

Original article



Treatment of individual differences in the Physical Education class. A diagnosis from Basic General Education



Tratamiento de las diferencias individuales en la clase de Educación Física. Un diagnóstico desde la Educación General Básica

Tratamento das diferenças individuais na aula de Educação Física. Um diagnóstico da Educação Básica Geral

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ABSTRACT

The article addresses individual differences in the Ecuadorian educational reality in relation to pedagogical and didactic aspects that are somehow linked to educational processes by age and teaching systems. This paper aims to present a diagnosis of the most recent research results related to individual differences in Physical Education, in order to achieve a more inclusive teaching at the Bolivarian University of Quito. The following research methods were used: historical-logical analysis, systemic analysis, inductive-deductive analysis; and empirical methods: observation, survey, interview and triangulation. The result was aimed at making a diagnosis of individual differences,

through a pre-experiment, in order to generate proposals that lead to achieving a more inclusive, integrative and sustainable education. The conclusions are the relevance of the class according to the ages, the degree of load in the effort in correspondence with health, the energy expenditure of the activities, the correction of errors, the motor and sports skills, the dosage of the loads and the characteristics of the imaginary of Physical Education today, among other important elements.

Keywords: diagnosis; individual differences; physical education; treatment.

RESUMEN

El artículo aborda las diferencias individuales en la realidad educativa ecuatoriana en relación con los aspectos pedagógicos y didácticos que de alguna forma u otra se vinculan con los procesos educativos por edades y por sistemas de enseñanza. Este trabajo tiene como objetivo presentar un diagnóstico de los resultados investigativos más recientes relacionados con las diferencias individuales en la Educación Física, en función de lograr una enseñanza más inclusiva en la Universidad Bolivariana de Quito. Se utilizaron como métodos de la investigación: el análisis histórico-lógico, el sistémico, inductivo-deductivo; y los empíricos: la observación, la encuesta, la entrevista y la triangulación. El resultado estuvo encaminado a hacer un diagnóstico sobre las diferencias individuales, a través de un preexperimento, con el ánimo de generar propuestas que conduzcan a lograr una educación más inclusiva, integradora y sostenible. Como conclusiones se trata la pertinencia de la clase acorde a las edades, el grado de carga en el esfuerzo en correspondencia con la salud, el gasto energético de las actividades, la corrección de errores, las habilidades motrices y deportivas, la dosificación de las cargas y las características del imaginario de la Educación Física en la actualidad, entre otros elementos importantes.

Palabras clave: diagnóstico; diferencias individuales; educación física; tratamiento.

RESUMO

O artigo trata das diferenças individuais na realidade educacional equatoriana em relação aos aspectos pedagógicos e didáticos que, de uma forma ou de outra, estão vinculados aos processos educacionais por idade e por sistemas de ensino. O objetivo deste artigo é apresentar um diagnóstico dos resultados das pesquisas mais recentes relacionadas às diferenças individuais na Educação Física,

a fim de alcançar um ensino mais inclusivo na Universidade Bolivariana de Quito. Foram utilizados os seguintes métodos de pesquisa: análise histórico-lógica, sistêmica, indutivo-dedutiva; e métodos empíricos: observação, pesquisa, entrevista e triangulação. O resultado teve como objetivo fazer um diagnóstico das diferenças individuais, por meio de um pré-experimento, com o objetivo de gerar propostas que levem a uma educação mais inclusiva, integradora e sustentável. As conclusões incluem a relevância da aula de acordo com a idade, o grau de carga no esforço em correspondência com a saúde, o gasto energético das atividades, a correção de erros, as habilidades motoras e esportivas, a dosagem das cargas e as características do imaginário atual da Educação Física, entre outros elementos importantes.

Palavras-chave: diagnóstico; diferenças individuais; educação física; tratamento.

INTRODUCTION

The Educational Revolution that is taking place in all teachings and especially in Basic General Education, demands a new style of work for teachers in schools, where the individuality of each student is taken to a higher level. The transformations must be fundamentally directed at obtaining a student who is, within the teaching process and in all his/her school and social activities, an active, critical, reflective, independent, and leading agent in his/her performance.

