The Technologies in the Classes of Physical Education: Vision of the Students

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Abstract

Information and Communication Technologies (ICT) are increasingly integrated into teaching and learning processes. This research aims to know the perception of a group of High School students and their teachers about the use of ICT as a learning strategy in Physical Education (PE). The studio has a mixed design. On the one hand, a quantitative design was proposed for the analysis of the vision of the students through two closed questionnaires and on the other hand, a qualitative approach was used to gather the reflections of the teaching staff, through three open questions. The results show that students who use educational platforms have a positive opinion of ICT, making better use of them for educational purposes. Regarding the incorporation of ICT by teachers to PE classes, it will depend on their opinion of them. The study shows that the incorporation of ICT in the area of PE as a means of teaching and learning is still to be developed in a broader and more specific way. As well as, that there is a positive relationship between the use of educational platforms and the motivation of High School students.

Keywords: Secondary education, technology, educational platforms, physical and sports activity

1 Introduction

The digital revolution that takes place during the second half of the 20th century, is different from the previous revolutions, it carries out changes and evolutions in all areas of society (Martín-Laborda, 2005, Tirado, Backhoff, & Larrazolo, 2016). Information and Communication Technologies (ICT), refers to a term that brings together a wide range of services, applications and technologies that use different types of equipment and computer programs and that are often transmitted through telecommunications networks (Commission of the European Communities, 2001).

The 21st century is characterized by having a society in constant change and evolution, which allows us to obtain information at the moment and share it, regardless of where we are (Contreras, 2003). Day by day, the use of new technological devices in the general population increases, which have become vital for individuals in the western world (Cobo, 2009). In this case, for example, mobile phones, computers, tablets, and on the other hand, devices that help everyday life such as appliances.

In this context, educational systems can not be separated from the transformations that arise in society and must offer what this demand (Capllonch, 2005, Noguera & Vázquez, 2012, Roig, Mengual, Sterrantino, & Cox, 2015).

Our students are surrounded by a technological reality, but this is not used in the same way in educational centers, continuing with the use of traditional methodologies (Roig et al., 2015). One of the clearest examples is the teaching resistance to the incorporation of the mobile telephone as an educational ICT (Brazuelo, Gallego, & Cacheiro, 2017, Cantillo, Roura, & Sánchez, 2012). In recent years, mobile telephony has become an intelligent device that has several options for use, including communication, multimedia and office automation, which could be incorporated as a means of learning (Brazuelo, et al., 2017).

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In the case of Spain, ICTs are really recent in the educational world, since their curricular start did not occur until the nineties with the Organic Law of General Organization of the Educational System (LOGSE). Currently, ICTs are within the curriculum in the current Organic Law 8/2013 of December 9 for the Improvement of Educational Quality (LOMCE) as a key competence to develop by the teacher in all educational stages. In several Autonomous Communities (CCAA), educational centers with tablets, electronic whiteboards and a multitude of digital devices are being subsidized in the form of technological material to bring the technological experience to the students (Fombona, Rodríguez, San Pedro, & Pascual, 2011). However, we find different reasons why teachers are not in favor of the introduction of technological materials in their classrooms. This situation could be justified with the possible distraction of the student since, if they have mobile devices or tablets, it could dissuade them from the true objective of the class (Sanabria & Hernández, 2011, Monge & Galisteo, 2013, Rangel & Peñalosa, 2013).

Within the Spanish educational curriculum is the subject of Physical Education (PE), which can not and should not distance itself from ICT. We know that PE, in general, has a large practical part, but this does not mean that we should ignore the multitude of advantages and possibilities that ICT can offer when teaching the contents set out in the curriculum (Ferreres, 2011).

The incorporation of ICT in PE is a challenge for teachers, since it is a pedagogical innovation that can lead to great improvements in the learning processes of physical activity and sport. The biggest challenge for teachers is the inclusion of ICT while maintaining a balance with traditional teaching (Monroy, 2010).

The students of today show more interest in the contents that will be relevant in their lives and will have a certain meaning. If this is enhanced through the technologies, widely used by students outside the educational environment, it will allow teachers to motivate their students towards the contents of EF. In short, this will make students feel more interested in the content taught, both theoretical and practical (Ferreres, 2011).

Currently, we find numerous resources in the network related to the EF, for example, blogs that offer information on different areas, 3D programs that show us the movements made by the body, mobile applications where we can register our activity daily physics and GPS applications, among others. In addition to these tools, there are other applications of particular production or spaces where teachers share their teaching units with other professionals in Education (Prat, Camerino, & Coiduras, 2013). In conclusion, there is a great variety of technological tools that we can integrate and use in EF and that are in accordance with the current Spanish educational law (LOMCE) regarding the development of digital competence.

