify PE effectively. In whatever subject matter classroom, games are created to draw pupils in, to keep them playing, interested, involved and entertained. The instructional method, rewards, points, scores, and badges help to motivate students to be involved in sport and physical activity, providing the elements for learning. Interactivity, content, and story are the essential elements to the gamification of a flipped classroom in PE. Gamification is always an integral part of every flipped classroom. Gamification consists of taking aspects of gaming and adding them to what is called “traditional instruction.” A PE teacher who wants to take advantage of gamification in her/his flipped classroom has to use some key-elements such as stories, case studies, or interactive activities. In this regard, e-tools for story-telling and storifying learning activities can be useful to achieve the objectives and carry out main tasks of flipped learning.

- To be based on micro-learning. Micro-learning involves learning of students in smaller steps and goes hand-in-hand with traditional learning. Micro-learning activities in a flipped classroom usually feature short-term lessons, coursework or projects designed to provide pupils student with little portions of information. To do this, the content and topics of a broad subject matter are broken down into smaller lessons or projects. Micro-learning allows students to be more receptive to receiving the information. For instance, watching a video online about how to learn a sports technique or reading a blog post that talks about that are perfect examples of micro-learning exercises.

- To personalize learning. The process of personalization in the flipped classroom is made possible only by continuous feedback. Feedback can either be explicit (a written or verbal suggestion, for example) or implicit (in the form of action).

- To use Facebook (or another social network) as a supportive online learning environment for the flipped classroom. One can choose between Facebook pages or groups and use them as a communication interface for the flipped classroom. Facebook will serve as an online networking platform and repository for video recording and making (using also YouTube), for documents and all other materials and e-resources capable of enhancing the flipped classroom in PE. Through Facebook, pupils and teachers can better interact sharing and posting links and multimedia making or retrieving them from the internet. Indeed, within Facebook, there are many tools which can be beneficial for the development and implementation of the flipped classroom in PE. The Facebook interface can act as an aggregator of information for class collaboration providing several learning opportunities for pupils.

V. CONCLUSION: FLIPPED CLASSROOM IN PE AND MASTERY LEARNING

Flipped learning can be a new way to innovate the teaching of PE in contemporary school and enhance its potentialities as a critical reflective discipline capable of coupling – through sports pedagogy – theory and practice, the development of critical thinking and technical skills for the sports. Flipped learning is a new form of learning which arises from the systemic interaction among the most potent and democratic type of learning studied by contemporary pedagogy, that is:

- Constructivism
- Problem-solving
- Learning by doing
- Community of learning

We have seen how Flipped learning can revolutionize the way of teaching and learning PE making the student the real centre of learning and transforming her/him into a learning facilitator as it happens in adult education. The positive sports pedagogy generated by FL allows setting up a comfortable learning environment for PE students in which the gap between the education in the gym/classroom and at home is solved through the perception of a continuum of online and off-line learning which web 2.0-based communication technologies contribute to bridging. FL contributes to the implementation of PE as a subject matter connected with all others in a context of interdisciplinary

interchanges and relationships. The interdisciplinary model of PE that FL contributes to enhancing is that of discipline having the same dignity and equal status as the other ones.

Moreover, FL can enhance a model of PE capable of fostering mastery learning. That is, a way of learning in which each pupil can approach and move towards the content of curriculum whenever she/he feels ready and not depending on the progression of her/his class. Freedom, personalization, adaptation of the material of PE to the needs, skills, and capacities of each student is the very and most relevant contribute that FL can give to the implementation of mastery learning in Physical Education.

In a Flipped classroom, students can choose their topic for the PE lesson based on suggestions made by their teacher. After completing their homework, they can work individually or in a group to carry out all practical activities within the class of PE. When they feel to have completed a task and feel satisfied with the results achieved, they move to another one. In so doing, they develop competencies which allow them to control their learning processes under the supervision of their teachers who play the role of facilitators and guidance supervisors. FL boosts mastery learning and sets up learning environments in which pupils perceive as highly motivating the tasks and educational goals their teachers want them to achieve through physical education and the sports. Self-determination and equality of opportunities are other benefits that can come to PE from the application to it of flipped learning.

Besides, flipping the course of PE allows its teacher to solve the controversial issue of evaluation in PE. A Flipped-learning-based environment allows the teacher to go beyond the mere evaluation and to turn it into a continuous formative assessment based on an effective system of tutorship and assistance capable of supporting and matching all needs of pupils. This evaluation will be based more upon global activities of the curriculum and not just upon performance in activities and sports games conducted in PE classes [7].

In conclusion, flipping PE in contemporary school not only provides opportunities to innovate the discipline contributing to its development as a democratic knowledge within the curriculum but also to take advantages of the very outstanding opportunities offered by web 2.0 technologies to teachers and pupils in today's school. The flipped classroom is a new and flexible way to learning and develops critical thinking in contemporary education taking advantage of the educational model offered by systemic pedagogy. In this regard, we are convinced that the very scarce research on the application of flipped learning to PE must be developed and boosted at the highest level. This has to be done by both academic scholars and teachers so to have, in the future, more case studies and examples of good practices, which can serve as models for more efficient implementation.

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