It is undeniable that man is a social being, who as such thinks and lives, developed in a family with similar ideas, but it is true that each one adapts to the social inheritance of a peculiar character. Here lies the uneven and modified nature of his learning, each one has different manners and qualities, it is up to the teacher to have the enormous task of knowing how to differentiate and govern the appropriate attention to each of his students, to promote in them, correct cultures, skills and behaviors (Perassi & Castagno, 2022).

These discrepancies include sex, somatotype, height, weight, the mother's time of conception, at what age she stopped breastfeeding, and cultural contexts in her diet (Santos, 2023).

Fierro *et al.* (2019) argue that Physical Education has proven to be an ideal argument for developing emotional understanding, academic benefit, stimulation and a taste for life. These syntheses can be achieved with greater or lesser impetus depending on gender and age and, of course, on the system of educational influences in which this cause of teaching Physical Education is carried out.

One of the missions of Physical Education is, without a doubt, to level the child's physical and mental progress, especially when considering that everyone comes from different homes and from a community. That is why Physical Education is aimed at developing motor, social, cognitive and affective skills, through the transversality of inclusive, playful and corporal curricular approaches. These are compendia that are taken into account to establish a distribution that supports the student's independence and that they take advantage of these physical exercises of a traditional practice for their entire life (Posso *et al.*, 2020).

From early periods, one of the skills that have been most successful in addressing individual differences in students lies in promoting learning environments in Physical Education. These environments have made it possible not only for the educator to become the recipient of wisdom and values, but also for the interaction of the student with their societies in the exercise of solving contexts, problems and developing intelligence, creativity and autonomy (Martínez *et al.*, 2020).

The Ecuadorian educational system responds to the demands that emerge from the four regions of Ecuador, both in the social and educational spheres, involving all those who make up the educational community: schools, families and all the people participating in the educational process; therefore, it is necessary to pay attention to the students' individual differences during the teaching-learning process.

Sometimes new teachers show higher levels of readiness for inclusive education; in other cases, rural teachers show greater readiness for inclusive processes. In any case, success lies in knowing and understanding the students' individual differences in order to develop the multiple skills that can be deployed in them (Castillo *et al.*, 2021).

This is why the authors of this work have set themselves the objective of carrying out a diagnosis on the treatment of individual differences in the Physical Education class, in order to achieve a more inclusive teaching.

MATERIALS AND METHODS

Methodological assurance is guaranteed, first of all, by using the following research methods at the theoretical level of scientific knowledge:

- Logical historical analysis: it allowed us to delve deeper into the evolution and development of attention to individual differences, their background and their manifestations in pedagogical practice.
- Inductive-deductive: during the characterization of the research object and the field of study and in the construction and structuring of the proposal.

Methodological assurance is completed by using the following research methods at the empirical level of scientific knowledge:

- Observation: To assess the preparedness of Physical Education teachers in Basic General Education in District 9 Tumbaco, to verify how attention is paid to individual differences in children and adolescents in classes.
- Survey: to diagnose the improvement of the teacher training system, in relation to attention to individual differences.
- Interview: To diagnose current trends towards the treatment of individual differences in the Physical Education class.
- Triangulation: to determine, through data comparison, the main regularities that define the current state of attention to individual differences in the Physical Education class.

Application of instruments for the evaluation of indicators and dimensions of the independent variable of the treatment of individual differences in the Physical Education class

The research methods and techniques used were described in the introduction to the paper, as part of the methodological design. The application of the proposal began in the 2023-2025 academic year and the evaluation of the system effectiveness was developed through the pre-experiment.

To measure teachers' preparation for work with attention to individual differences, dimensions and indicators were determined.

Scale for measuring dimensions and indicators:

Dimension I. Theoretical and methodological knowledge on attention to individual differences.

Indicators:

- a) Physical Education teachers' knowledge of individual differences.
- b) Physical Education teachers' knowledge about how to apply exercises in working with individual differences.
- c) Knowledge that Physical Education teachers of Basic General Education have for planning, guidance, execution and control in the work of individual differences.

Dimension II. Skills that teachers have to develop work with individual differences.

