Psychology of education as a social technology: designing exchange zones

Irina Antipova¹, Tatyana Pavlova^{2,}, Elena Krishchenko¹, Natalia Lomova²*

¹Southern Federal University, Bolshaya Sadovaya Str., 105/42, Rostov-on-Don, 344006, Russia

²Don State Technical University, Gagarin sq, 1, Rostov-on-Don, 344003, Russia

Abstract. The functions of the psychology of education as social technologies in a transitive society are considered. For this it is proposed to use the concept of "exchange zones" formulated by P. Galison. Research tasks: to clarify the methodology for considering the design of exchange zones in a transitive society; to consider the functions of the psychology of education as social technologies in designing exchange zones. Methodological foundations of the study: social epistemology (I.T. Kasavin, S. Fuller), contextualism, constructivism. Conclusions: 1. The psychology of education as a social technology is included in the production of exchange zones of science and society, 2. As part of the functioning of social technologies, the content and boundaries of exchange zones are also designed, 3. The psychology of education also represents the space of communication, a means of constructing exchange zones.

1 Introduction

The expansion of communication between sociocultural systems and subsystems of transitive society, a significant advance towards communicative rationality (Yu. Habermas) opens up wide prospects for the educational system, but, like any advance, this states even more significant problems and leads to equally significant difficulties, the evaluation of which requires to choose a reasonable methodology. Since the expansion of communication is not supposed to lead to the elimination of differences between communicating subjects, problems can be understood using the concept of exchange zones proposed by P. Galison. Having clarified the methodology of research, one can imagine the functions of the psychology of education in the space of expanding social production. Research tasks: to clarify the methodology for considering the design of exchange zones in a transitive society; to consider the functions of the psychology of education as social technologies in the design of exchange zones. Methodological foundations of the study: social epistemology (I.T. Kasavin, S. Fuller), contextualism, constructivism.

2 Materials and methods

Changes in the production and functioning of social systems offer great prospects for the

* Corresponding author: zabrodinka@bk.ru

education system. Sociocultural historical local systems enter into open communication, and different subsystems of society interact more closely. The possibilities of exchanges, communications between systems are expanding. For example, despite all non-classical criticism, science remains a central part of culture and is increasingly represented in society through various social technologies, like the media, entering into wide communication with other subsystems. But despite all the advantages, problems also arise. They can be described through the concept of exchange zones proposed by P. Galison. Classical science faced the problems of differentiation, now the integration of scientific disciplines and cultural practices has become relevant. P. Galison initially solved the problems of the methodology of science, but this work "aimed initially at solving the problem of the incommensurability of theories (Kuhn, Toulmin, Feyerabend), during its development, went beyond solving this problem" [1]. P. Galison used the "concept of" exchange zone "adopted in anthropology to metaphorically describe how various scientific practices use... each other" [1]. But communication "in the form of personal, group, social relations between people" can also be considered exchange zone [2]. This concept is used in connection with the tasks of "conceptualizing the communicative content of science... and is in the focus of social research of science today" [1].

Exchange zones consider the social reality of communication between different scientific practices. Equally interesting is the research of G. Collins, who "focuses on the design of exchange zones in natural science and technology and the intermediary role played by a humanities scholar in this process" [1]. This concept is also used in technoscience [3]. We are interested not so much in these studies by P. Galison and G. Collins, but in the widespread application of the concept of exchange zones when describing communications between socio-cultural systems and subsystems in which (communications) psychology as a social technology operates and performs its functions. Considering the study of exchange zones in his article, I.T. Kasavin formulates an urgent problem affecting the educational system: "In modern society of knowledge there is a high need for highly qualified scientists and engineers. At the same time, the conditions of consumer society reduce the prestige of intellectual activity, which becomes one of many goods. There is also an acute contradiction between the growing specialization and differentiation of sciences, on the one hand, and ordinary consciousness, on the other, which does not have time to master the achievements of science" [1]. I.T. Kasavin qualifies this problem as a break in science and society, which requires measures to integrate scientific practices "into the cultural society" [1]. Undoubtedly, this problem is central to education, including psychology of education. Thus, emphasizing the problems of exchange zones between science and society, I.T. Kasavin opens up the possibility and problematization of the problems and place of the psychology of education in the processes of integrating science into society. One cannot but see that various systems of methodology claim to become methodological precepts in the process of research. Let's look at the possibilities of different methodological systems. Since the expansion of communications in social systems correlates with the revision of classical categories, in particular the category of subject, the turn to an empirical subject, in connection with which comes "non-rigor, relativity" [4], to the background knowledge [5], relativism claims to be the central program of the methodology. The latter causes various, including serious adverse assessments, causing criticism already in the space of ancient philosophical thought: Platonic Socrates (dialogue "Teetet") revealed the paradox of Protagoras's relativism that this program is not consistent with the function of the teacher performed by Protagoras, since teaching as a function of normalising thought cannot allow relativization definitively. Rationally assessing the advancement of relativism and conducting a subtle distinction of relativism and relativity [4], L.A. Mikesheina connects perspectives with the expansion of rationality and the study of an empirical subject.

