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The construction of didactic theories as a requirement for the development of general didactics

KEYWORDS

theory, subject of research, goals of cognition, researcher's awareness, model, axiological dilemmas

ABSTRACT

This paper's concern is the need to construct didactic theories in the aspect of the development of general didactics. The author performs an analysis of the various ways the term 'theory' is understood in the many field of scientific inquiry. What follows is a discussion of the problems of scientific cognition, researcher's methodological awareness, as well as the models of pedagogy: the scientist, hermeneutic and praxeological models. Finally, the author draws attention to the sources of researcher's expectations, axiological dilemmas in pedagogical research and potential conflicts of values.

The understanding of theory as a term in science

Theory is predominantly understood as a structured and systematised set of statements pertaining to a certain given matter, with the aim of describing, systematising and explaining certain facts as well as predicting their consequences. In empirical sciences, a theory is a general body of statements used to describe and determine certain conjunctures, phenomena and processes in a consistent and falsifiable way. In methodology theory is also understood as a certain system of general statements, explaining an aspect of the natural world, and structured in such a way that the statements of lower degree of generality are derived from those of higher degree of generality (A. Malewski 1963, p. 63). In this sense, re-

duced to the explanatory function, a theory cannot be applied in pedagogy, and consequently neither in didactics, since the explanation of the phenomena of a certain aspect of the natural world cannot provide a sufficient theoretical foundation to modify them. As this is so, what could be the meaning of a pedagogic theory? A set of statements pertaining to a given aspect of the natural world, which are characterised by a certain degree of generality, i.e. require a reasoning with the use of terms of strictly defined scopes, regarding whole categories of objects and phenomena, and thus enable the formulation of justifiable expectations and predictions, and which are further marked by a certain degree of logical consistency, to prevent any mutual incompatibility (H. Muszyński 1970, p. 56). In pedagogy one can differentiate between the theories of teaching and learning, which are focused on the goals, content, the laws governing the processes of teaching and learning, the rules and methods of teaching as well as the organisation structures and didactic means, and the theory of upbringing, with regards to the goals, content, organisation structures, means of social, moral, aesthetic and physical education as well as their conditioning and results. Didactics, as one of the four pillars of pedagogy, has long been suffering from disintegration. This can be ascertained by: (a) the inconsistency of its statements, and (b) their frequent mutual incompatibility. Every scientific discipline displays a natural tendency towards integration. An ideal situation, though impossible to reach in general didactics, would employ a single ultimate theory to explain all relationships between all elements in its field of inquiry. As is easy to understand, and as mentioned above, such a situation is unrealistic In order to overcome the state of disintegration, two courses of action can be pursued within the field of general didactics

One solution is to construct a set of partial theories (subtheories), such as the theory of team-teaching, theory of problem-based learning, theory of programmed learning, or theory of moral education. This solution poses specific difficulties, with the multiplicity of partial theories regarding the same field of inquiry, and with the application of psychological theories of learning in the practice of didactic conduct, where the formation of own theories is declined. It is immediately apparent, that any theory originating from another discipline of knowledge, and applied to the didactic process, will significantly over-simplify the didactic reality.

Every theory must conform to a set of conditions, specifically a theory must:
a. be precise in the description of the subject matter; contain a specific, hierarchized and consistent conceptual network; contain a set of structured statements and hypotheses, as well as the methods to substantiate them;

    b. enable the explanation of phenomena and patterns with regards to the subject matter; enable the predictions of future situations and form a foundation for practical activity;

    c. specify itself in relation to the general theories.

Are there any theories at the disposal in pedagogy, and especially in didactics, which would confirm to the above? It would seem that no, or not in full. What is there should rather be described in terms of more or less developed pre-theory concepts.

