

ORIGINAL RESEARCH

THE TEACHING RESEARCH FOCUSED ON THE MOVEMENT: HEURISTIC APPROACHES AND
ELEMENTS OF COMPLEXITY

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Abstract

The teaching research in the motor field that investigates the different features and the specificity of the teaching of the movement activities should fix methodological strategies based on some ontological considerations.

The object of this theoretical-argumentative work is a possible definition of a specific field of research on the movement activities, trying to explain their original and exclusive elements which require a selection of some methods of educational research based on precise ontological positions.

The method adopted has required a review of literature for a critical exam of the main methodological approaches used to study the movement activities, combining it with some philosophical considerations which guided the different approaches of the educational research.

The results led to the conclusion that it can be necessary an epistemological consideration to assume clear ontological positions to deal with the methodological research on the teaching of the motor activities in the educational field.

The methodological complexity demanded by the heuristic activity in the motor field requires a methodology of research based on the interpretative methods and techniques used by the educational research, which have to be shaped according to the main issues of the teaching of the movement, requiring as well the inclusion of specific protocols, techniques and tools which are indispensable to the observation, the analysis and the evaluation.

Key words: teaching research – movement activities – critical realism – ingenuous realism.

Introduction

The sciences of the movement, just as the medical and educational ones, are complex spaces where idiographic and nomothetic scientific traditions match, helping to study a phenomenon and offering the contribution of different research approaches. A strict scientific approach to the study of the movement in its several forms, uses and practices cannot, indeed, ignore the heuristic contribution of knowledge traditionally ascribed to different areas. It is so required, for a psycho-educational and methodological-teaching analysis, the integration of theoretic paradigms which may be traced back to the many researches of the natural sciences and the human sciences.

The just outlined horizon defines only partially the heuristic complexity of the motor field, which demands the researchers to know first the following issues:

1. The study of the human features and their motor implications, combining the anthropological, psycho-pedagogical and biomedical knowledge, with particular reference to the auxologic area.

2. The study of the regulating mechanisms of the action, combining the biomedical knowledge with the physical-mechanical one.
3. The study of the learning mechanisms of the movement, combining psychological, teaching-educational and biomedical knowledge, with particular reference to the neurobiological area.
4. The study of the motivation to move and act, combining psychological, teaching-methodological, pedagogical and biomedical knowledge, with particular reference to the neurobiological area.
5. The study of the interpersonal and group dynamics related to the motor action, combining psychological, teaching-methodological, technical and pedagogical knowledge.
6. The study of the relationship between the cultural models of the person and motor-sport phenomena, combining sociological, psycho-pedagogical, juridical and demo-anthropological studies.
7. The study of the performance limits of the person, combining biomedical, physical-mechanical, technical, demo-anthropological, juridical and sociological knowledge.

The teaching activity is a specific subject of study inside the science of the movement. It is a field of research inside which it has to be defined why, how and by which tools and actions it is possible to teach the movement activities and how they can be considered effective and efficient.

The complexity of the research on the teaching of the movement has to be found inside the several possible teaching-motor experiences and inside specific contexts, requiring the following issues to those who choose to carry out specific studies on the teaching of motor activities:

- A deep knowledge of the specific goals of the activity to carry out, corresponding to the type of methods and techniques required by a specific activity or subject.
- A deep analysis and evaluation of the right spaces, in terms of features, places, climatic, structural and environmental conditions, which are the backgrounds where and thanks to which the different activities are performed and which influence the executive and performative aspects.
- An analytical awareness of the different teaching methods deriving from the different ways of participation in the motor-sport activities, which require protocols of physical training and specific standards related to the differences of the individual and the group activity.
- A deep awareness of the psycho-physical implications arising from the different engagement and practice, the different amateur and professional forms, the different meanings of the results and of the bonds related to the different values.
- An analytical knowledge of the effects of the movement during the teaching accordingly to the energy systems which prevail in every different movement or sport.
- A deep knowledge of the psychological, functional and performative meaning which marks out the use of each space and the choice of the distances between the athletes.
- A theoretical-operating specific experience in the risks of the tools used, in their possible availability and in the preventing systems of the teaching activity.
- A precise knowledge of the structural features of the required performance, of the main elements of the movement or of the action that has to be performed or not from a teaching point of view.
- A specific competence to fix the quantitative features of the performance required by the teaching activity, establishing the right training systems and programs to plan the performance respecting its features and possible variables.
- A knowledge of the qualitative features of the requested performance, which can favour the teaching planning in difficult situations, considering the variability and the heterogeneity of the activities and the problems that the athlete may meet.

So, the teaching research in the motor field should investigate the different features and the specificity of the teaching of the movement activities and their different and possible forms and contexts, fixing methodological strategies based on ontological considerations.

The scientific consideration, that is the object of this work, is the possible definition of a specific field of research on the movement activities, particularly trying to explain their original and exclusive elements which require a selection of some methods of educational research based on precise ontological positions.