3 Results

Relativism, as well as skepticism, represents an irreconcilable opponent of a realistic epistemological program. Their controversy remains invariably relevant, for example, the controversy between R. Rorty and H. Patnem, who discussed the metaphysics of realism and relativism in the context of American pragmatism, as showed by I.D. Dzhokhadze, did not lead to a constructive result in the sense of refining the assessment and also choosing between these philosophical systems [6]. Considering the limitations of realism, philosophers discuss transformations and historical problems of rationality. So, V.N. Porus proposes to consider the multidimensional rationality: "various aspects or" portraits "of rationality, investigated and created in the conceptual framework of the epistemology of special sciences, not only coexist, but actively interact" [7]. Showing that the historical approach to scientific practices, problems of scientific production is inevitable in the study of science advances, O.E. Stolyarova gives reasons that the historical approach does not directly lead to relativism, and the classical philosophy of science cannot be considered as simple and systematized practice, but science receives some systematics from critics [8]. Without finding definitive solutions to the philosophical problems of relativism, these methodological discussions, nevertheless expand the interrogation as the boundaries of thought. "The transformations of modern epistemology periodically call into question the meanings that recently seemed obvious, and at the same time draw attention to those concepts that seemed to be of no philosophical interest. So, today the categories of knowledge, truth, objectivity, subjectivity are re-problematic" [9]. Nevertheless, philosophers who realize the limitations of classical interpretations of categories are not inclined to abandon the truth in science. Thus, A.Yu. Antonovsky, considering the problems of the media engineering of observations in sciences, does not consider "that the truth can be got rid of" [10]. Approaching the problems of the foundations of knowledge and the production of objectivity from the side of socioepistemology, A.Yu. Antonovsky finds the conditions of thematization in the structure of distinguishing communication agents, showing that the structure of distinguishing message and information embedded in the distinction between Ego and Alter and forms "conditions of cognition: distinguishing of person and thing, subject and object" [11]. In fact, philosophers whose concepts are regarded by opponents as relativistic (T. Kuhn, R. Rorty) do not recognize themselves as relativists, do not completely and strictly break with the truth, the exception is the author of the anarchist and humanistic methodological program P. Feyerabend. Relativism is heterologous in the sense that it does not relativize the basis of relativization and therefore is not applicable to its own statements, therefore, it cannot become the methodological basis of the study. Classical realism, repeatedly presented as an object of non-classical criticism for foundationalism, is considered as a promising methodological program in integration with constructivism (constructive realism, V.A. Lectorsky). Contextualism can be considered a program that combines realist components with constructivist and relativistic ones, causing controversy between leading methodologists. The expansion of communications, exchanges between different social systems and the expanded application of technical communication systems takes place contextually, but this increase in communication capabilities cannot be considered on the basis of simple schematization, unable to provide an opportunity for assessing prospects and also costs, consequences, therefore it is necessary to justify the choice of methodology on the basis of which it is possible to assess and plan probable solutions and correction of consequences. Despite the attractiveness of contextualism in the study of communication of various systems in an open society, it is necessary to establish opportunities and restrictions and contextualism as well. The expanding boundaries of communication between different cultures and subsystems expand the methodology too, and the rejection of unification in the evaluation

