Physical Education classes in Brazil and technology: A way to a better and healthier life

Clases de Educación Física en Brasil y tecnología: un camino hacia una vida mejor y más saludable

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ABSTRACT

Many students dislike Physical Education classes in Brazil because of content repetition, unsatisfactory curricular organization, among other factors. The purpose of this study is to assess the efficiency of a proposal for Physical Education classes, which includes contents of physical activities and the use of comic books application. This is a qualitative study, which comprises both bibliographic and field researches. Twelve classes were held to a group of eight graders from a public school in the city of Piracicaba/SP/Brazil. Questionnaires were used to evaluate the proposal for Physical Education classes. We found out that the use of comic books application is an effective teaching resource, as it reveals the students' experiences, what they felt, and the mediation between their "rational" and "sensitive" knowledge about physical activities. There is evidence that our experience has provided participating students with: 1- Leisure education and health education, 2- Awakening to knowledge of the body culture of movement, 3- Access to some leisure contents, mainly those related to physical, sports and artistic ones, 4- The creation of comics by App Flaras.

Key words: Education; Physical Education; Leisure; Comic Books; App, Culture.

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RESUMEN

A muchos estudiantes no les gustan las clases de Educación Física en Brasil debido a la repetición de contenidos, organización curricular insatisfactoria, entre otros factores. El propósito de este estudio es evaluar la eficiencia de una propuesta de clases de Educación Física, que incluye contenidos de actividades físicas y el uso de la aplicación de cómics. Se trata de un estudio cualitativo, que comprende tanto investigaciones bibliográficas como de campo. Se impartieron doce clases a un grupo de ocho alumnos de una escuela pública de la ciudad de Piracicaba / SP / Brasil. Se utilizaron cuestionarios para evaluar la propuesta de clases de Educación Física. Descubrimos que el uso de la aplicación de cómics es un recurso didáctico eficaz, ya que revela las experiencias de los estudiantes, lo que sentían y la mediación entre sus conocimientos "racionales" y "sensibles" sobre las actividades físicas. Existe evidencia de que nuestra experiencia ha proporcionado a los estudiantes: 1. Educación para el ocio participativa y educación para la salud, 2. Despertar al conocimiento de la cultura corporal del movimiento, 3. Acceso a algunos contenidos de ocio, principalmente los relacionados con los físicos, deportivos y artísticos, y 4. La creación de cómics por App Flaras.

Palabras clave: Educación, Educación Física, Ocio, Cómics, App, Cultura.

INTRODUCTION

Several studies have pointed to the failure of school in recent years (Arroyo, 2003; Cohen, 2006; Navarro et al., 2016). High levels of repetition and school dropout translate the low quality of Brazilian Basic Education. There are many points affecting Physical Education classes (repetition of contents, unsatisfactory curricular organization, etc.), according to some authors, such as: Darido (2004), Fortes et al. (2012), Oliveira (2010), Tenório & Lopes (2015), Carvalho & Lopes (2015).

Due to the non-performance and non-knowledge of physical activities, the biological consequences are heart problems, obesity, hypertension, etc. There is also a loss, not always taken into consideration, which is the lack of knowledge about the body and the elements of the body culture of movement, which can cause the individuals not to understand themselves, their sensitivity and emotions, which are felt and manifested through their body.

Studies, such as those from Beasley & Garn (2013) and, more recently, Lima et al. (2018), found out that previous experiences with physical activities/body practices can generate positive imagination in the students, but also unwillingness and prejudice regarding these practices in the future, depending on the way they are offered. So, Physical Education in school plays a major role in properly boosting active and healthy life styles lifelong. Expanding the range of activities for promoting this practice, reducing inactivity and increasing preventive and healthy habits, becomes a challenge for the area that is searching for successful strategies.

One of the resources suggested as part of the practice list in the Physical Education classes refers to adventure. For its potential in fulfilling the youths' expectations in the Junior High School, we suggest an incisive glance in the adventure activities in nature as a proposal for this level in order to minimize above mentioned problems. Although several studies have already indicated how these practices can benefit Physical Education in the school context (Figueiredo et al., 2018; Newman et al., 2018), they are still timidly considered, which requires to understand this universe to stimulate such activity as part of an active and healthy life style. For this reason, this study seeks to demonstrate, based on the specific literature, the characteristics of such activities, as well as to analyze how they can be taken as a content in the Physical Education classes from an Education for Leisure point of view.