Therefore, the objective of this research has been to know the perceptions of 3rd and 4th High School students about the use of ICT as a strategy in the teaching and learning of PE. As well as, to know the vision of EF teachers about the use of ICT in the teaching and learning of their subject.

2 Method

The methodological approach used was quantitative (questionnaire) to the students and qualitative (interview) to the teachers of these students. Through the questionnaires we will obtain information about the level of knowledge, use and consideration of ICT by high school students and through the interview we will know the opinion of teachers regarding ICT.

The sample consisted of 195 3rd and 4th High School students from two public schools belonging to the Valencian Community (Spain) and their respective PE teachers, specifically an institute that uses an educational platform in their PE classes (EPT) and another that does not use the technologies in their PE classes (ENT). The selection of the institutes was carried out by non-probabilistic sampling, for convenience and availability. To carry out this study, the necessary steps were taken to allow the consent of its realization by both centers, as well as the permission of the parents or guardians. All students and teachers have participated voluntarily.

The instrument for collecting the data was a questionnaire consisting of 17 items, divided into three blocks: knowledge of ICT, use of ICT and considerations about ICT. This was developed based on the questionnaires of Brazuelo, Gallego & Cacheiro (2017) and Moya, Hérnandez, Hérnandez & Cózar (2011). The qualitative information was made through an interview where three open questions were posed that allowed reflection on the use of ICT in PE.

The procedure to collect the information was through the Google Drive form on the Internet, which was active for 3 weeks, in the IPT the teacher uploading the questionnaire link to the educational platform that she uses with her students. The other institute provided the email of the students to send a web link. To carry out the interview with the teachers was set a day and a specific time in which the teacher was available to perform it.

The analysis of quantitative results was made through the spss.24 software package. Descriptive statistics was used and for the comparison of means the Student's t-test for independent samples was used. Regarding the analysis of qualitative data once the information on the opinion of teachers and ICT in PE was compiled, the narratives were organized to analyze and extract the main conclusions of the analysis made from the reflections of the teachers.

3 Results

Next, the most relevant quantitative results of the questionnaire made to the students are presented, as well as the qualitative data obtained from the interview with the professors. As we have said before, the participants in this study were students from two different institutes belonging to the 3rd and 4th years of ESO and with different ages ranging from 14 years to 17 years (Table 1).

Table 1. Classification of the sample according to institute and course

Institute	3º ESO N (%)	4º ESO N (%)	Total N
EPT	59 (62.80)	35 (37.20)	94
ENT	56 (55.40)	45 (44.60)	101
Total	115	80	195

Knowledge of educational portals

On this topic of knowledge that students have about educational portals we find that EPT students, 7.4% know a lot about educational portals such as Werass and Moddle; 24.5% of students say they know them a lot, compared to 67% of students who know something. On the other hand, students of the ENT Institute, in 6.9% of them know something about the educational portals, and 93.1% of the students do not know anything about them. There is a significant difference 0.01 ($p \leq 0.05$) in terms of the knowledge of the portals. Use of ICT.

Use of computer tools

In relation to the use of computer applications we find a series of very variable results. In the EPT institute almost half of its students (46.8%) use Word for their physical education work; 20.2% of students handle Excel; 41.5% of students use Power Point; 34% do not use any program, and finally 2.1% use other programs. While, in the ENT institute, 87.3% of its students use Word for their physical education work; 3.9% use Excel; 19.6% of students use Power Point when doing their jobs. There is a significant difference 0.00 ($p \leq 0.05$), between institutes with respect to the results obtained (Table 2).

Table 2. Use of computer tools.

IT Tools	EPT %	ENT %
Word	46.8	87.3
Excel	20.2	3.9
Power Point	41.5	19.6
No utiliza	14	12.7
Others	2.1	0.0

Regarding the use of educational portals, at the IPT institute all students (100%) use the educational portal called Werass in Physical Education and 4.3% also use Moddle. In contrast to the above, we found the ENT institute 100% of its students do not use educational portals with a significant difference of 0.00 (p ≤ 0.05), between the students of both institutes.

With regard to the use of virtual libraries and encyclopedias, in the EPD, 71.3% of students use Wikipedia for work related to Physical Education topics; 17% make use of the Royal Academy of the Language; 25.5% of students use nothing and 4.3% use other types of virtual libraries and encyclopedias.

