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**STUDENTS INFORMATION CULTURE DEVELOPMENT IN THE
PROCESS OF COGNITIVE ACTIVITY**

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Abstract

The article discusses two aspects of the development of the students' information culture in the modern Russian school. The authors consider the theory and practice of the development of communicative and cognitive skills of the text information processing. They also introduce the task of the development of students' information culture in the course of research training. The authors explain the research training as a special type of the training which forms the need for realisation of the cognitive activity, ability to use the research method of knowledge of life for the decision of practical and theoretical problems. The authors condition the new approach to the phenomenon of «the academic culture» outlined in this article by the fact that this notion is not analysed in the traditional context of the higher (university) education but with the regard to the system of the secondary education. Three levels of the students' academic culture are considered: value, cognitive and operational. The latter is linked to the phenomenon of the academic culture. The academic report made by a pupil indicates the level of the development of his academic culture; it reflects the process and the results of an educational research. The article presents the analysis and evaluation of the texts of academic reports made by pupils-researchers in terms of the verbalisation of the emotional concept «surprise». The article also provides the overview of basic trends in the study of the cognitive emotion of «surprise» in the Russian and foreign science.

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Keywords: Research training, academic culture, skills of information processing of A text, pseudo text, concept.



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1. Introduction

Researchers study the elucidation of the essence of the information culture as a social phenomenon and to the study of its content and the peculiarities of its formation and development in society in several directions because it is a multidisciplinary concept and it permeates all aspects of human life. When defining the notion of «the information culture», researchers lay emphasis differently: on increasing level of informatisation and the need to master the means and methods of information science; giving priority to the ways and norms of communication with artificial intelligence systems; emphasizing the need to acquire library-bibliographical literacy and culture of reading, as well as a whole range of additional knowledge, abilities and skills, including the ability to navigate in the legal field of informatisation; laying emphasis on the participation in the development of information space, etc.

We address the information culture as a «part of human culture, an essential component of learning activity of both teachers and students, the qualitative characteristic of their information activities as a part of learning activity». The information culture is manifested in «an array of knowledge, skills and reflective attitudes during person's interaction with the information environment». (Gendina et al., 2002).

2. Research Questions

Current linguistic and educational situation «actualises the problem of the cognitive training, i.e. not only acquiring knowledge, but understanding the essence of the studied subject, phenomenon, unit of language, as well as culture and speech at large» (Deykina, 2016; Ekman, Friesen, 2003), defines the role of metacognition in the process of learning (Israel et al., 2005; Zuljan, Vogrinc, 2010). For quality information and cognitive activity, students need knowledge, abilities and skills of self-education and self-development, skills of the information exchange – the ability to carry out the process of the reception and the transmission of information in any form; the ability to collect, process and transform information.

All of this brings to the fore the problem of developing abilities of information processing of a text, which is considered by us as «multi-component activity, which represents both the process of the understanding of the information represented in a text in a variety of forms, and the result of this understanding, explicitly expressed in the form of secondary texts (thesis, annotation, review, summary, abstract, report, presentation)» (Yerokhina, Dobrotina, 2016; Dobrotina, 2016; Stolp, Zabrocky, 2009).

We consider the skills of information processing of the text as «communicative-cognitive: communicative because they are an essential component of the communicative competence; cognitive because of the internal content and because psychological aspects take part in the "realization of idea" in the word, since they are related to the inner speech and its mechanisms – choice and control. They are part of information skills, the use of which provides for the realization of cognitive universal learning activities, and they are represented by two groups of skills: 1) cognitive (perceptive) skills, based on logical operations of analysis, synthesis, comparison, analogy, abstraction; 2) skills of semantic and linguistic compression of information» (Dobrotina, 2016, pp.76-77).

Let us highlight a short list of techniques given in the work (Jennifer, Cromley, 2012), among which are the following: asking different types of questions, from reflection questions (Could I explain what I read to my classmate?) to the questions on the usage of received information; learning the graphic organizers, such as diagrams and concept maps: «Comprehension monitoring: Students are taught to

notice whether they understood what they read, usually by asking themselves questions such as «Could I explain to a classmate what I just read?» Summarising: Students learn how to summarise what they just read in a few sentences, deleting unnecessary detail and condensing important information...The multiple strategies approach: Students learn more than one strategy, such as summarising and graphic organisers».