The adventure activities in nature include elements that can be favorable to the students'

interest as they are innovative and encouraging in terms of Physical Education classes and they can also arouse several sensations and emoticons through situations involving a controlled risk, adventure and safety (Schwartz, 2018). To bring adventure activities to school, some strategies can be applied, such as the usage of movies, cartoons and, including, comic books, or even other initiatives to facilitate that different adventure practices can be accepted and known.

However, investigation was not enough in how researchers are applying these activities in the Physical Education classes context, mainly, in High School.

Another aspect is that problems related to the pedagogical mediation seem to be latent, mainly in a world transformed by technology. The great number of ways for communication and interaction are affecting not only the human relations but also the teaching-learning relations. It is symptomatic how students live the digital world excitement while teachers are still unprepared and discouraged to adopt new technologies in their classes. This "distance" is reflected directly in the lack of the students' interest in learning on the traditional basis. In this point of view, many professionals and researchers have been thinking about strategies for a more efficient learning so that students can learn the school lessons, access and produce knowledge.

If, even in a limited way, the so-called more "theoretical" subjects have been slowly adopting technologies, the Physical Education classes, maybe for this practical nature, is far off that. The body and the elements of the body culture of movement[1] (dance, fight, gym, game, sports) are the study objects in the PE area. However, these contents in the school context have not been quite successful. This is due to the kind of approach used; for example, in the case of the technical or training standard, in which the teacher plans his/her classes expecting that all students perform the same movement with the same proficiency, ignoring the fact that all of them are different in their skills and experiences. Another problem is a "non-class", when a teacher spends time fooling around, instead of teaching the students, allowing them time to play freely. In this case, the students who enjoy the PE classes are happy doing what they like to do, but those who do not enjoy those classes or do not feel motivated, they just do not participate.

In both situations, the disadvantage is that the students do not access the knowledge related to the body and the body culture of movement. Besides that, the students do not have the opportunity to know and think critically about the contents; they lose the chance to develop affective relations with the body practices, holding them back experiencing one or several activities in their adult life during their free time.

Consequently, we are facing a social situation in which there is a combination of school dropout, limited access to knowledge by the population, and experience from physical activities/body practices resulting from an obsolete pedagogical mediation. In a sociological preview in which the future situation for kids and youths may be of a growing lack of interest in knowing the body and the physical activities/body practices, bringing consequences for the whole life and a context in which electronic devices and equipment are important means of communication and sociability among people, it is necessary to find out innovative and effective ways of dealing with the teaching-learning process.

In this regard, from a perspective that understands the PE as a subject responsible for the concept Se-movimentar[2], Selfmove, in English, for an "Education for Leisure"[3], taking also into consideration the potentialities of applying

[1] Body culture of movement is the part of the culture related to the body language, used to socially express oneself. It becomes the core concept for the Brazilian Physical Education based on authors, such as (Coletivo de autores, 1992; Betti, 1994, Daolio, 1995; and others).

[2] Concept developed by Kunz (1991).

[3] See Marcellino (1987).

innovative Technologies as a promising didactic resource, the objective of this investigation is to develop a comic application to be used in the PE classes by Junior High School students. Evaluating the feasibility and reaching desired quality levels in creating this application required an intensive research in the literature from this area. This study presents a series of arguments that validate our assumptions and make our project workable. Trying to minimize the theoretical reductionisms, such arguments allow an interaction between Human and Social Sciences (main culture and leisure) and the neuroscience studies.

METHODS

Both bibliographic and field researches were carried out and this is a qualitative study. A bibliographic research was carried out in libraries of Brazilian public universities, in the Scielo database and in the Brazilian Digital Library of Theses and Dissertations (BDTD). The period of the bibliographical survey was from March to May 2018, and texts published from 2014 until May 2018 were selected. Field research was also carried out at a public school in the city of Piracicaba, in the State of São Paulo / Brazil, along with a class from the 8th grade of Elementary School. Within 12 given classes, 20 students participated in the research (1 girl and 19 boys). The field research was carried out from August to November 2019 and was based on a pedagogical experience from two female teachers and one male teacher, who are this paper' cowriters. The students had the classes organized as an elective (extra) subject. All students participating in the research chose to take part in this experience on a non-mandatory basis.