In turn, in ENT, 71.3% of students use Wikipedia to search for topics related to Physical Education; 5.9% of students use Encarta; 8.9% consult the Royal Academy of Language and 27.7% of students use nothing. There is no significant difference between institutes and the use of encyclopedias and virtual libraries (Table 3).

Table 3. Use of virtual libraries / encyclopedias according to educational center

Virtual libraries and encyclopedias	EPD%	ENT%
Wikipedia	71.3	70.4
RAL	25.5	27.7
Encarta	0.0	5.9
No use	25.5	27.7
Others	4.3	0.0

Use of the mobile phone for educational purposes

The use made of the mobile phone, the students of the EPD, the use they make of the mobile phone is "personal and educational" (80.8%); while 19.1% make only "personal" use. However, in the ENT the opposite is true, since 90.1% of the students use the mobile only in a personal way and 9.9% of the remaining students in a personal and educational way (Figure 5). There is a significant difference of 0.00 ($p \leq 0.05$) between the two institutes regarding the use of the mobile phone (Table 4).

Table 4. Use of the mobile phone according to the educational center.

Use mobile phone	EPD %	ENT %
Personal y educational	80.8	90.1
Personal	19.1	9.9
Total	100	100

Regarding the question of whether they consider that ICT helps me to improve their academic results, in the EPD, 12.8% of the students consider that they do not help them much; 33% that help them a lot; 47.7% of students consider that something helps them and 9.6% of students consider that they do not help anything to improve academic results. However, in the ENT, 7.9% consider that they help them a lot; almost all of the participants (77.2%) consider that something helps them and 14.9% of the students consider that nothing helps them (Figure 6). We found no significant difference.

As to whether ICTs are wasting a lot of time, 5.3% of EPD students consider that they do; 14.9% think that they waste a lot of time with ICT; 43.6% consider that they lose some time and 36.2% of the students consider that they do not waste any time. About ENT students 1.1% loses a lot of time; 8.9% of students think that they waste a lot of time; a high percentage of students (71.3%) think that they lose some time with ICT and 18.8% think that ICT does not waste any time (Table 5). We did not observe significant differences between institutes about whether ICTs waste a lot of time.

Table 5. Perception of time occupied by students in ICT

Time occupied in ICT	EPD	END
Lose a lot of time	5.3	1.1
Lose enought time	14.9	8.9
Some time	43.6	71.3
No waste time	36.2	18.8

Regarding the degree of interest that students have in innovations and technological advances in PE, in the IPD, 26.6% of students have "a lot" interest in innovations and technological advances; 48.9% of students have "enough" interest; 23.4% have "something" of interest in ICT, while 1.1% have "nothing" of interest. In contrast, in the INT, 7.9% have "a lot" interest in ICT; 23.8% of students have "enough" interest; 65.3% of students have "something" of interest and 3% do not have any type of interest (Table 6). There is a significant difference between institutes of $p \leq 0.05$ related to the degree of interest in ICT.

Table 6. Interest of the students for the advances and innovations of the ICT in EF

Interés por avances en las TIC en EF	EPD %	ENT %
Lot interest	26.6	7.9
Enough interest	48.9	23.8
Somethig interest	23.4	65.3
Nothing interest	1.1	3
Total	100	100

Results interview

The results of the qualitative data are shown differentiated by teacher and institute. In this sense, the most significant reflections of the professors of both institutes are exposed based on the study carried out, of the three main questions developed by the teaching staff. The first of them refers to the importance of ICT in PE classes, the second question raised referred to the training they have had in ICT and the last topic refers to the advantages and disadvantages of ICT in PE classes.

Teacher EPD

The professor belonging to the EPD, with 11 years of experience in her work, believes that:
- ICT is very important in PE since it is a competence that must be developed and that will be of great help to students.
- He has obtained his ICT training in several courses, also informally through what his classmates teach him, and with self-training, consulting on the internet.
- ICTs have great advantages and few disadvantages, by incorporating ICT in their classes as much as possible. It considers as advantages, the communicative speed between student teacher; the motivation; the individualization; the facility to evaluate. As disadvantages he finds distraction and isolation.

Teacher ENT

In contrast to the above, we find the ENT Institute professor, with 23 years of experience who thinks the following:
- ICT may be important in general, but do not think that EF is fundamental, since it personally focuses the subject on physical activity and prevents technology from being a distraction.
 - He has obtained his training through courses taken at the beginning of his professional career.
- For him, the only advantage that ICTs have is that he can possess a motivating character for the student towards tasks that become a bit demotivating and heavy, which is not a sufficient reason to incorporate it into his classes. On the other hand, as disadvantages is that ICT sees them as an incomplete and superficial means of learning; who have dependence on others; that there is a waste of time; which can be a distraction for the students; that facilitates the copying and pasting of the works, while, if they do it by hand, at least they have to transcribe the information on paper.

