The teacher and pedagogical science: How to overcome the barrier?

El maestro y la ciencia pedagógica: ¿Cómo superar la barrera?

Vladislav SERIKOV 1

Content

ABSTRACT:

The article looks into the causes of the critical and sometimes negative attitude of practical teachers to published results of pedagogical research and recommendations of pedagogical scientists. The study identifies two groups of causes of the hostile attitude of teachers to the content of pedagogical texts: the first has to do with the shortcomings of the pedagogical studies and forms of their presentation, and the second with the fact that teachers are not equipped to understand and use the results of research in their own experience. These shortcomings include: discrepancy between the materials studied and declared methodological approaches, low standard and small scale of experimental testing of proposed recommendations, unconvincing facts cited, incorrect quantification, trivial or unverifiable hypotheses, remoteness of the themes of studies from the problems that really concern teachers, unduly complicated texts overloaded with abstruse terminology. The second group that sets a barrier between teaching practice and academic theories stems from insufficient theoretical background of the teachers themselves, whose conceptual toolkit does not correspond to the definitions offered by scholars. The barrier between pedagogical science and the teacher can only be overcome if both sides move toward each other: academics must

RESUMEN:

El artículo examina las causas de la actitud crítica y a veces negativa de los docentes prácticos a los resultados publicados de la investigación pedagógica y las recomendaciones de los científicos pedagógicos. El estudio identifica dos grupos de causas de la actitud hostil de los docentes al contenido de los textos pedagógicos: la primera tiene que ver con las carencias de los estudios pedagógicos y las formas de su presentación, y la segunda con el hecho de que los docentes no están equipados para entender y utilizar los resultados de la investigación en su propia experiencia. Estas deficiencias incluyen: discrepancia entre los materiales estudiados y los enfoques metodológicos declarados, bajo estándar y pequeña escala de pruebas experimentales de recomendaciones propuestas, hechos no convincentes citados, cuantificación incorrecta, hipótesis triviales o inverificables, lejanía de los temas de estudios de los problemas que realmente conciernen a los docentes, textos indebidamente complicados sobrecargados con terminología abstrusa. El segundo grupo que establece una barrera entre la práctica docente y las teorías académicas proviene de insuficientes antecedentes teóricos de los propios docentes, cuyo conjunto de herramientas conceptuales no corresponde a las definiciones ofrecidas por los académicos. La barrera

understand the problems and logic of the teacher and the teacher should, as far as possible, become involved in scientific research.

Keywords: teacher, scientific texts, causes of teacher rejection of academic recommendations, divergences in the interpretation of concepts.

entre la ciencia pedagógica y el maestro sólo puede ser superada si ambas partes se mueven entre sí: los académicos deben entender los problemas y la lógica del maestro y el maestro debe, en la medida de lo posible, involucrarse en la investigación científica.

Palabras clave: profesor, textos científicos, causas del rechazo de los docentes a las recomendaciones académicas, divergencias en la interpretación de los conceptos.

1. Introduction

A great deal has been said about the attitude of practical teachers to the recommendations of pedagogical science. The far-from-positive attitude to pedagogical science displayed, according to expert estimates, by between 60 and 89 percent of teachers is described by the terms "mistrust," "doubts about its usefulness," "waste of time", and so on (Stürmer, Könings and Seidel 2012). Reading academic texts these teachers describe them as "obscure," "divorced from practice," "using abstruse terminology," "abstract judgments," "paucity of concrete examples." More in-depth conversations with teachers and heads of education establishments show that they are put off by the separateness of the content of the published texts and the daily practice of teachers, lack of proof of many judgments, the abundance of exhortations and modalities ("it is necessary," "the teacher must," "is obliged to," etc.), the setting of grand goals without indicating the path toward achieving them, formulation of problems that are far removed from what really engages the minds of practical teachers, invoking of authorities unfamiliar to the teacher. Teachers often note the lack of proof of the relevance of what the authors of scholarly treatises propose. The teacher reading these texts doubts that the implementation of the "models" proposed will improve his professional situation.

The barrier of incomprehension, we suggest, arises for two reasons: the first is that the academic output has "methodological flaws" which make it difficult or even impossible for practical teachers to use them; the second reason is that teachers do not command the conceptual apparatus, have no logical-psychological mechanism for perceiving and processing scientific information that would enable them to be "with it," i.e. to adequately perceive scientific ideas and technologies.