What should follow, is to ask a question, whether the attempts to construct didactic theories should be abandoned? Again, it would seem that no, as the chances to improve these concepts should never be forsaken. Furthermore, it should be noted that every partial theory has introduced new elements to the didactic practice. E.g. the theories of content selection have displayed the evolution of education content and enabled its improvement and closer alignment to the current requirements. The team-teaching theory has demonstrated the significance of the personal growth processes within social groups. The theory of problem-based learning has influenced the development of the cognitive independence among students. The theory of programmed learning has conveyed the knowledge of psychological mechanisms of learning, and called attention to the need for a logical system of education content. The theory of multilateral education has displayed the possibility of using different learning paths, according to the pursued objectives. The theory of moral education has demonstrated the possibilities to integrate the goals of teaching and upbringing within the education process.

Another solution is to synthesise the existing didactic research in order to surmount the disintegration. It should be noted that the development of didactics has shown distinct phases of embranchment and synthesis. After every such cycle, the embranchments are ever more numerous, and the synthesis thus becomes ever more difficult (K. Kruszewski 1987, p. 9). Every synthesis provides a creative inspiration for both theorists, who work to refine its substance, as well as the practitioners, who struggle to bring its concepts into reality. Such a synthesis of the inter-war period didactics was included in the invaluable *Precepts of Teaching* (*Zasady nauczania*) by B. Nawroczyński. The synthesis of post-World War II didactics was performed by W. Okoń, in the successive editions of his work *The Outlines of General Didactics* (*Zarys dydaktyki ogólnej*), where the influence of the socialist ideology on didactics is immediately obvious.

W. Okoń has also attempted to synthesise the achievements of the 1960s in his paper titled *The Basics of General Education* (*Podstawy wykształcenia ogólnego*). The indisputable value of syntheses lies in their qualities, which enable the assimi-

lation of research results from other disciplines of science, not necessarily consistent with the basis of the synthesis. Thanks to the successive synthesis attempts the Polish teaching cadre, in spite of the unfavourable situations in the past, are able to communicate in the specific language of didactics and understand the research areas and the notions of the lesson study process.

A symptomatic quality has emerged within the research practice in pedagogy, as well as in the related disciplines such as psychology or sociology, where the differences between the methods of conducting research and of providing empirical support for the results are becoming blurred. The scientific research into pedagogy is becoming increasingly applicable to the education practice, which in turn results in growing expectations towards pedagogy as a field of inquiry. The results of pedagogical research are becoming essential in the modifications to the education practice. Such research can be characterised with the use of varied criteria. Taking into account the goals, one can distinguish descriptive, diagnostic, experimental and explicative research. Categorising by the cognitive and methodological assumptions on the side of the researcher, one can distinguish quantitative and qualitative empirical research. Thinking along the criterion of time and space, one can distinguish into historical and comparative research. However, is one should account for the fact that pedagogics is both a theoretical and practical discipline, the categorisation of pedagogical research by Stanisław Palka seems to be the most legitimate. He assumed a structure of research subjects which creates a continuum along the theory to practice axis. To follow his way of thinking, one can distinguish:

1. Meta-theoretical and meta-methodological research

This kind of research pertains to pedagogy as a scientific discipline, to its own terminology, laws which are formulated within it, the methods of constructing the theoretical knowledge in pedagogy, and the methodology of empirical quantitative and qualitative research. These indicate the scientific awareness of the pedagogical cadre and serve to diagnose the level of development in the discipline, and to design and predict further cognitive research.

2. Theoretical research

These enable the construction of theoretical knowledge in the field of pedagogy. This knowledge encompasses the process of upbringing and of education and self-education of an individual in a lifetime perspective. It is based on the generalisations derived from the results of empirical quantitative and qualitative research. The results of these display the development stage of theoretical pedagogics. This kind of study is typical of researchers representing the theory-oriented pedagogics. Its results can be fruitfully processed and applied to the requirements of pedagogical practice.

3. Theoretical and practical research

The results of these serve a dual purpose. Research of this kind is conducted both in order to construct a system of theoretical knowledge in pedagogy, and to meet the practical requirements of upbringing, education and self-education of an individual. This type of study is dually mediatised in practice:

Firstly, the researchers in this field rely on evidence gathered over the course of observation and analysis of pedagogical practice, and consequently formulate the research subjects of a greater degree of generality. Their results lead to the discoveries and formulations of the laws of pedagogy.