criteria leads to the contextualization of norms and rules of interactions. Simple schemes are not applicable here due to the fact that in open communication not the summing up of each participant's needs, but their interaction is done, which nevertheless does not mean their immutability and impossibility of mutual change. Without claiming to definitively justify a methodology in which it is possible to evaluate and plan possible solutions to problems arising in a transitive society, let's have a look at the possibilities and limitations of the most promising contextualism program. This program is widely used in various cognitive systems, from philosophy of science to linguistics and psychology, and seems promising, since it cannot but lead to the design of communication regulations depending on current contexts. I.T. Kasavin (2005b), extensively discussing contextualism in philosophy and sciences, shows that the problem of context did not receive philosophical conceptualization and systematically the context in philosophy is not themed in an expletive form. In general, V.N. Porus, too, agrees with this. "Contextualism is a term without a strict definition. In epistemology, it appears on the rights of a "basic metaphor" [12]. In the philosophy of science, contextualism admits that "cognitive action is considered as a certain event, the occurrence, the course and result of which are influenced by the context" (ibid.). Semantic contextualism, as shown by A.Yu. Antonovsky (2010), turns out to be applicable in solving those problems that arose before the standard definition of knowledge in connection with problematic Gettier cases, which showed the doubtfulness of the classical understanding of knowledge (Platonic). F. Dretske [13] in limiting skepticist doubts proposed the criterion of "relevance of alternatives," based on the relevance of the presented context: it is not worth doubting about what it is impossible to doubt in the current context. Semantic contextualism provides an opportunity to develop topical problems of epistemology. So, C. Deroose [14], starting the article with clear cases, shows the dependence of recognition of the presence of knowledge in a person on the significance of tasks, on the context. O.E. Stolyarova, considering the problems of epistemology in connection with the expansion of technoscience, shows that "technologies and practices of interaction with things are considered as... the context of scientific knowledge "[15]," technology acts as a referent knowledge, "second nature". And this contextuality represents not a primitively understood relativization, which is distinguished by the paradox of heterology, but something that changes science. O.E. Stolyarova, appealing to L. Daston and P. Galison, considering the historicity of objectivity, writes: these authors "do not create ontology in a directional way, I think that it can be read between the lines - this is the ontology of collective formation, and its epistemological implication will not be a representation as a reproduction of something existing, but intervention as making of the new. We... meet here with Kantian constructivism... we learn what we created ourselves "[15], material culture of the same (practices of interaction with things in science) and limits relativism, since this techno-nature as a reference to science and" imposes ontological frameworks "on science [15]. Thus, in the studies of O.E. Stolyarova, constructivism turns out to interact with constructivism and limit relativism in classical interpretation. Contextualism as a program draws closer to relativism in recognition of the dependence of all knowledge and regulations of practices on context, but differs by recognising the commensurability and objectivity of contexts. But this seems to be accessible to problematize in psychology, in which the contexts of communication are both recognized as objective and regarded as no less conditional and constructed. Thus, the psychology of education, too, finds prospects in revealing the potential contained in contextualism. The conceptualization of context in psychology was proposed by N.V. Grishina, showing that it is "impossible to investigate" an individual outside the context and context outside the individual "" [16], the context includes the subject, and changing some of his own reactions, the person changes the context [17]. Considering restrictions and changes in context interpretations in linguistics, V.G. Kalashnikov shows that context

cannot be interpreted as external objective conditions. He proposed an understanding of "context as a semantic mental mechanism" [18]. Summing up, we can formulate the problem of exchange zones between science and society: the problem is the gap and looking for ways of integration, contextualism can become the methodology of research, partially correlating with the relativism program, in interaction with the opportunities provided by constructivism.