2. Methodology

In the course of our study we analyzed both of the above mentioned causes of the barrier between the teacher and academia. First we assessed the quality of academic texts. A group of scientists with a high citation index were asked to do the following: after reading the title of the article (report) or dissertation, to formulate their own or expected solution before reading the text. In more than 90 percent of the cases, the experts correctly anticipated what they would find in the body of the paper. This suggested that the papers and dissertations presented lacked any scientific novelty, i.e. what the authors of these scholarly materials wrote about is already known to science and what they did was to elaborate some details and methodological tools, which naturally disappointed the practical teachers who expected the scientific text to offer them "something new." Yet another problem is that teachers misconstrue many scientific concepts and ideas, i.e. they do not invest them with the meanings the authors of these scientific products had in mind. We had to understand why this happens.

The first goal of the study was to analyze the quality of published results of pedagogical research. The above questions were aimed at assessing the correspondence of pedagogical studies to elementary methodological standards, initially without taking into account whether the texts were within the intellectual reach of the teachers and whether the recommendations were acceptable for the practical teachers. The second goal was to assess how well equipped the teachers were to understand and accept the scientific ideas and recommendations and find out the reasons why teachers failed to understand or rejected the scientific materials.

Our analysis of the scientific texts followed the following scheme: 1. What question (problem, task) does the author of the study seek to answer? 2. Into what more particular questions has the author divided the general question? 3. The answers to which of the questions raised are already (fully or partially) known to science or are practically unknown? 4. On what existing pedagogical ideas, theories and concept does the author draw in order to solve the problem raised? 5. What new ideas and hypotheses has the scientist put forward? 6. What methods of verifying the hypothesis have been used in the work? 7. What has the experiment revealed in the study of the problem? 8. What is the method proposed by the author and what are the results of its testing during the course of the establishing experiment? 9. How was the pedagogical experiment organized (selection of experimental and control groups, observed indicators). What methodologies and technologies were being tested? 10. What new previously unknown things has the study revealed? 11. What problems remained unsolved?

We analyzed a random selection of 10 monographs brought out by various publishers, 10 articles from pedagogical journals of various stature, 10 Candidate's and Doctoral dissertations in three disciplines: general education theory, professional education, teaching methods.

3. Results

Let us briefly describe the more typical results. In 63.7% of the scientific-pedagogical texts the question to which they sought the answer was not clearly formulated. After describing the commonly known flaws in teaching practice, the authors proceed to describe "ways to overcome them," more often than not without any prior pilot testing. In 49.4% of the papers reference to earlier theories is purely formal: after declaring their allegiance to a certain approach the authors do not only fail to use it in their research, but act in a way contradicting the declared approach.

For example, after declaring a "holistic approach" the author of a dissertation measures students' "readiness for self-education" as the sum of the features of this quality: "background knowledge," "ability to find information," "to work with a text," "motivation for self-education," "strong will," "perseverance," etc. Preliminary testing (108 third- and fourth-year students majoring in Mathematics and Informatics at a teacher-training higher education institution) has revealed that more than 60% of students possess these qualities, however in practice no more than 5% are actually engaged in self-education. In short, diagnostics of "readiness for self-education" according to the above indicators failed to deliver authentic results. Why? Probably because the author defined "the whole" ("readiness") as the sum of particulars ("knowledge," "skills," "motives"…) which runs counter to the declared holistic approach. It is safe to assume that in order to really become engaged in self-education activities the student must have some holistic mechanisms of readiness to adopt a different way of life, a real need to devote time to self-education.

Other shortcomings of academic papers include: not enough attention to what has been done by other authors on the same problem and the approaches to solving it used in practice. The text of the article or dissertation sometimes looks as if the problem has never been tackled before and the author starts "from scratch" instead of describing his own contribution to existing knowledge and experience in the field. No wonder this style of academic writing puts off practical teachers.

It is well known from the history of science that the most exciting moment in scientific research is the hypotheses the scientists seek to confirm or disprove. This is very different from the hypotheses the teacher finds in academic texts. What should a pedagogical hypothesis look like? Apparently, it is the suggestion of a means to achieve some concrete pedagogical result. In other words, it is a suggestion on how somebody could be taught something or how a useful quality can be fostered in somebody.