Secondly, the researchers verify or falsify the theoretical constructs and research hypotheses pertaining to a certain type of education and didactic practice, thus stimulating the development of theoretical knowledge in pedagogy and triggering the modifications in practice.

4. Pure practical research

It serves the goal of solving practical problems and amending the current practice with regards to both positive and negative phenomena in education and didactics. This kind of research is usually limited to a local context. The results appear in the form of a report or expertise prepared on commission by the local administration. This, however, does not prevent them from being used to perform theoretical analysis (S. Palka, 2006, pp. 97-109).

The goals of scientific cognition

Not every kind of cognition can be regarded as scientific. In order to qualify as scientific, the cognitive process must realise certain external and internal goals. The former are a result of the function of science within the society and serve the realisation of certain theoretical and practical tasks. The latter are ones that a researcher sets before themselves in their study and are cognitive in nature. The role of a researcher is to recognise the truth and provide a verifiable model of an aspect of the natural world which is their research subject. As this is so, the goal of cognitive research lies in the kind of truth which is of interest to a researcher, and which should be characterised by generality, consistency, high informative content, reliability and simplicity. The above characteristics are strictly inter-related and mutually conditioned. Even though it should be noted that the relations between the particular characteristics may be of indirect nature. Among these five, the role of the informative content is crucial, as the component which conditions the falsifiability of the presented knowledge. It should be further emphasised, that

'the more a certain statement (or research hypothesis) tells us about the reality, the richer its content, the more diverse logical and empirical consequences we can draw from it, the easier it will be to verify precisely, as the empirical material to support it will be more abundant and diverse'. The informative content of a certain knowledge is conditioned by its degree of generality, expressed in the number of theoretical and empirical conclusions which can be derived from it. The construction of science relies on a pre-determined strategy. The researchers are frequent to apply the strategy to 'overtake reality'. This strategy plays a special role in pedagogical research, as the pedagogy, among its many functions, also fulfils a prognostic one. In the essence, by analysis current states of affairs it attempts to predict the future developments. As a result of this, researchers in the field of pedagogy cannot limit themselves to the ongoing problems, but must formulate research subjects of an extended field of research, thus constructing a sort of 'spare' knowledge. Consequently, the number of scientific research subject increases significantly, however, this is beneficial due to the added advantage of this accumulated 'spare' knowledge.

Methodological awareness of the researcher. The methodological awareness is understood as one of the baseline regulators of the scientific research process (J. Brzeziński, 2007, pp. 48–49). Scientific research activity is widely understood as a (methodologically qualified) researcher or a group of researchers undertaking activities with the direct or indirect result in the realisation of the goals of scientific cognition. 'The methodological awareness can thus be understood as a certain set of preconceptions which can be articulated in the form of adequate normative and prescriptive (prognostic) statements (J. Kmita, 1980, p. 31). The preconceptions which constitute the methodological awareness can be thus regarded as a significant component of the theoretical-methodological paradigm (as understood e.g. by Thomas Kuhn) of the scientific cognition as a whole or in a specific discipline or set of disciplines, a paradigm which determines the subjects and goals of scientific cognition and the acceptable methods of reaching them'. (T. Pawłowski, 1988, p. 206). What exactly is the methodological awareness then?

Methodological awareness is a system of rules which determine the recognised methods of pursuing research within a certain field of inquiry. The methodological rules determine the sets of activities which constitute the scientific research practice, and the ways of conducting these activities. Zbigniew Spendel suggested the following classification of these rules, using their content as a criterion:

    1. Rules which indicate the research goals (methodological norms):
- indicating the lead goals and potential intermediate ones;
- determining the criteria of goal achievement;

- determining the standard problematic of research;
- determining the standards of research activities.