The field research was carried out in a school located in the East zone of the city of Piracicaba (São Paulo, Brazil), about 8 km far from downtown. This school was built for the population from Jardim Alvorada and adjacent neighbourhood: Sol Nascente, Jardim Ipanema, Nova Pompéia, Altos da Pompéia, Jardim Oriente, Serra Verde, Jardim Itamaracá, Jardim Itaberá, Jardim Itaporanga, Jardim Chapadão, Cecap, and others in more remote sites. In 2019, this school, through School Management and its Community actions, joined the Integral Education Program (full-time students), including the Elementary School, last years. Due to its physical building and area of scope, the school adopts a hybrid system - the Elementary School follows the Integral Education (morning and afternoon) during the day and, in the evening, there are regular High School classes and special classes for Youths and Adults.

The research participants are below in Table 1.

Table 1

Participants of the research.

Participants		Grade/Elementary School	Birthday	Age and Sex
Nr.	Name			
01	GBRI	8°. A	23/02/2006	13 ♂
02	DREG	8°. A	14/12/2005	14 ♂
03	AAMA	8°. A	23/01/2006	13 ♀
04	GCAM	8°. B	09/12/2005	14 ♂
05	HSIL	8°. B	17/03/2005	14 ♂
06	STOL	8°. B	21/12/2005	14 ♂
07	VARI	8°. B	19/04/2006	13 ♂
08	EMEN	8°. C	30/03/2006	13 ♂
09	GROJ	8°. C	18/08/2005	14 ♂
10	LGOM	8°. C	10/12/2005	14 ♂
11	MCAM	8°. C	01/05/2005	14 ♂
12	MSTO	8°. C	15/03/2006	13 ♂
13	DFIL	8°. C	09/02/2006	13 ♂
14	PPER	8°. C	19/09/2005	14 ♂
15	RCLI	8°. C	30/09/2005	14 ♂
16	JCHA	8°. C	17/01/2006	13 ♂
17	AJUN	8°. D	30/06/2005	14 ♂
18	LROD	8°. D	18/01/2006	13 ♂
19	PABM	8°. D	09/09/2004	15 ♂
20	VCSI	8°. D	12/12/2005	14 ♂

Field Research - Procedures

The field research comprised 12 classes, evaluated by two questionnaires – one at the beginning of the classes and another at the end. A short description for the 12 classes is presented as follows.

Class 1 - Students completed the evaluation questionnaire in relation to what they know about "leisure, education and comics", and then the teacher introduced them to the idea of including technology in the classes of Physical Education, from the creation of a Comic book, whose objective is the Education for Leisure.

Class 2 - Guidelines on creating comics.

Class 3 - Discussion / experience on the theme "Adventure activities in nature, care for the environment and education for leisure in the Elementary School".

Class 4 - Guidelines on creating comics for the software Flaras.

Class 5 – Creation of comic book based on the theme from Class 3.

Class 6 - Discussion / experience on the theme "Physical activities, community and education for leisure in the Elementary School".

Class 7 – Creation of comic book, having as theme the previous class 6.

Class 8 - Discussion / experience "Comic book of superheroes and education for leisure in the Elementary school".

Class 9 – Creation of comic book based on the theme from Class 8.

Class 10 - Reading and discussion of created Comic book.

Class 11 - Final evaluation – more explanations about the software Flaras, use of sound and augmented reality.

Class 12 - Final evaluation questionnaire – Students completed evaluating what they could understand about the pedagogical experience and closed the discussions.

The focus for the data presentation and discussion on this paper considers the Class 6 content - "Physical activities, community and education for leisure in the Elementary School" and Class 7 – Creation of comic book based on the theme from Class 6. We will select data which were more representative for this analysis, some comic texts created by the most part of the students during Class 7 and the analysis of question #1 from the questionnaire used at the end of the classes (What raised your attention in the classes?).