Let us look at examples of hypotheses of pedagogical scientists in this connection. Take for example, the hypothesis about how to inculcate legal awareness into senior-year school

students: "the key mechanism of the system of pedagogical means aimed at inculcating legal culture to a senior-year student is project activity pursued as activity aimed at achieving a result within a fixed time period using legal concepts and resources" (Lyakhova 2016). A teacher who sets out to tackle the problem of legal education of senior-year schoolchildren is unlikely to be thrilled by such a hypothesis. What projects, resources, results and concepts does the author have in mind? What exactly does "fixed time period" mean?

Let us take another problem: how to foster an attitude to family as a social value in school leavers? Here is a hypothesis: "the basis for forming the personal entity being studied is a level model that presupposes a transition from the value-oriented level through heuristic level to regulatory-prognostic level; the process will proceed by stages with due account of the content of family values, the potential of axiological environment of humanities education, the mechanisms of interiorization and appropriation of values; the priority means will be heuristic personally significant pedagogical situations in the context of organization of project-oriented activity." (Korenkova 2015). After reading the above would not the practical teacher take interest why the attitude to family is formed only at school through "pedagogical situations," "problem assignments," and "projects"? And why is the family itself never mentioned in the hypothesis?

If a mathematics teacher decides to inculcate technical culture to his students and he decides to find out what hypothesis on that score are put forward by the author of the work "Pedagogical Conditions of Development of Technical Culture of Students in the Process of the Study of Natural-Mathematical Sciences" he may be disappointed because the hypothesis reads as follows: "the development of a student's technical culture in the study of natural-mathematical disciplines can be effective if … pedagogical conditions are revealed that contribute to the development of the student's technical culture in the process of the study of natural-mathematical disciplines, of which the basis is the complex of didactic means" (Starostina 2016). In short, good luck to you in "revealing" and "developing."

Many of the conclusions made in published pedagogical papers are formulated without any indication of the research methods used to obtain them. When instead of a description of prolonged large-scale experiments the authors of academic articles confine themselves to speculative statements and "examples from practice" practical teachers of course can easily come up with opposite examples and counter arguments. In any case, trust in such texts is undermined. Summing up the results of our analytical study let us note the shortcomings of pedagogical scientific texts that diminish their positive impact on the development of educational practices, which is manifested in the psychologically negative attitude of practical teachers, their mistrust of scientific findings, and manifest reluctance to read and apply what scholars write about. Let us note the following flaws found in the flood of scientific-pedagogical information: very low standard in organizing empirical studies (small samples of respondents, insufficient duration of experiments, attempts to derive the ways and means of achieving pedagogical targets from theoretical models and abstractions without corresponding pilot tests). Pedagogical treatises hardly ever mention unsuccessful experiments, which are important in revealing ill-conceived and unproductive innovations. There is no double-checking of hypotheses by different experimenters, measurements and calculations of correlation dependences are frequently sloppy. The authors of academic papers focus on external aspects of educational activities and pay much less attention to describing the inner state of the students. The conditions of obtaining educational results are described unconvincingly and in vague terms. In summing up the results of studies the approach based on the opinions of a panel of authoritative experts capable of telling legitimate results from accidental ones is seldom used. In describing the experiment little attention is paid to the personal contribution and influence of the experimenter's individuality although it is always significant in educational practice.

The practical teacher always deals with the whole developing personality of the student and does not always understand how to implement the recommendations of the scholars when

fostering a particular quality, for example, responsibility for one's academic performance, readiness to choose a profession, tolerance, etc., with "a system of work" devoted to fostering this quality. The teacher, naturally, may wonder how other educational tasks are solved in the process. The explanation that this is a scientific abstraction and that science needs to abstract itself from all other problems in order to solve a concrete problem does not convince the teacher. He knows very well that in reality there is no getting away from the diversity of problems. Such abstractions in pedagogy are totally incorrect from the methodological point of view as well. In inculcating some useful quality or habit to a child we cannot place the child into a test tube, we have to take into account the superposition of processes and influences, the space within which the child develops.

Practical teachers as a rule reject materials that contain trivial propositions, unproven, subjective and vague judgments, desultory and unverifiable claims. Practical teachers resent texts, which set forth projects with vague goals and means, and dubious resources – legal, methodological, human, temporal, recreational, financial, etc. – unsupported managerially and sometimes having no addressee.