2. Rules which determine the methods of realisation with regards to research activities (methodological prescriptions):
   - rules of formulating operational goals;
   - rules of designing the methods to achieve the operational goals:
     - o rules of the production of the results,
     - o rules of the realisation of preparatory and auxiliary activities;
   - rules of control (or potential modification) of the course of research activities;
   - rules of assessment of the realisation of operational goals (Z. Spendel, 2005, p. 27).

From the formal point of view, methodological prescriptions can be shaped as procedures or heuristics.

1. Procedures (or at times algorithms) determine in detail the sequence of performing a certain finite number of activities, leading predominantly to the realisation of a goal (e.g the statistical inference algorithms). The procedures translate directly into an activity schedule and may be depicted as flowcharts in certain situations.

2. Heuristics are the broadly delineated frameworks (boundary conditions) and patterns of possible activities, which may not be sufficient to guarantee the achievement of a goal, yet increase significantly the probability of this achievement if conducted properly; heuristics must be highly detailed in every particular case prior to becoming a basis for a specific activity (Z. Spendel, 2005, p. 27).

It should be noted that in scientific research the heuristic principles play a far greater role than their algorithm counterparts. A researcher's methodological awareness may not be limited to a set of pre-established rules, according to which they would conduct their scientific research. Contrary to that it comprises a system of tools and means which the researches should be able to apply to the construction of a research procedure compliant with the normative methodological requirements and sufficient to enable the achievement of the assumed goals of scientific cognition (J. Brzeziński, 1996, p. 75).

The most frequent conceptualisation of methodological awareness in the fields of psychology and pedagogy includes three types of statements:

1. The statements which express the fundamental conviction as to the ontic structure of reality, or in simper form, such statements which present the ultimate reasoning to ask and understand the question 'what is the subject

of scientific cognition?'. They also contain certain premises as to providing the answer to that question. This is what is referred to as the ontological perspective.

2. The statements which express the baseline convictions regarding the cognition of the natural world, as well as the premises to choose the most suitable language to describe it. Or in a simplified manner, such statements which present the basic epistemological tools to enable the formulation of the criteria to assess the formal rectitude of any answers to the questions at hand. This is what is called the epistemological perspective It also includes the regulations of the course of practical scientific research, described by the philosophy of science in the shape of the theory of the development of scientific cognition.

3. The statements which describe the rules of application of various research techniques and analysis methods for the gathered data, or in a simplified manner, such statements which verbalise the precepts of study to find support to the answers to the subject research questions. These are essentially the knowledge of research models.

In an attempt to characterise the social methodological awareness of a researcher, one cannot omit the axiological perspective of scientific pursuit. It is a part of the set of values, the realisation of which determines the directions and methods of study. Thus, the social methodological awareness, as understood by Jerzy Brzeziński, is marked by a hierarchical structure and encompasses three levels: the ontological, epistemological and methodological.

According to Brzeziński, the individual methodological awareness is a certain set of methodological theories accepted by a given researcher, inclusive of the following:

- The theory of the studied scientific object
- The theory of empirical research
- The theory of statistics
- The theory of interpretation of the research result.

The content which comprises the above-mentioned levels 1 and 2 of methodological awareness, reconstructed and verbalised on the grounds of a specific philosophical concept, and based on applicable ontological and epistemological presumptions, serves to index the concrete goals of every particular activity performed by the researchers, thus binding the practically palpable values with the values derived from a certain worldview, or in other words the non-instrumental superior values (J. Kmita, 1982, p. 176).

The above pertains to the mono-paradigmatic fields of scientific inquiry. The foundation of social methodological awareness, understood as the regulatory factor in scientific research, lies in the assumption, that there exists a single, optimal or correct solution to a given research problem, which consists of a set of methodological decision-making in order to determine the most adequate strategy to arrive at a solution. However, a certain researcher may not be able to find such a strategy, if their individual methodological awareness should significantly diverge from the content of the social methodological awareness, or in a situation where certain extra-methodological determinants of the course of scientific cognition are active. This does not imply however, that within the subjective psychological perspective (based on individual experience) of a certain researcher, any problem should appear as such, which would have only a single solution.