The objectives of Class 6 were: 1. To understand the relationship between physical activities, leisure and community; 2. To experience an activity to each element of body culture of movement (sports, gym, fight, game and dance). The objective of Class 7 was: 1. To create a comic book based on the theme from Class 6.

Class 6 Content

Sports (Badminton and Paintball): In pairs, the students of that step experienced a badminton and paintball match with adapted rules. For the paintball, students were divided into two teams and they had to hit paper balls in the opponents (instead of paint balls).

Gymnastics (Rhythmic Gymnastics: Hoop and Ribbon): Hoops and ribbons were made available to students so that they could experience body movements with such apparatuses.

Fights (Fencing): At this step, the teacher divided the students into pairs, thus, each one dueled with swords. A delimited space was defined for the combat where the fencers could move.

Games and play (games with ropes): At this step, "long" ropes were made available to students in order to experience different games.

Dance (Free dance): At this step, a stereo reproduces a list of songs suggested by the students in the previous class that they were supposed to dance in order to create and share steps with each other.

Analysis

The analysis includes an interpretation based on Minayo (1994) and the bibliographic research to understand the comic texts created by students and question #1 (What raised your attention in the classes?) from the questionnaire used at the end of the pedagogical experience classes. The research was approved by the Research Ethics Committee at Methodist University of Piracicaba, Brazil, under protocol 2.641.621, process CAAE 87190218.3.0000.5507.

RESULTS

Comic books produced in Class 7:

Figure 1. Paintball: ballon 1, "Let's play paintball!!!", ballon 2, "No, let's exercise", last part "the end".

Figure 1 was produced by the students RCLI, PPER, MCAM, GROJ, and EMEN. In the comic strip, the students used Picture 1 to show their wish for playing Paintball, a game that has a "shooter" shooting paint balls and the other participants that need to run away. In Picture 2, the kids want to exercise too and in Picture 2, participants are hit by the paint balls.

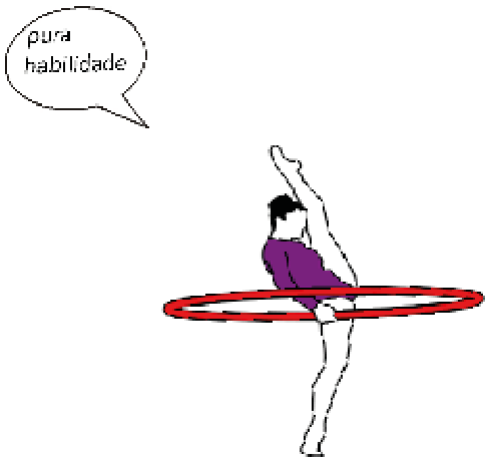
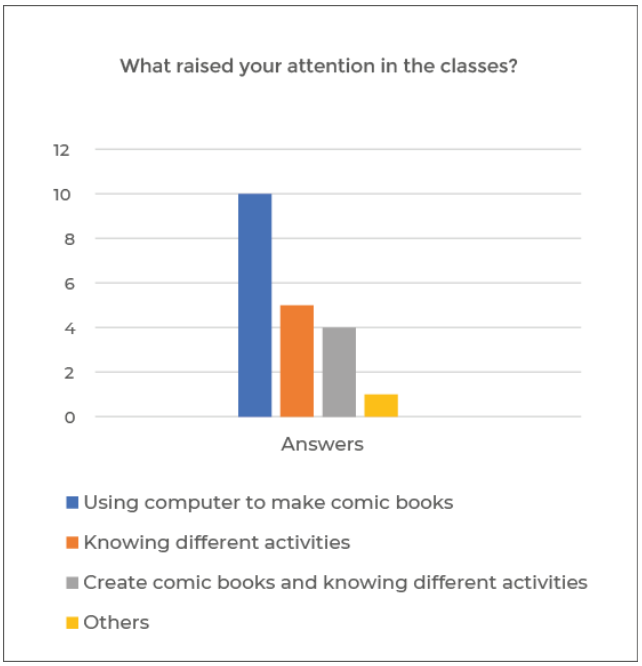


Figure 2. Gymnastic: balloon "Pure skill".