Indicators:

- a) Ability to plan, guide, execute and control differentiated work.
- b) Ability to apply physical load in differentiated work.
- c) Ability to follow up on the diagnosis made.

Dimension III. Attitude assumed by teachers for working with individual differences.

Indicators:

- a) Interest shown in searching for information corresponding to individual differences.
- b) Willingness to plan different activities in their classes, taking into account the students' differences.
- c) Responsibility for taking on the preparation of work on individual differences.

RESULTS

The evaluation results were obtained through the application of five instruments: classroom observation guide, interviews with physical education teachers, and a survey of students. The instruments were averaged for each indicator, applying percentage analysis.

Initial finding

In educational practice, the authors considered that there was a gradual change in the Physical Education teachers' knowledge and skills of in the direction of the teaching-learning process of working on the individual differences of their students.

Their theoretical knowledge was expanded and they appropriated definitions given by different researchers on the subject, content and foundations. It also allowed them to learn about the Physical education teachers' state of preparation; it fostered the expansion of their knowledge on the components of the teaching-learning process and the general foundations of the elements in the work of attention to individual differences in Basic General Education.

Significant qualitative changes were observed through the methodological support visits carried out. It was found that Physical Education teachers have assumed the task of putting into practice the knowledge they have acquired, have managed to use the necessary information to diagnose the characteristics of their students and thus plan, guide, execute and control the teaching-learning process in Physical Education.

A significant change has emerged in the way of planning, executing and controlling the teaching-learning process, which has allowed them to acquire skills to work effectively in the process and for their students to feel motivated to learn. An increase in the willingness to assume the change in their way of acting was observed, with their exemplary behavior, perseverance and spirit of dedication to the activity. These results motivated the development of integrative tasks, which are carried out with interest, responsibility and willingness.

Behavior is reflected through the dimensions and indicators as follows.

In the initial diagnosis, eight teachers were identified at the high levels, for 12.5%; at the middle level there were thirty Physical Education teachers, for 31.25%; and at the low level there were

twenty-six teachers, for 56.0%. In the initial verification, a significant advance could be observed with a positive movement towards the high levels with five teachers, for 31.25% and twenty-eight teachers for 50.0%; and at the low level thirty-one teachers, for 18.75%.

The greatest achievements were obtained in indicator C, related to planning, guidance, execution and control in differentiated work.

The results of dimension I are shown in the following (Table 1):

Table 1. Results of dimension I

Levels	I.1	I.2	I.3
High	6.25 %	15.63 %	25 %
Half	25 %	56.25 %	43.75 %
Low	68.75 %	28.12 %	31.25 %

Source: Prepared by the authors

Dimension I. Theoretical and methodological knowledge for the application of differentiated activities.

Indicators:

- a) Teachers' knowledge of the components of differentiated work. There are four teachers at the high level, representing 6.25%; 16 teachers at the medium level, representing 25%; and 44 teachers at the low level, representing 68.75%.
- b) The knowledge Physical Education teachers have about the application of exercises for differentiated work is as follows: at the high level, 10 teachers for 15.63%, at the medium level, 36 teachers for 56.25% and at the low level, 18 teachers for 28.12%.
- c) Knowledge that Physical Education teachers in General Basic Education have for planning, guidance, execution and control in differentiated work. At the high level there are four teachers for 25%, at the medium level there are 37, which represents 43.75% and at the low level there are 23 for 31.25%.

Dimension II. Skills that teachers have to develop work with attention to individual differences.

Indicators:

- a) Ability to plan, guide, execute and control differentiated work. At the high-level indicator there are 18 teachers, which represents 25%, at the medium level there are 28 for 50.0% and at the low level there are 18 for 25%.
- b) Ability to apply differentiated exercises. At the high level, 15 teachers for 25%, at the medium level, 29 for 56.25% and at the low level, 20 for 18.75%.
- c) Ability to follow up on the diagnosis made in attention to individual differences. At the high level there are 10 teachers for 31.25%, at the medium level 23 for 62.5% and at the low level 31 for 6.25%.

In the procedural dimension, 18 teachers were at the high level, representing 6.25%, at the medium level, 22 teachers, representing 18.75%, and at the low level, 24 teachers, representing 75% of the sample.