Pedagogy is a multi-paradigmatic discipline, which allows for alternative kinds of methodological awareness. In the methodological literature one can encounter three models of pedagogical pursuit: the scientistic, hermeneutic and praxeological.

The scientistic model of pedagogy adheres to the accuracy of pedagogical notions. The researchers who follow this model aim to attribute distinct empirical criteria of application to the pedagogical notions. They strive to make the operational or behavioural notions susceptible to observation and measurement. This type of methodological perspective values the study of individual and social group behaviours, both in natural and artificially organised education settings. The pedagogical phenomena under research are reduced to the observed scientific facts. The scientistic point of view postulates the removal of evaluating statements from the language of pedagogy. 'The presence of evaluation may impede the assumption of an objective position with regards to the observed phenomena', as well as, due to the subjective bias, preclude 'a precise description of the achieved research results' (T. Pawłowski, 1988, p. 206).

The measurements enable the study of the forces of mutual influence between pedagogical phenomena. According to J. Kmita, the scientistic approach relies on three baseline assumptions:

1. The relationship between the assessment of a certain situation and the situation as such may be twofold: either the assessment is in accord with the situation (being correct), or it is not (being false).
2. The achievement of correct assessments is the only possible form of cognition.
3. Conceptual cognition is a basic value (J. Kmita, 1982, p. 141).

The scientistic model in pedagogy is closely connected to behaviourism. This is where an individual is seen as pre-determined by the external environment and regarded as other-directed and non-autonomous.

The hermeneutic model of pedagogy assumes a point of exit in the form of an individual's own experience, including their motivations, attitudes, beliefs, goals, values and prospects, which determine their behaviour within the various education settings. A methodological consequence in this type of understanding pedagogy is the direction of research into the manifestations of individual experience by the means of methods such as: introspection, autobiography, humanistic interpretation Pedagogical phenomena are thus reduced to the individual's internal experience. The essence of research lies in the understanding of an individual's intentions, goals and aspirations. This model resists mathematisation, since according to Janusz Gnitecki, it results in a loss of invaluable knowledge regarding an individual or a social group, in particular such knowledge which cannot be formulated into quantitative rights (J. Gnitecki, 2006, p. 71). The understanding of the nature of education is pursued over a number of perspectives: - understanding of the student by the educator; - understanding of the child's learning process and their personal development by the pedagogue; - understanding the attitude of the educator from the perspective of the student, of the educator themselves and from the objective and ideal perspective; - understanding of the wide spectrum of the education and upbringing establishments as parts of the education reality; - understanding of the positive and negative pedagogical phenomena from the perspective of extra-educational environments and their interests of the social, economic and cultural nature; - hermeneutic interpretation of the reciprocity of practice and theory as a circular relationship, not as a feedback loop (K. Ablewicz, 1998, p. 34–35).

The praxelologic model of pedagogy takes into account the attempts to emphasise the efficiency of pedagogical activities. This becomes possible, as claimed by Gnitecki, in an environment with an increased degree of determinacy of the three basic categories of practice-oriented pedagogy, which are the goals, activities and conditions. Practical pedagogy encompasses three types of reflective approach, regarding: the education teleology, the education activities, the necessary conditions for the efficiency of pedagogical activities (J. Gnitecki, 2006, p. 72). The goal of practical pedagogy is to develop the directives and guidelines for education practice. The above three models of understanding pedagogy are frequently mutually contraposed, leading to the emergence of contrasts between the ways to grasp

the essence of pedagogical sciences, as well as the varied ways of understanding change as a category of pedagogical research. The goal of empirical pedagogy is to explain the change within an individual, the goal of hermeneutic pedagogy on the other hand, is to interpret this change from the perspective of the meaningful values in a human life, and the goal of praxeological pedagogy lies within the search for practical ways to induce change in an individual.