4 Discussion

Kasavin I.T. proposes to solve the formulated problem of the gap between science and society, considered in connection with exchange zones, "by creating new tools (social and humanitarian technologies) of a special type - exchange zones" [19]. According to I.T. Kasavin, these technologies include psychology as well. Let us clarify the concept of social technologies in relation to psychology. Thus, V. G. Gorokhov, studying the concept of technology in the philosophy of technology and the specifics of socio-humanitarian technological practices, showed that "an active approach to the definition of the concept of" technology "turns out to be the most constructive" [20]. And it is the introduction of scientific innovations, that, according to V.G. Gorokhov, represents social technology [20]. In a slightly different way, I.T. Kasavin understands this problem, expanding the interpretation and problems and concepts of social technologies. Understanding the latter as techniques of manipulation is considered as a "technocratic distortion," "a modern view of the ST from a position of social constructivism leads to a fundamental revision of their technocratic interpretation up to the fact that there is an identification of the ST with «spoken technologies» [21]. These social practices seem to be very effective in building man's consciousness, since it can't turn up as something naturalized, arising beyond and despite social conditions, but the latter are not represented as some non-structured «environment» located around a person. It's the activity of forming «environment» that is recorded in understanding social technologies. Primitivism in understanding and technocratic emphasis arises "when ST is understood as some guaranteed algorithm for managing social subjects and processes, which does not take into account a number of fundamental differences between society and nature" [21].

Social technologies form not a stereotype, but a cultural program that does not exclude, but assumes the freedom of human consciousness, but is formed in adjustment, in participation to the social community in which these social practices receive a real existence as cultural ones. Here, the understanding of culture as the program of V.S. Stepin may turn out to be heuristic [22]. Therefore, the education system does not represent the formation of stereotypes, but the production of human consciousness, this does not exclude the presence of stereotypes in any way, but involves a conscious, and often unconscious, adjustment to the current context, the use of their stereotypes [23].

Thus, a person turns out to be either a dependent and deterministic context, or choosing to design these contexts. Here, the problem of normality cannot but arise, since culture, refusing to unify rules and regulations, cannot refuse to distinguish between norm and abnormality. We'll consider this problem in the brief case studies of queer methodology. The most prominent problem of normality arises in studies of sexuality, where queer theory and queer studies have carried out a significant advance which, at the present stage of the development of social knowledge, open up opportunities not only for a new look at the phenomenon of sexuality. The issues that are raised here lead us to the general principles of the functioning of the psyche, which has the quality of sociality "[24]. D.V. Vorontsov, explaining the distinction of queer methodology and feminism and gender studies, showed that the difference is in the interpretation of the practice of producing normative sexuality. Not gender and sexual orientation, but practice appears to be constituting the boundary of

the normative. It turns out that practice traditionally interpreted as dependent on a person, on characteristics, dispositions, standards, etc., appears to be the constitution of not only sexuality, but, in general, the psyche, since to present normality and evaluation only as sexually dependent, means, therefore, to significantly limit the problem.

Considering the problem of exchange zones, which are inevitably presented as some contexts that diverge from the unification of social values, one can distinguish the tasks of technologies to form reactions in proposed contexts and adjustment to forming contexts, these mutually exclusive tasks can be performed both by different social technologies and within the framework of one socially specific practice of social technologies. The psychology of education as a social technology is included in the production of zones of exchange of science and society because it forms the consciousness of a person, ready or responsive to proposed contexts or to design them, which is not always clearly distinguishable. Thus, social technologies appear to be either the practice of designing communication content in exchange zones, or the means of designing of both boundaries and problems of exchange zones, since the latter are also available to design. Therefore, the problems of the psychology of education appear to be different: to form a communication space or to form means of constructing exchange zones. Thus both the opportunities and the responsibility of social technologies in an open society are increased significantly.

5 Conclusions

1. On account that the contextuality of communication allows both the determination of context and human freedom in the construction of context, it can be considered that the psychology of education as a social technology is included in the production of exchange zones of science and society in two ways, both forming these exchange contexts, and producing the means of their formation by man.

2. As part of the functioning of social technologies, not only the content, but also the boundaries of exchange zones are designed.