Methods

The method adopted in this theoretical-argumentative work required a critical exam of the main methodological approaches used to study the movement activities, combining it with some philosophical considerations which guided the different approaches of the educational research.

Results

Didactics, as autonomous science, studies and inquires into the teaching activity, analyzing its methods and techniques. When it aims to favor the acquisition of motor learning and/or the creation and/or the improving of the motor skills, it becomes a specific field of research and, for some aspects, a transversal one.

Considering the just said complexity of the variables to be studied, it is necessary, from a heuristic point of view, to select different methodological choices in the teaching-motor field. These choices should combine the qualitative and quantitative approaches which contribute in a tuning way to give back the complexity of the studied phenomenon (Creswell, 2003).

As in the pedagogical fields, the main problem of the scientific nature of its speech concerns: *“the way the epistemological features give value to the different methods, even those which use the quantification and the experimentation”* (Viganò, 1999, p. 413), the guarantee of a scientific value of the teaching activity requires the joint use of a whole of methods, languages, strict and coherent tools aimed at catching the complexity of the movement through its interpretation and survey.

Indeed, the research of an effective methodology, which shapes itself according to the multidimensional aspect of the experience which is at the basis of the movement teaching, takes advantage from the integration of exploratory, descriptive, relational and experimental studies, since it needs both the causal explanation, whenever possible, and the interpretative comprehension, avoiding unilateral scientific considerations.

If the quantitative techniques allow to study the movement through notational mechanisms which schedule the gestures and the performances per sectors, the reference to a methodological and qualitative approach (Peshkin, 1993, pp. 23-29) allows to evaluate the value of the number, highlighting the uniqueness of the person who shows himself through the exclusivity of his body-movement relationship.

This difficult process of integration of approaches and research methods is required by a specific research on the movement, which heuristically asks some questions that the biomedical research cannot answer despite the strong experimental evidences.

The scientific sectors regarding the biomedical field, indeed, even investigating the causes of the movement, the effects of the motor activities, their possible variables, the multifactorial evaluation of the abilities, the skills, the psycho-physical potentials of the person, do not have any heuristic tool to answer the following questions:

1. How to teach through the movement;
2. How to teach the different movements;
3. How to correct didactically the movements learned in a wrong way;
4. How to teach according to the psycho-physical features and the motivations of the person.

These questions are integral part of the tradition of the educational research and they draw from teaching-pedagogical methods and techniques and from heuristic element of interest like the demo-anthropology.

So, from this point of view, the research requires many methodological approaches (Nelson Thomas, 2001), which should meet the ontological concepts they refer to and their theoretical paradigms.

As matter of fact, every research in the teaching field, even when it refers to the study of the teaching activities based on the movement, requires the researcher ontological choices, which can guide the heuristic processes.

The path chosen by the researcher to carry out researches even in the teaching-motor field cannot draw apart from its educational values, from the regulative principles of his “being a person”. It depends on his view of the world and on the its investigating tools, including the relative epistemological choices which allow him to access to knowledge.

The realist approach, which have a positivist background, when applied to the research on the teaching of the movement, does not expect an interdependence between the object of the research and the researcher, considering the subject to be studied as an independent reality, objectively recognizable. In this view, the research on teaching does not include the possible conditioning of values, prejudices, different levels of perception and variety and specificity of experiences performed by the researcher while studying the teaching of the movement, which is so considered an object of independent study and not a “phenomenon”.

The realistic approach does not give any value to the context, the space and the time of the studied object. It does not study the influence of the cultural model for the fulfillment of the experience, but it considers the reality to study as a place where to find a self-regulating mechanism independent by the agents, independent from the specific features of those who teach and who learn.

The realistic approach applied to the teaching-motor field is the result of the culture of the mechanist teaching which has military root. For a long time, it required the teachers and the technicians to grant the acquisition of specific movements, gestures and skills, not much caring of the psycho-physical differences, of the personal needs and of the constructive aspect of the group. The realistic approach is, in the movement teaching field, a study of the researcher to take out the general laws and towards which he always put himself as a never interacting onlooker.

The results of a realistic research of the teaching of the movement could hardly confirm the general laws, except those studies which highlight features objectively present in every person. For example, a study on the methods used to improve the running endurance will never prove that the teaching of some techniques will give the same performative result for all the students. So, the realistic approach applied to the teaching of the movement has, in an educational environment, the following limits:

- a. *It can almost never find out the general laws which regulate the studied object*, since the teaching of the movement activities is based on the complicated relationship among the subjects, between the subjects and the environment. This relationship fulfils itself almost always in different ways, so hardly to reproduce in a mirror-like mode;
- b. *The teaching situation in the motor field is not an objective reality*, since every possible teaching activity is aimed at favouring or improving a movement, a gesture, or a performative dimension and it cannot avoid considering the impossibility to foresee the variability of the answers. The result of teaching through the movement is not impervious to the influence of the psychological and the subjective area of the person and of his physical and functional conditions, which do not depend only on the past practice and trainings but also on the personal motivations and situations which are time by time a mixture that can make the teaching activity effective or not.