4 Discussion

As we mentioned before, the objective of our work has been to carry out a study on the perceptions of 3rd and 4th ESO students about the use of ICT in the teaching and learning of PE, as well as to know the opinion of your EF teachers. Today there are different educational platforms that are defined as computer applications, which are accessed through a network and allows teachers to create, design, evaluate teaching content and make them available to students online (Ayllón, 2010; Falcón, 2013). In our study we observed that in the educational environment part of the students know educational platforms being able to see benefits for them by contributing in terms of learning (greater autonomy, solving problems, self-learning, critical thinking) and obtaining a greater and better performance in the EF subject, facts that Falcón also highlights (2013). In general, the students use basic programs; Word, Power Point, search engines in the network, virtual libraries, that allow them to obtain and share information and didactic contents.

The use of ICT presents positive aspects, through this use students acquire a greater fluidity in terms of digital development (Moya, Hernández, Hernández and Cózar, 2011). In our case we can observe similar results, students who use educational platforms, are more willing and interested in the use of these in their teaching-learning process.

In this line, the use of educational platforms in PE exploits to the maximum the qualities of the students, makes it more autonomous, responsible, participant and above all that familiarizes with the digital world in which we are currently moving (Ayllón, 2010; Falcón, 2013).

The mobile offers many advantages in the teaching-learning process, since it allows us to communicate with any person wherever we are, find information, share documents, etc. According to the study by Cantillo, et al. (2012), says that the current trends in the use of mobile in education develop a better capacity in the students to classify, know, appreciate, control, process, communicate, as well as endless competences. In our results we find a remarkable inequality, because the students of the EPD, where they use educational platforms, use the mobile both in a didactic way and in a personal way, unlike the ENT students who only use the mobile in the personal field, This fact could be related to the lack of knowledge of the teaching staff about the educational potential of the mobile phone and the lack of awareness of the students of its educational usefulness (Brazuelo et al., 2017).

ICT, although, can help improve academic results, they also develop the competence to learn to learn. Fernández-Espínola and Ladrón-de-Guevara (2015) state that there are improvements in the academic results of students who use ICT in relation to those who do not use it. In our case, the perception of students who use the virtual platform is that if it helps them improve their academic results.

The use of ICT in teaching and learning have advantages such as: learning in less time, access to multiple resources, greater contact with the student, easy evaluation, is attractive and motivating, among others (López, 2013). These qualities coincide with those indicated by the EPT professor, who in turn tries to incorporate this competence into her professional work because she considers her development to be of vital importance for the students. The same does not happen with the ENT teacher, who does not appreciate these advantages offered by ICT in the teaching and learning process of PE, this fact may be related to the teacher's low ICT training. Regarding the disadvantages of ICT pointed out by López, (2013), they refer to: addiction; isolation; visual fatigue; a lot of time invested; Economic effort; dispersion. In our study it is appreciated that these are also seen by the teachers interviewed.

When analyzing teacher training in ICT, we appreciate a low formal training, only refer to some courses done by self-interest, self-training or through colleagues, in this line Fernández-Espíndola and Thief of Guevara (2015) and Tirado et al. to the. (2016), reflect that there is low teacher training in information applications. In sum, the results obtained pose a challenge for PE, since the incorporation of ICT in the teaching and learning process could be relevant in the comprehensive training of students, developing their digital competence in addition to enhancing their self-learning by improving their results academic.

This research has as limitation the low representativeness of the sample, so that its results can not be generalized. It would be very important to carry out future studies with broader samples where teacher training is analyzed and the incorporation of ICT as learning strategies, as well as the academic performance of students. This work could be propitious to encourage teachers in the use of ICT in PE classes, based on the perceptions that students have reflected.

5 Conclusions

- The integration of ICT in PE is a challenge that must still be overcome by teachers in this area, as reflected in numerous studies at Spanish and our level. There is a low level of formal training on this issue, which is why a training policy is essential in relation to the incorporation of ICT in the area of PE.
- Students who are immersed in technology use it to perform homework, work, to receive information and especially as a means of communication. There is a positive appreciation, motivation and interest in ICT of students who have educational platforms in their teaching and learning process of the PE.

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