One of the most serious complaints of practical teachers to published academic materials and recommendations is that they often fail to give an answer to the problems that are of real concern to the teacher: how to deal with today's school students who, as one expert put it, are basically "Mowgli kids with iPads?" How to motivate them to reasonably organize their time without wasting it on entertainments, which the modern world offers in abundance? How to teach them to use the Internet rationally? How to bring back the culture of reading which the present generation has all but lost? How to instill tolerance in them?

One key problem the modern teacher expects pedagogical science to solve has to do with the fact that the State Standard of education today includes new types of cultural experience – meta-disciplinary and personal learning outcomes, socio-cultural competences (types of activity) which represent various forms of creative, personal and value-related experiences of the child. How to organize the learning of these new types of education content by teachers who, when they studied at the teacher-training institution, were taught mainly to organize the absorption of knowledge? How to assess, measure and to what extent are these outcomes really achieved? How to rationally organize one's activity to combine the performance of daily duties with being involved in educational innovations?

At the same time, in studying the nature of the barrier between teacher and academic science, it has to be noted that it is caused not only by methodological flaws of science and the quality of scholarly publications, but also by the fact that teachers are often ill-prepared for perceiving scientific knowledge and understanding academic papers (Cochran-Smith and Lytle 1999). One paradox in this sphere is that while having a scientific background in a certain discipline, the teacher is often at a layman's level on issues of pedagogy, psychology and philosophy of education. Let me cite the results of interviews with teachers of various disciplines who attended upgrading courses at refresher training academies and education development institutions. The subject of these conversations was definitions of the most frequently used pedagogical concepts. Let us note some of the most common misconceptions of pedagogical notions by practical teachers.

4. Discussion

Thus the concept of "*content of education*" defined in modern pedagogical science as a selected set of types of cultural experience oriented toward certain educational goals, is identified by practical teachers with such didactic phenomena as "syllabus," "standard," "classroom topic." The "*aim*" of a lesson or event for many teachers is not planned changes in the quality of knowledge, functional literacy or personality of the child, but the material, the topic of the lesson or the (often formal) declaration by the teacher of certain intentions and requirements. The concepts of "method" and "form" of education frequently used in pedagogical discourse are thought to be identical by practical teachers whereas in reality they denote totally different

phenomena: the method is a way of organizing learning activities of one type or another. For example, to organize the activity of perception and understanding, there needs to be a group of explanatory-illustrative methods (story, explanation, demonstration), learning certain actions calls for reproductive methods (exercises, training), imparting experience of creative activity involves the experience and solution of problems, advancing of hypotheses, discovery of something new (if only subjectively new), which is served by the group of problem methods of education, etc. In short, method is a way of organizing the activities of learners leading them to absorb this or that type of education content. Form of education means the structuring of relationships between the teacher and the learner: individual, group, classroom, lecture, seminar, distance learning, etc.

"Learning activity" is often identified with ""working in class," "doing homework" whereas strictly speaking it means "activity aimed at mastering some other activity" (Serikov 2008). The motive of learning activity, according to the "classics" of developing education (J.Bruner, V.Davydov, L.Zankov and others) is the need for self-development, self-actualiztion. This interpretation of learning activity implies that taking part in a lesson or doing homework does not yet mean inclusion in learning activity if the participation is reduced to being formally present and mechanically performing boring tasks. In other words, one can spend 11 years in school and never once be "included" in learning activity.

The expression "*activity-based approach"* frequently used in academic works is interpreted as the use of various types of student activity during the course of a lesson. The main thing is for children to do something with the material, to handle it, and not simply listen and memorize. In science, of course, activity-based approach means something else. It is the key instrument of explaining all the new features that are formed in a developing person (what will happen to a person depends on "what he has done and how he felt about it" (S.Rubinstein (2000)). Thus, if we want to foster some new features in the student we should include him in a corresponding activity (consistent with the pedagogical goal) and generate a positive attitude toward it, an acceptance of its personal significance. Thus, the activity-based approach is the key explanatory and projection principle in pedagogy. It is not as easy to implement as teachers sometimes think.

In interpreting the concept "*study subject"* most teachers identify it with a science or a syllabus or texts and exercises from a textbook. The complex structure of a study subject as a didactic structure containing knowledge, methods of activity, creative and emotional-value experience connected with a given subject area is not always understood. One has to explain to teachers that subjects have different combinations of these structural elements and that the main thing in learning a subject is not learning the corresponding science (the school, after all, does not train physicists or historians) but development of the child's abilities, cultural competences and personality.