The research that experimentally investigates the teaching of the movement can use, indeed, a realistic approach to study the object in a critical way, trying to get the trend elements and checking the possible presence of a structure which underlies and regulates the studied reality, and which is inter-subjectively objective as knot of a real and so observable property (Bonniolo, 1999, p. 370). This approach highlights that it is not possible to identify one single law which univocally and exhaustively corresponds with its explanation, since every law runs the risk to be considered limiting if considered the only one that can give an explanation.

The critical realism, as ontological position which allows to find a methodological path that fits the teaching of the motor activities, requires, in opposition to the logical positivist position, a view of the phenomenon as a “compound whole”, implying a stratified view of things and a net refusal of the reductionism (Polanyi, 1958).

“Critical realism is argued to be illuminative of these issues; this involves dealing with ontological questions- what is there out there to learn about--as well as epistemological ones - how can this be learned about. It also involves seeing the world as an open system with emergent properties rather than the predictable machine of the positivist approach and the “nothing but a sea of meaning” of the extreme social constructionist approach” (Burgoyne, 2009, pp.149-161).

This concept leads to consider the teaching procedures of the motor phenomenon not as working in extremely closed conditions, as the determinist laws would like, but developing patterns, trends and probabilities. Actually, the critical realism considers “the events as the result of random processes which take place in open spaces, hence they are the result of many mechanisms belonging to different things which interact in different ways” (Pedon & Gnisci, 2004, p. 30).

This approach, on a heuristic level, answers the complexity and the specificity of the teaching-motor field, acknowledging the following:

- The complexity and exclusivity which mark every teaching activity focused on the motor experience;
- The possible use of different theoretical patterns during the teaching phase;
- The impossibility to use every research on the movement as one only theoretic exhaustive key;
- The possible identification of a constituent background which can produce, in particular conditions, trends and guide the results of the teaching according to the produced answers, behaviours.

So, it is a question of starting from these ontological considerations to identify methodological approaches particularly used in the educational research and which can investigate the teaching of the movement activities.

Conclusion & discussion

It is definitely necessary an epistemological consideration which allows to assume clear ontological positions to start dealing with the methodological research on the teaching of the motor activities.

In the field of the realistic theory, which gives certainty (and feature of existence) to some elements of the reality, we acknowledge the limits of some approaches of research on the movement which would give value to the body that is “independent” from the thought, from the situation created by the teaching activity, from the features of those who learn and who teach. It is a kind of research that might run the risk to undertake critical or highly ingenuous positions.

The ingenuous realism is a heuristic inductive approach which often refers to the study of the phenomenon aimed at registering the significance of the data, at the study of the relationship between the quantitative dimension and portraying and at identifying the chance among the factors. This kind of teaching research may turn the phenomenon into a container of information which would be limited by the precarious and inadequate studied situation which could never give a complete scheme. A realistic “*ingenuous*” view of the teaching activity in the motor field might consider the teaching activity as an object of study which excludes the need to investigate the perceptive-cognitive-executive peculiarities of those who teach and learn; it seems insensitive to the differences and the subjectivity.

The critical realism offers an interactive view of the reality to be researched in the teaching-motor field. It is the refusal of the epistemological reality which considers the scientific concepts based on the facts, since the knowledge is considered a social and historical product.

According to Oldroyd (1986, p. 484), we have the real world, our comments on this world and our experiments carried out on it; those experiments and the comments are made through our cognitive apparatus, which are socially moulded.

In a view of the teaching research that is inspired by the critical realism, it is assumed that the fulfillment of tests which have an empirical evidence and which can confirm or not the developed theory. In this view of the educational research, the researcher tries to interpret and provide an explanation of the regularity which are empirically detectable during the teaching activity based on the movement, and which are linked to the relationship of the factors happening during the teaching activities. In this kind of approach to the teaching-motor research, the researcher will be able to use all the information empirically detectable, trying to find out possible regularities among the factors and the trends of the teaching main structure.

This approach excludes the objectivity of the teaching of the movement as object of study, considering essential to investigate the protagonists of the motor experience and their view of the world to justify and interpret the intentionality of the teaching activity and the differences in the learning processes.

The teaching research with a realistically critical approach is probably the heuristic way that much more interprets the complexity of the study on teaching and on the movement teaching methods, the many variables which happen during the movement teaching activities.

So, the methodological complexity demanded by the heuristic activity in the motor field requires a research based on the interpretative methods and techniques used by the educational research, which have to be shaped according to the main issues of the teaching of the movement.

They require as well the inclusion of specific protocols, techniques and tools which are indispensable to the observation, the analysis and the evaluation.

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