The use of different strategies (methods), among which there is a rereading of a text if it is unclear after the first attempt, the method of asking yourself questions during the reading, which helps to evaluate the degree of understanding, is not always helpful with the problem of misunderstanding. We can read about that in the following work (Wilkinson, Kitzinger, 2006; Stolp, Zabucky, 2009, p.8). «For example when students ask themselves questions during reading, they are evaluating their understanding. If students opt to reread one or more sentences or paragraphs because they are having difficulty in understanding, then students are regulating their understanding. As teachers are all too aware, students may not always correctly identify the extent of their comprehension or consistently use the most appropriate strategies (or, indeed, any strategies) to overcome comprehension failures». That is why the role of a teacher, who helps to design the strategy for the developing the information culture based on the stages of the information processing, is very important: (finding-perceiving-comprehending-processing-exchanging/using). The communicants' roles are changed, and a teacher takes on the role of a research advisor (Jennifer, Cromley, 2012, p. 2).

3. Purpose of the Study

The academic culture created in the process of organising students' research activity is a special kind of information culture. This activity requires a certain base of the formed skills in the information processing of the text, but the meaning and purpose of the research activities of students are fully understood only if there is a certain system of values, norms, rules and patterns of behaviour that characterize an academic discourse.

The modern information and educational environment is characterised by an ever-increasing amount of information resources and their increasing availability to the user, on the one hand, and by the multiplicity of meanings, the destruction of value hierarchy, the lack of unquestioned authority and clear life goals, on the other. Therefore, the main purpose of education is to prepare a person for a life in a society so that he is able to maintain inner freedom and, at the same time, to comprehend universal human ideas and values; a person who feels the need for self-education and self-development and is able to fulfil it; who has mastered the culture of the intellectual activity and common ways of understanding the world.

4. Research Methods

Thus, there should be not only the improvement of pedagogical methods and technologies in school but also the search for the optimal teaching models that are appropriate for modern educational objectives. One of such models is the research training. Its purpose is the development of pupils' needs to undertake cognitive activities, skills of using the research method for understanding life in order to solve practical and theoretical (educational and vital) goals. The authors use analysis, classification, and the comparative method.

5. Findings

The research training environment is a specific locus of educational space that is different from the ordinary living environment of pupils, on the one hand, and from the professional academic environment, on the other. The nature of the activity, the rules of the speech behaviour, the specifics of speech genres in the exploratory learning encourage the need to master other, as compared to traditional schools, cultural norms (Yerokhina, 2014, p. 65).

The research training by its nature is a process of enculturation of pupils, their inclusion in the basics of the academic culture. We regard the academic culture as a system of values, norms, rules, patterns of behaviour, working methods, principles of communication, etc., which is based on the pedagogically adapted experience of the scientific and cognitive activity. Let us briefly describe the three-level system of the academic culture. The cognitive level represents knowledge of the ways of the cognitive activity in a research situation, the traditions and norms of a conducting research and recording its results. The operational level of the academic culture combines a set of skills necessary for a successful interaction in the course of a research, the verbalization of its process and results. In modern educational practice, this level of culture is named Academic literacy: «Academic literacy has been defined as the capacity to undertake study and research and to communicate findings and knowledge, in a manner appropriate to the particular disciplinary conventions and scholarly standards expected at university level» (University of Western Australia, 2005). This linking of academic literacy to disciplines highlights the fact that academic literacy is pluralistic in nature (we can speak of —academic literacies): there are not only a number of sub-literacies of which academic literacy is comprised but each discipline area has associated with it a particular set of literacy practices with which those involved in the discipline need to become conversant and which effectively help define and differentiate that discipline» (Murray, 2010, p.58). Value level of academic culture defines the meaning and purpose of research activities; recreates the ideal of the man of science.

It is important to stress that the acquisition of value component of academic culture by the subjects of exploratory learning is highly important for the development of their communicative competence, as it sets their speech ideal (a perfect model of speech behavior) not only within the boundaries of the communicative space of exploratory learning but also beyond its limits.