Figure 2 was created by the students GCAM, LGOM, HSIL, VARI, and STOL, representing a ballet dancer raising her leg, showing her personal skills.

Figure 3. Physical activities: balloon "Oh, my back, old man".

Figure 3 was created by this group of boys: MSTO, JCHA, DFIL, and VCSI. The students use an elderly couple riding by bike to show that physical activities/body practices can be performed in different stages in life.



Graphic 1. Question #1 of questionnaire "B", after of the classes ("What raised your attention in the classes?)

The Graphic 1 shows the following answers from the students participating in the investigation: 10 selected "Using computer to make comic books", 5 selected "Knowing different activities", 4 selected "Create comic books and knowing different activities" and 1 gave a different answer which was considered "Others".

DISCUSSION

The students understood that Physical Education comprises different contents, not only sports. The students express the relationship between the elements of the body culture of movement, demonstrating a positive view regarding this practice. These aspects are important so that this practice can be included in a daily life, bringing good benefits to their leisure and health. The students use the comic books as an expression of themselves. Most of them have demonstrated to understand the discussions about knowledge of the body practices. This learning of practices such as fencing, badminton, gym, walking on the slackline and handling the badminton racket, among other elements of the body culture of movement. The

pedagogical experience allowed students to access knowledge related to the body and the body culture of movement, as well as the opportunity to know and reflect on its contents.

About Figure 1

The young boy RCLI declared that the intention of the team that created this comic strip was to illustrate the activities they performed, such as an adapted version of Paintball and Parkour. We would like to reinforce here that RCLI liked to have practiced Parkour and has also recommended this exercise to other students.

It was clear that reading the comic strips was a satisfied and pleasant activity. The students manifested their desire in the gym exercises although they were still involved in the Paintball game. In this regard, the games boost interaction, respect, and sociability within a ruled and defined space, encouraging the playful, amusing, and creative aspects, which suggest to the research participants that [...] it can make room for identifications that allow the people who play to be, feel and act taking into consideration the other person as reference [...] (Faeti & Calsa, 2015 p.15).

About Figure 2

Regarding the art, Gombrich (1995, p. 15) says that observing a picture brings us to uncountable memories which can be pleasant and/or unpleasant. In this picture, the ballet dancer suggests that only a person with major skills is able to such high performance but, even those who cannot perform in this same level, can watch a gym presentation with pleasure; for example, as a leisure activity, simply watching. So, the students expressed their appreciation for both the gym/dance and the movement itself. According to Schwartz (1999, p. 50), "Both the art and the game also have a symbolic (romantic) and absolute regardless of any usefulness it may have for their products." In face of those emotions, the students seemed to value, through the ballet dancer image, the physical exercises and her movements.

About Figure 3

The research participants MSTO, JCHA, DFIL, and VCSI learned how to deal with the App Flaras and how to use the techniques from the guides, mainly in that for preparing and organizing comic books. The boys were very cooperative. Although it was hard for them to express their ideas as a team, they asked for help individually from teachers and researchers involved in this investigation. The student MSTO was the great highlight due to his active participation in the suggested activities, with a good sense of humor and highly cooperative, and frequently expressing the team's idea to the researchers. The team production called "Against Sedentarism", according to MSTO, is related to the feelings a practitioner has from the physical exercises.

In the picture, the elderly couple is in the foreground and a balloon in which the woman says about her back pain. The figure transmits a positive message on body practices, as they are smiling. Lopes da Silva (2018, p. 269), compliant to Fronza (2016), states that "[...] the comic books are "attractive" to the thought, especially because they cause emotions, a mobilizing element for the thought and the construction of knowledge. [...]". The construction of knowledge in this comic strip shows how important the body practices are in any time of life and for this reason should be encouraged in opposition to sedentarism. Even though the body practices can cause some muscle pain in the beginning, they should be pleasant, funny, spontaneous and recreational, and should not be seen as an obligation.