The results of dimension II are shown in the following table:

Table 2. Results of dimension II

Levels	I.1	I.2	I.3
High	25 %	25 %	31.25 %
Half	50 %	56.25 %	62.5 %
Low	25 %	18.75 %	6.25 %

Source: Prepared by the authors

This dimension behaved as follows: at the high level there are 36 teachers, representing 62.5%, at the medium level there are 22 teachers, representing 12.5%, and at the low level there are six teachers, representing 25%. It is necessary to highlight the teachers' interest throughout the preparation.

The indicator of the most achievements is c, which is related to following up on the diagnosis made on endurance capacity.

Dimension III. Attitude assumed by teachers for working with individual differences.

- a) Interest shown in searching for information that corresponds to individual differences. Fifty-four teachers in the sample are at the high level, 87.5%; the remaining 10 are at the medium level, 12.5%.
- b) Willingness to plan different activities in their classes taking into account the students' individual differences. All the teachers in the sample, 64, are at the high level, which represents 100%.
- c) Responsibility for taking on the preparation of work in attention to individual differences. At the high level there are 17 teachers for 43.75%, at the medium level there are 23 teachers for 31.25% and at the low level there are 24 for 25%.

The results of dimension III are shown in the following table:

Table 3. Results of dimension III

Levels	I.1	I.2	I.3
High	25 %	25 %	31.25 %
Half	50 %	56.25 %	62.5 %
Low	25 %	18.75 %	6.25 %

Source: Prepared by the authors

In the attitudinal dimension, 11 teachers were at the high level, representing 12.5%; 18 teachers at the medium level, representing 50%; and 35 teachers at the low level, representing 37.5% of the sample.

It was a process that was carried out with the Physical Education teachers of the General Basic Education of District 9 Tumbaco.

The diagnosis was designed to increase the teachers' preparation in working with individual differences, since the initial diagnosis detected marked deficiencies in the preparation to work with this content, which affected the quality of the teaching-learning process of Physical Education.

DISCUSSION

When preparing for a Physical Education class, the teacher must be prepared and up-to-date with the method of individual differences in his classroom and, above all, be aware of the scientific and technical advances and the progress of this subject through the different tones of the era.

From the very beginning, some authors (Pastor & Sánchez, 2007) have warned that the Physical Education class should be more specific and timely, in accordance with the ages and situations in which the student develops. Among other peculiarities, quantitative aspects must be taken into account, such as the degree of obligation in the effort and the disposition towards health, rather than performance. Therefore, one should not work vigorously or in prolonged sessions to achieve greater resistance or strength. The periodicity of the work sessions in terms of the energy expenditure used in the sports activities to be carried out must also be considered in this analysis.

Schilling *et al.* (2023) visualize this method to individual differences from the correction of errors. In their outlines, these authors explain that this reformatory work must be related to the students' particular characteristics, their level of development of motor and sports skills and the method of physical capacities. They also enter into harmony with these aspects: the volume and intensity of the motor action in the execution process. In addition, these authors describe the dosage of the loads in balance with the optimal levels of physical capacities.

Sports pedagogical explorations indicate that special work in Physical Education classes can be carried out based on the effects of a diagnosis that shows differences in age and also in gender. Such is the case of Baños *et al.* (2019), who reveal in their determination that girls achieved higher average values in the perception of the Physical Education teacher's abilities and in aggressiveness. However, in the case of boys, behaviors related to ineptitude and low commitment were found to be more harmful; indiscipline to rules, disrupting the classroom environment and low self-control in front of girls also stood out.

This approach allows for a proposal that is appropriate to the educational needs of Physical Education, based on making adaptations so that everyone can participate. In this sense, the challenge for the new Physical Education teacher is to guarantee learning environments and transform the class into a process of inclusion, through the students' understanding and awareness and all the agents that surround these children.

According to Arenas *et al.* (2022), the need to train a professional to address individual differences must be understood as the first step to success in this endeavor; this is followed by the pedagogical proposal.

For this reason, taking Ecuadorian students as a reference, we can understand the great variability of students in Physical Education classes, in different education systems, and especially in Basic General Education; hence the rigorous demands on the part of the teacher.