A researcher's choice of a particular way to understand pedagogy as a science results in the adoption of a certain perceptual attitude. The perceptual attitude is the preliminary formation of a researcher's mind to perceive any particular piece of information. It should be noted, that the power of the perceptual attitude may be sufficient to render any observation inadequate to reality (E. Nęcka, J. Orzechowski, B. Szymura, 2006, pp. 296–297). The perceptual attitude may hinder the categorisation of studied objects and result in errors. An attitude derived from deeply established structures of knowledge, stereotypes or prejudices can significantly impede the research process and result in an overly subjective perspective on the researched phenomenon.

The expectations of a researcher are an important factor in pedagogical inquiry. This factor may become the source of self-fulfilling prophecies, as the results of positive expectations or the bias within the very experiment.

The sources of researcher's expectations

In the subject literature one can encounter three types of such sources: the researcher's personality, their knowledge, or the data regarding the researched individuals, acquired prior to the commencement of study.

Regarding the former source, one should list the attitudes of the researcher, their beliefs and their recognised values . According to Brzeziński, comparative research conducted among researchers with high and low levels of expectations, allowed for the creation of their psychological profiles. The main features within the profile of a researcher with a high level of expectations appear to reside in authoritarianism, a significantly dogmatic style of thinking, the lack of tolerance for different beliefs, rigidity in the way of thinking, the search for social approval, and a high degree of reluctance to approve of such pieces of information which fail to support the researcher's expectations (J. Brzeziński, 1996, p. 90).

The latter of the above-mentioned sources, is the researcher's knowledge (the familiarity with current pedagogical theories and the prevailing research results, the pedagogical methodology, as well as their own competences as a researcher).

The last source lies beyond the researcher as such, and is comprised of the data which the researcher acquires regarding the studied individuals and other objects prior to the commencement of their actual research. Such data maybe of twofold nature: objective and subjective, what is called **objective data** are, e.g. the health status of the students under the research, their social background and previous learning results; the **subjective data** are the characteristics of the researched individuals derived from their belonging to certain organizations, social groups, ethnic minorities, religious communities, etc.

It should be emphasised, that the same research results would be interpreted in a different manner, depending on where the researcher can be placed within the scale of authoritarianism and dogmatism. '[The researcher] would regard the individuals belonging to a group where the expected results should support the research hypothesis in a significantly different manner than the individuals within the group where the expected results could falsify it' (J. Brzeziński, 1996, p. 90). It is not rare among researchers that they should attempt to support the working hypotheses at all costs.

The ethical awareness of a researcher is essential to the reflective approach to pedagogical inquiry. It consists of the researcher's beliefs pertaining to their undertaken activities, which are subject to moral qualification. The content structure of ethical awareness is comprised of three types of beliefs:

1. The beliefs regarding what does and what does not constitute a moral value. According to what specific rules, which situations would be qualified as morally whole and which as morally evil. This type of beliefs determine the scope of moral values which constitute the researcher's duty and which should be realised by them.

2. The beliefs regarding the ways of fulfilling a moral obligation, which results from the acceptance of a certain set of evaluative beliefs. These beliefs are regulative in nature, they determine the conditions and the manner of pursuing activities which express the approval of certain moral values. They also indicate, which activities are unacceptable.

3. Meta-beliefs which determine the hierarchy of moral values and their relationship to cognitive values (Z. Spendel, 2005, p. 51).

Returning to the problem of the methodological awareness of the researcher within the process of inquiry, It should be noted that a researcher is frequently faced with the need to choose one particular methodological orientation, which is a choice of a certain model of the natural world, e.g. between determinism and indeterminism. The decision on a particular theory regarding the subject of inquiry determines the future content of the research questions. This is a choice between

either competitory or complementary models of research. The decisions taken by the researcher may be subject to evaluation or self-assessment, and thus this presents a choice between the potential acceptance or rejection, or between different degrees of potential acceptance. Both the decision-making and the issue of certain assessments from the perspective of the determinants from which they are derived, as based on the previously possessed knowledge, are difficult to determine.