The academic report made by a student-researcher reflects the level of his development of academic culture. Often the reports of students are the result of a quasi-scientific activity. Consequently, there is a mass production of pseudoscientific ignorant texts (M. M. Bakhtin) // pseudotexts (E. V. Yagunova) // spurious texts (V. A. Karakovsky) // absurd texts (A. S. Kravets) // echo-texts (Y. V. Shcherbinina). These terms name different aspects of the same communicative phenomenon: there are texts in discourse that are devoid of communicative intent, only with the outward signs of the text. It is obvious from what has been said above that the student's report should resemble a research not formally, but essentially, mentally, in terms of value, embodying the image of the author as the bearer of certain (in our case, academic) culture, i.e. to include relevant concepts. In our discussion, we will rely on the definition proposed by Stepanov: «Concept is the basic unit of culture in the mental world of man» (Stepanov, 2004, p.43).

Within the scope of this article, we will focus on one of the concepts – the emotional concept of surprise.

The emotion of surprise has a wide range of scientific examination and description: it is understood as a specific feature of information (Baldi, 2002); as a response to an unexpected event (Plutchik, 1991); as a marker of social behavior (Ekman, Friesen, 2003; Meier, Reisenzein, Schützwohl, 1997); as a semantic phenomenon (Wierzbicka, 1999); as a phenomenon of linguistics (Wierzbicka, 1999). We list only those aspects of studying the emotion of surprise that are relevant to our further investigation.

Sergeyev, while analyzing the semantics of this concept, have identified its main characteristics: the information paradox (we are surprised by an event or a fact if we don't have enough information and, at the same time, know exactly what is contrary to the occurred event); subjectivity (event, surprising for one person, may not be surprising for others); cognitive efficiency («the contradiction between the existing and the new information provides for the enrichment of cognitive experience of a person») (Sergeyev, 2004).

While we agree with the idea that there is a diversity of ways to objectify the concept, we believe that in terms of exploratory learning the concept of surprise needs to be verbalised (surprisingly, paradoxically, interestingly, incredible, amazing, etc.). The student signals verbally the cognitive emotion of surprise, explains the reasons for its appearance, shows the algorithm of his actions, motivated by this emotion.

Here are some examples of statements made by participants of the 3rd Saratov regional round of the XXI V. I. Vernadsky's Russian national competition of youth research works, where young researchers express surprise at the mysteries of the world: «I would like to explore space. I'm curious to know if the universe is infinite. Here, for example, if you fly on a rocket and fly to the right or left, will it be possible to fly on and on? Or, how do stars look like? How huge are they and why they can be seen even from Earth? Why is the sun hot? This is a very interesting topic. Doesn't anyone want to know?» (Elaeva Ekaterina); «I would like to explore human psychology, because, first of all, I'm interested in it. Secondly, I often don't understand why this person did exactly what he did and what did he feel at that moment. I want to figure that out. And most importantly, I want to understand and be aware of my thoughts and actions» (Vodolazkiy Ilya) (*I want to investigate*, 2014).

Quite often, however, the emotion of surprise is not only absent in the reports of students-researchers, but they even use the lexical unit unsurprisingly that emphasizes personal detachment, lack of author's interest in the subject matter: There is nothing surprising in the fact that grammatical forms, being once regular and then ousted by others, do not disappear completely and without a trace (from the report of the student at the scientific-practical conference of pupils).

6. Discussion

Academic texts provided to the students as part of pedagogical communication (textbooks, teachers' speech, academic and popular-scientific texts, etc.) have to be the model of objectification of the concept surprise. In the selection of the texts, cultural, historical, scientific importance of the ideas (the content) of texts should be taken into account, as well as their informative richness that provides for the

realization of interdisciplinary relationships, intellectual and emotional richness that presupposes the response of students; variety of forms of representation (diagrams, tables, infographics, etc.). In this case, they do not transfer ready-made knowledge that needs to be memorised and reproduced, but demonstrate the process of seeking the truth, the motive for which is an emotional response to the destruction of the existing cause-and-effect links in the consciousness of the subject.