In Ecuador, the fundamental objective is to form a population with a comprehensive general culture; from this arises the need for the entire community to prevail in all possible ways, from learning the ability, to learning and training the body (Abad, 2013).

The process of updating and strengthening the curriculum of Basic General Education in Ecuador aims to develop the human condition and prepare for the understanding of the pressing problems of the world and the nation. To do so, it is essential to correctly guide citizens towards the formation and practice of values that allow them to interact with society with respect, responsibility, honesty and solidarity, applying the principles of good living.

The teaching-learning process of Physical Education in Ecuador has gone through several stages, in which it has undergone countless transformations, due to the political changes in the country. In its first stage, the programs were characterized by a traditional pedagogy, where the same classroom teacher taught Physical Education. Today there is a teacher specialized in the subject, who within his/her teaching schedule completes 25 teaching hours, dividing them into two weekly frequencies per class group.

The teaching-learning process is carried out within the educational institution and within the hours included in the curricular framework, responding to the skills that appear in the current national curriculum.

In Basic General Education, we work in two class frequencies; it is a process that is organized within educational institutions, planning various activities for the development of the children and adolescents' skills.

In Physical Education class, in relation to other subjects, individual differences are mainly determined by the result of the initial diagnosis that each teacher makes when starting a given unit, combined

with genetic or biological factors such as height, body weight, flexibility, agility that are recognized by visual diagnosis.

The integral model of the Physical Education class has as its fundamental premise the granting of great importance to the student's activity, as subjects, so that all their potential is formed and developed, under the correct guidance of the teacher, in a bilateral process that takes place in a collective environment.

In Physical Education class, the teacher's role is to guide, direct and correct technical errors in activities, taking into account each student's characteristics and using appropriate methods, procedures and organizational forms, ensuring that all students meet the objective.

The Physical Education teacher in Basic General Education has to constantly prepare himself to give attention to his students equally, taking into account that they are going through an age cycle and a change from children to adolescents, paying close attention to the changes that generally occur at these ages. To do this, he must develop several actions, which must include the following:

- To plan an initial diagnosis that allows us to discover both talented and less gifted students.
- To plan a follow-up strategy after the initial diagnosis.
- To strengthen preventive work by correcting technical errors.
- To give students a greater role in activities where they can express their creativity.

In summary, it must be stated that one of the issues that has most hindered the quality of the teaching-learning process of Physical Education is the treatment of individual differences. These differences have been a set of limitations for the children and adolescents' development at this stage of Basic General Education.

Differentiated attention is formulated, which is nothing more than a subprocess in which an anticipated representation of the result is developed, taking into account the elements of the diagnosis and the capacity for intervention that can be achieved by implementing the design. This forecast, in its prospective function, specifies a pattern of achievements of the content of Physical Education, which is a set of indicators in terms of knowledge, skills, habits, capacities, modes of action and professional values that the student must develop after the development of the process.

Attention to individual differences demands that diagnostic strategies must be of a unique nature, and efforts must be made to achieve availability, accessibility and options of differentiated educational offerings for students.

In relation to this principle, it is recognized that the initial diagnosis is an aspect that the teacher must not forget when dealing with individual differences in children and adolescents. This is characterized by being a scientific activity of improvement for the teacher. The scientific diagnosis allows the direction of the teaching-learning process and, in turn, provides priority attention to individual differences in Basic General Education.

Individual differences in the Physical Education class has been a topic that has eventually evolved over time and the researchers and academics' theoretical-practical contributions who have enriched its science globally and, specifically, in the Ecuadorian educational reality.

Correct attention to individual differences in the teaching-learning process of Physical Education must be based on the comprehensiveness and differentiation of teaching, methods, procedures and organizational form in the class, based on the teacher's improvement.

Differentiated attention is a methodological aspect proposed for the improvement of Physical Education teachers, based on the permanent diagnosis of the teaching-learning process.

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Conflict of interest

Authors declare no conflict of interests.

Authors' contribution

The authors participated in the design and writing of the article, in the search and analysis of the information contained in the consulted bibliography.



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