'The criteria for the correctness of both the decisions and the assessments, apart from the requirement of internal consistency and consequence in taking and issuing them, are not immediately obvious' (J. Brzeziński, 1996, pp. 74–79). According to Brzeziński, it is the methodological theories previously adopted by the researcher, what determines the above methodological decisions (J. Brzeziński, 1996, p. 79). Spendel however, questions this claim. To quote his opinion:

1. It is not the case, that a researcher possesses at their disposal (in the meaning of the familiarity with the applied statements) invariably a single methodological theory.
2. The preference attributed to a given methodological theory over an alternative concept cannot be reduced to 'inheriting' certain views from the one's preceptors, especially in the world of global information flow.
3. The methodological theories are not a given in any way (which would preclude any kind of development of the scientific research apparatus), on the contrary, they have to be constructed by someone (as one of a range of possible solutions) (Z. Spendel, 2005, p. 39).

Queries of this kind should be applied foremost to any multi-paradigmatic field of inquiry.

In all kinds of scientific study, including pedagogical inquiry, the researcher's own intuition is a significant factor. The very term of 'intuitive cognition' refers to a broad category of phenomena regarding the acquisition of knowledge, learning, memorising and problem-solving. The essence of intuitive cognition can be reduced to the fact that a researcher is to perform sophisticated cognitive activities in problem-solving, without being aware of the essential elements of this process, and often possessing in their cognitive repertoire certain skills or knowledge required to solve the problems at hand. One of the characteristic features of intuition is the capacity of the researcher's mind to function despite the lack of total awareness of the causes or mechanisms behind this functioning. Certain assessments are intuitive in nature. A researcher may in such case be convinced that they realise something, without realising why. 'This results in them experiencing a certain instancy, obviousness and apriority of their assessment. An intuitive assessment is instantaneous, since within the scope of internal experience it does not constitute the final

link of a prolonged reasoning. It appears obvious, since it requires no explanation, its correctness seems irrecusable. It is aprioric, since the researcher does not perceive it as a result of experience and knowledge, but rather as a sudden, mysterious flash of intellect' (E. Nęcka, J. Orzechowski, B. Szymura, 2006, p. 564).

It can be thus concluded, that intuition is the capacity to find meanings, which elude verbal expression. The cognitive-oriented psychologists attempt to discover the mechanisms of an intuitive assessment, as well as the unconscious premises from which it should arise. The very notion of intuitive cognition, according to Edward Nęcka, Jarosław Orzechowski and Błażej Szymura, refers to three different phenomenal categories. These are foremost, the assessments which the researcher cannot fully legitimise. Such assessments rely on premonitions, as opposed to rational assessments. Within the other scope of meaning, an intuitive assessment is regarded as naïve, as a result of common experience, and not of empirically verified procedures. Such type of cognition can result from inaccurate or detached observations, or from a tendency to make rash generalisations. 'The science does not have a monopoly on truth either.' One can dare to claim that the development of science relies on the constant substitution of naïve, unsupported or false theories with models more relevant to the research results' (E. Nęcka, J. Orzechowski, B. Szymura, 2006, p. 569). It can be ascertained with all responsibility that many a scientific theorem is based on superstition, accepted without critique and reproduced by the whole generations of scientists. The veritable scientific knowledge, which is subject to verification, is marked by the ever-frequent defiance of the universally accepted beliefs and natural intuitions.

Within the third scope of meaning, an intuitive assessment is a breach of logic resulting from the researcher having adopted an over-simplified heuristic. The result of such a cognition may prove to be an accurate assessment, while the cause of falsely chosen research problems, methods or biased assessments is found in the lack of logical reversibility. The above can be explained with the application of the theory of mental operations by Jean Piaget. Within the mind of the researcher, a problem arises when they are unable to directly explain, on the basis of their previous knowledge, the course of certain events. To express this in the language of psychology, one would say that the researcher's mind is found in the state of cognitive conflict. In such a situation, the researcher's activity becomes directed towards the formulation of a new programme of activity, to enable them to find a solution to the observed problem. At this stage, the symbolic thinking plays a cardinal role Cognitive conflicts precede problems, and are in turn preceded by contradictions and discrepancies in information. The subjective manifestations of a conflict refer to a sequence of mental activities, such as ambiguity, obscurity, complexity, curios-

ity, etc. These fail to constitute a homogeneous mental sensation, due to the components of emotional reactions, cognitive assessments and the very attitude of the researcher. The discovery of a problem is thus a result of the autonomous activity within the researcher's mind.