7. Conclusion

We will sum up the result. It is necessary that the principles and norms of the academic culture, which are, in essence, an ethical ideal of all intellectual collective activity and a necessary condition for effective communication, be accepted and consistently implemented by all participants of the educational process.

References

- Baldi, P. (2002). *A computational theory of surprise*. Blaum M., Farrell P.G., van Tilborg H.C.A. (Eds.) Information, coding, and mathematics. Boston: Kluwer Academic Publishers, pp. 1-26.
- Deykina, A. D. (2016). Methodical culture of the teacher-language and literature teacher in a modern lingvooobrazovatelnoy situation. *Russian at school*. №6, pp.3—5. [in Rus.].
- Dobrotina, I. N. (2016). Information processing of the text at Russian lessons as a development tool of communicative abilities of seniors: PhD dissertation (Pedagogy). Moscow. [in Rus.].
- Ekman, P., Friesen, W.V. (2003). *Unmasking the face*. Cambridge, MA: Malor.
- Gendina, N. I., Kolkov, N. I., Skipor, I. L., Starodubova, G. A. (2002). *Formation of information culture of the personality in libraries and educational institutions: educational method*. Grant. Moscow. [in Rus.].
- I want to investigate*. (2014). Saratov. The practical magazine for the teacher and administration of school M.: Folium, No. 7, pp.15 — 16. [in Rus.].
- Israel, S.E., Block C.C., Bauserman K.L., & Kinnucan-Welsch K. (2005). *Metacognition in literacy learning : theory, assessment, instruction, and professional development* (edited by Lawrence Erlbaum). Associates, publishers Mahwah, New Jersey London.
- Jennifer, G., Cromley. (2012). *Metacognition, Cognitive Strategy Instruction, and Reading in Adult Literacy*. Retrieved from: http://www.ncsall.net/fileadmin/resources/ann_rev/rall_v5_ch7_supp.pdf
- Meier, W-U., Reizenzein, R., Schützwohl, A. (1997). Toward a process analysis of emotions: The case of surprise. *Motivation and Emotion*. Vol. 21(3). - pp. 251-274.
- Murray, N. (2010). Conceptualizing in English language needs of first year University students. *The International Journal of the First Year in Higher Education*, № 1(1), pp.55–64.
- Plutchik, R. (1991). *The emotions: Facts, theories, and a new model*. Lanham, MD: University Press of America.
- Sergeyev, A. I. (2004). *The Kontrastivno-semantichesky analysis of a concept "surprise" in the Russian and German languages (On material of works H. B. of Gogol and E. T. A. Hoffman)*: Extended abstract of PhD dissertation (Philology): Moscow. [in Rus.].
- Stepanov, Yu. S. (2004). *Constants: Dictionary of the Russian culture*. Moscow, Academic Project. [in Rus.].
- Stolp, S., Zabrocky, K.M. (2009). Contributions of Metacognitive and Self-regulated Learning Theories to Investigations of Calibration of Comprehension. *International Electronic Journal of Elementary Education* Vol. 2, Issue 1, October, pp. 7-31.
- Wierzbicka, A. (1999). *Emotions across languages and cultures: Diversity and universals*. Cambridge: Cambridge University Press.

- Wilkinson, S., Kitzinger, C. (2006). Surprise as an interactional achievement: Reaction tokens in conversation. *Social Psychology Quarterly*. Vol. 69(2), pp. 150-182.
- Yerokhina, E. L. (2014). The academic culture of the pupil researcher in the conditions of introduction of FGOS. *Person and education*. No. 2 (39), pp. 64-67. [in Rus.].
- Yerokhina, E. L., Dobrotina, I.N. (2016). Paradigm of the student-teacher relationship in the modern educational environment. SHS Web of Conferences, Tom 29 (2016). 2016 International Conference "Education Environment for the Information Age" (EEIA-2016), Moscow, Russia, June 6-7, 2016. S.V. Ivanova and E.V. Nikulchev (Eds.). DOI: <https://doi.org/10.1051/shsconf/20162901017>
- Zuljan, M. V., Vogrinc, (2010). *Facilitating effective student learning through teacher research and innovation*. Ljubljana: Faculty of Education.