3. The psychology of education represents both the space of communication, and a means of constructing exchange zones.

References

1. A.M. Dorozhkin, *Epistemology & philosophy of science* **54(4)**, 20-29 (2017) DOI: <https://doi.org/10.5840/eps201754462>/<https://journal.iph.ras.ru/article/view/1297>
2. G.P. Kornev, *Epistemology & philosophy of science* **54(4)**, 34-38 (2017) DOI: 10.5840/eps201754464
3. O.E. Stolyarova, *Sociology of science and technology* **4**, 132-143 (2013) <https://elibrary.ru/item.asp?id=20806842>
4. L.A. Mikeskina, *Epistemology & philosophy of science* **XIX(1)**, 5 – 15 (2009) <https://cyberleninka.ru/article/n/empiricheskij-subekt-i-kategoriya-zhizni>
5. I.T. Kasavin, *Epistemology & philosophy of science* **3**, 3-11 (2005) <https://cyberleninka.ru/article/n/mir-nauki-i-zhiznenny-mir-cheloveka>
6. I.D. Dzhokhadze, *Epistemology & philosophy of science* **XXX(4)**, 175 - 190 (2011) DOI: 10.5840/eps201754462
7. V.N. Porus, *Epistemology & philosophy of science* **XXIII(1)**, 5 – 16 (2010) <https://www.elibrary.ru/item.asp?id=14568453>
8. O.E. Stolyarova, *Epistemology and philosophy* **XXIV(2)**, 65 - 67 (2010) <https://cyberleninka.ru/article/n/spor-dvuh-epistemologiy>

9. I.T. Kasavin, Epistemology & philosophy of science **XXII(4)**, 5 - 13 (2009)
<https://cyberleninka.ru/article/n/problema-kak-forma-znaniya>
10. A.Yu. Antonovsky, Epistemology & philosophy of science **XXVI(4)**, 101- 118 (2010)
<https://www.elibrary.ru/item.asp?id=15584848>
11. A.Yu. Antonovsky, Epistemology & philosophy of science **XXVII(1)**, 79-83 (2011)
<https://cyberleninka.ru/article/n/ot-ego-i-altera-k-soobscheniyu-informatsii>
12. V.N. Porus, Epistemology and philosophy **55(2)**, 75-93 (2018) DOI:
10.5840/eps201855230
13. F. Dretske, The Journal of Philosophy **67(24)**, 1007-1023 (1970)
<http://www.jstor.org/stable/i309228>
14. K. DeRose, Philosophy and Phenomenological Research **52(4)**, 913-929 (1992)
<http://www.jstor.org/stable/2107917>
15. O.E. Stolyarova, Epistemology and philosophy **XXX(4)**, 32 - 50 (2011)
<https://cyberleninka.ru/article/n/istoricheskiy-kontekst-nauki-materialnaya-kultura-i-ontologii>
16. N.V. Grishina, Social psychology and society **9(3)**, 10 - 20 (2018)
doi:10.17759/sps.2018090302
17. N.V. Grishina, Psychological research: electronic science journal **3(17)** (2011)
<http://psystudy.ru/index.php/num/2011n3-17/491-grishina17.html>
18. V.G. Kalashnikov, *Contextual approach as a methodology of psychological research* (Nestor-History, St. Petersburg, 2019)
19. I.T. Kasavin, Epistemology & philosophy of science **51(1)**, 8 - 17 (2017)
<https://cyberleninka.ru/article/n/2018-01-009-kasavin-i-t-zony-obmena-kak-predmet-sotsialnoy-filosofii-nauki-epistemologiya-i-filosofiya-nauki-m-2017-t-51-n-1-s-8-17>
20. V.G. Gorokhov, Epistemology & philosophy of science **XXVIII(2)**, 110 - 123 (2011)
<https://www.elibrary.ru/item.asp?id=16859908>
21. I.T. Kasavin, Epistemology & philosophy of science **XXVI(4)**, 5 - 15 (2010)
<https://cyberleninka.ru/article/n/sotsialnye-tehnologii-i-nauchnoe-znanie>
22. V.S. Stepin, *Civilization and culture* (SpbUHaSS, SPb, 2011)
23. A.K. Belousova, E.P. Kryshchenko, O.V. Barsukova, et al, Mediterranean journal of social sciences **6(4)**, 238-241 (2015)
[HTTPS://ELIBRARY.RU/ITEM.ASP?ID=24938289](https://elibrary.ru/item.asp?id=24938289)
24. V.D. Vorontsov, Questions of psychology **2**, 153 - 162 (2012)
<https://www.elibrary.ru/item.asp?id=18906675>