About Graphic 1

By reading the answers for question #1, 50% from the students indicate that using a computer to prepare the comic strips was the most attractive point. The student AAMA confirms that using Flaras in the PC was possible because they were guided by the teachers during the investigation. Students from this generation are, according to Nadal et al. (2016), identified as "Digital natives". As time and school

cycles go by, they become able to move in the cyberspace and learn that it is part of their interest. In terms of the pedagogical proposal, the adventure activities associated with comic creation were described in a positive way by VARI and RCLI as they felt attracted by the activities carried out in the multi-sport court. Those activities were carried out in a mixed environment – classroom, PC and multi-sport court, considered essential to stimulate learning and performing physical activities with pleasure, although the close association of school environment to obligation. This percentage can be considered expressive and positive as some students were not proficient in using a PC but could participate in the class and create the comic strips with App Flaras.

As you can see answers were diverse, but focused on learning App Flaras, the comic books and the body practices. These three points are related to knowing the body culture of movement (Daolio, 2004) and the Education for Leisure, which were the main objective of this investigation. What was planned for the research is confirmed, disclosing how the elective subjects or the Physical Education classes can benefit when their studies come close to a cultural reference - Plural Physical Education (Daolio, 2004), taking advantage from the Leisure and Educational Communication studies (based on neuroscience).

Based on the literature, it was possible to identify some studies on applying the technology related to the physical activities and how useful they can be for the present analysis as a complement to the findings in this investigation. Based on the Theory of Self-Determination used by Moreno-Casado et al. (2015), the effect of the cell application was analyzed in terms of a controlled training and the psychological needs, the self-determination level for performing the physical practices and leisure activities. A semi-experimental study was developed with 54 students (approximate age is 16,4 years old), 32 boys and 22 girls, from different public schools in the High School level, in the Extremadura region, Spain. The team members from the research (n=27) developed an independent aerobic training program, that was recorded and registered using the application "Endomondo Sport Tracker", during eight weeks. The members (n=27) registered the same application. The results showed that meeting the competition needs and self-determination have increased with the activity, as well as the leisure activity level was higher within the students that used the application compared to those that have not used it. As no significant differences were noted in most part of the variables analyzed in the study, more detailed studies need to be developed in this area.

Coelho et al. (2016) has also evaluated the effects of using an educational software to improve the students' knowledge on overweight and obesity prevention. To do that, the authors carried out an experiment without a control group, using a Before/After evaluation, in a public school in Divinópolis, in the state of Minas Gerais, in the Southeast region of Brazil. It took 71 students, from 6 to 10 years old. The educational software for overweight and obesity prevention was created and validated, used for the educational intervention. Before and after intervention, a questionnaire was applied based on the 10 Steps of a Healthy Diet for Kids, suggested by the Brazil Ministry of Health. By comparing Before/After using the educational software situations, the authors observed statistic differences in numbers of questions correctly answered by the students, mainly those referring to daily consumption of healthy and non-healthy food, how to prepare meals properly, and how important physical activities are. This study emphasizes the importance of the educational activities through the usage of a software program in the construction of knowledge for the students concerning overweight and obesity prevention.

Both studies indicated in this paper are compliant to the data identified in this investigation – using technology can be favorable for the construction of knowledge on physical activities/body practices and consequently a way of

education for leisure and health, in which individuals can live a better life.

CONCLUSIONS

The proposal developed as an elective (extra) subject was greatly favorable to the field research, which was carried out from pedagogical experience and its results, as well as allowed to the school a different and attractive theme for the students.

Using comic books as a strategy for the pedagogical work in the classroom was an effective experience for the students who took part of the investigation. The use of the ludic element and leisure studies based on the App Flaras allowed the students to create comic strips that, when analyzed globally, reveal the progress in the youths becoming independent, critical and observant in the space they live and occupy in the society.

The method focusing the elements from the body culture of movement and leisure has based its content on the conventional classes, which made it attractive for all the students who felt pleasant in participating in the practical activities and creating comic books using a PC.

There is evidence that our experience has provided participating students with: 1. Leisure education and health education; 2. Awakening to knowledge of the body culture of movement; 3. Access to some leisure content, mainly physical, sports and artistic; 4. The construction of comics by Application Flaras.

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