Scientists and teachers often interpret differently some popular educational practices. For example, the concepts of "*project*," "*project method of teaching"* are often used in school parlance as vogue terms referring to reports, computer presentations by students, some types of group work, in short just about anything, whereas scientists see the project method as a method of teaching that includes the student in the process of making a product and consequently an instrument in mastering a competence (Rubinstein 2000).

It is also worth noting that "*personality-based approach"* of the teacher is often confused with "individual approach", that is, taking into account the individual traits of children although the former refers to a special educational practice which has a special education content, the experience of making known one's personal position in various life situations, and special personality-development technologies, whereas taking into account individual traits of students is something else.

5. Conclusion

The list of the differences in the interpretation of pedagogical concepts found in scientific texts and in the minds of teachers could be extended, however one thing is clear: there is a substantial difference between the teacher's thinking and the logic of academic texts (Klevetova and Serikov 2013). It is not only that teachers are unfamiliar with the content of many scientific theories, but that the mechanism of the teacher's thinking is in some ways different from traditional conceptual thinking. The practical teacher does not think in abstract definitions, but in concepts, images, rules derived from his/her own experience. Reading a scientific text, he imagines not an abstract "average student" but a diversity of children's images and life stories (Clark and Lampert 1986). He mentally tests every "theory" to see if it suits various children and situations (König, Blömeke, Klein, Suhl, Busse, and Kaiser 2014). That is why a scientist working with an "experimental and control group" faces an uphill struggle in trying to convince a teacher of anything because for the teacher every lesson is an experiment.

The psychological barrier between pedagogical science and the teacher can probably be overcome only if both sides try to meet each other half way: the scientist must have a good idea of the life style and thinking of the teacher and the teacher should try his hand at science. Once you find yourself in the partner's place you come to understand him better…

References

Clark, C. and Lampert, M. (1986). The study of teacher thinking: implications for teacher education. *Journal of Teacher Education*, 37 (5), 27–31

Cochran-Smith, M. and Lytle, S.L. (1999). *Inside/outside: teacher research and knowledge*. New York: Teachers' College Press

Klevetova, T. and Serikov, V. (2013). Technologies of Organizing a Physics Class in the Context of Competence-Oriented Approach. *Fizika v shkole,* 8, 17-23.

König, J., Blömeke, S., Klein, P., Suhl, U., Busse, A. and Kaiser, G. (2014). Is teachers' general pedagogical knowledge a premise for noticing and interpreting classroom situations? A video-based assessment approach. *Teaching and Teacher Education*, 38, 76–88

Korenkova, M. (2015). *Teaching Senior –Year School Students to Treat Family as a Socially Significant Value Through Project Activities*. Author's Summary of Candidate's Dissertation in Pedagogical Sciences. Volgograd State Social and Pedagogical University, Volgograd, pp. 5-6

Lyakhova, O. (2016). *Instilling Legal Culture in Senior-Year School Students Through Project Activities*. Author's summary of Candidate's dissertation in Pedagogical Sciences. Volgograd, pp. 6

Rubinstein, S. (2000). Fundamentals of General Psychology. St.Petersburg: Piter Publishers, pp. 371-372

Serikov, V. (2008). *Teaching as a Type of Pedagogical Activity*. Manual. Moscow: Akademiya Publishing Center, pp. 41

Starostina, T.(2016). Pedagogical Conditions of the Development of Technical Culture of Students in the Process of the Study of Natural-Mathematical Disciplines. Author's Summary of Candidate's Dissertation in Pedagogical Sciences. Kazan (Privolzhsky) Federal University, Kazan, pp. 5

Stürmer, K., Könings, K.D. and Seidel, T. (2012). Declarative knowledge and professional vision in teacher education: effect of courses in teaching and learning. *British Journal of Educational Psychology*, 83, 467–483

1. Institute for Strategy of Education Development of the Russian Academy of Sciences, 105062, Russia, Moscow, Makarenko Str. 5/16. E-mail: vladislav.cerikoff@yandex.ru

[En caso de encontrar algún error en este website favor enviar email a webmaster]

[En caso de encontrar algún error en este website favor enviar email a webmaster]