Axiological dilemmas in pedagogical research

The course of scientific pedagogical scientific research, and the pedagogical research as such, both demonstrate the evident ethical aspect. Within the pedagogical inquiries the researchers are frequently faced with moral dilemmas. Axiological conflicts can often emerge in manifold research settings. What should be brought to attention are two types of conflicts: the conflict of values of a 'truth vs good' type, appearing as 'truth vs good' of the researched individuals and as 'truth vs good' of the researcher, as well as the conflict of values of the 'good vs good' type, referring to the good of the researched individuals and the good of the researchers and the recipients of knowledge (Z. Spendel, 2005, pp. 58–59). The axiological conflicts are frequently understood as such situations, in which there appears a discrepancy between the norms pertaining to diverse types of individual consciousness, or, according to Spendel, between the norms pertaining to diverse types of consciousness (either individual or social). A peculiar case is constituted by such research situations, in which a conflict of values would surface when the researcher should undertake such research activities, the effects of which may also form an act of approval for the cognitive values acquired during the research, as well as the act of negation of certain moral values. The occurrence of a reversed situation is equally possible. It should be emphasised, that within the research practice there may also appear such situations, in which the conduct of research activities precludes the simultaneous approval of the key values of both the researcher and of the researched individuals. The reasons raised above allow a conclusion that within the research practice, conflicts of both the 'truth vs good' and the 'good vs good' type.

1. Conflict of values of the 'truth vs good (of the researched individuals)' type

Empirical studies involving individual people may reveal ethical limitations within the research apparatus. It is not always possible e.g. to adhere to the rules of experimental research. A danger of the infringement of the moral boundaries of the experiment may be imminent. Similar dangers may appear during scientific observations of within other methods. It may difficult for a researcher e.g. to con-

duct observations without any kind interference in a context where the researched individuals find themselves in a particularly difficult situation. In such a situation a researcher may be faced with a moral dilemma. A conflict may also appear when using the *ex post facto* research model, or a questionnaire or interview, in such a situation, in which the researcher would refer e.g. to past moments which may have been traumatic for the respondents.

2. Conflict of values of the 'truth vs good (of the researcher)' type

The type of relationship between methodology and ethics is in this case quite controversial, convoluted and ambiguous' (Z. Spendel, 2005, p. 60). The difficulties a researcher may face over the struggle to fulfil the obligation to meet the research standards determined by the chosen methodology, as well as the very being in possession of a highly professional research apparatus, may induce them to underestimate or even ignore the ethical problems connected with the research process This may in turn lead to the researcher adopting an egocentric attitude, which may effectively violate the good of the researched individuals and bar the path to the truth completely or partially, as a result of the pursuit of mundane personal interest Should a researcher breach the values inherent in the pedagogical research methodology once, and remain unpunished, they may be prone to repeat such an act or continue acting in such a way.

3. Conflict of values of the 'good (of the researched individuals) vs good (of the researchers and the recipients/users of knowledge) (Z. Spendel, 2005, p. 61).

There may be contradictions between the interest of the researcher and the interest of the researched individuals. As an example, within the reflective approach to the upbringing process, a question may arise about the moral sense of any significant interference by the educator with the personality of the student. What is at hand is mainly the moral judgement of such an interference and its impact on the student's life.

The above-mentioned and briefly discussed examples fail to exhaust the full range of dilemmas faced by researchers conducting pedagogical inquiries. However, they may be enough to raise the awareness of the imminent dangers. Finally, they should never be used to undermine the sense of conducting pedagogical research.

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