

Integrative Thinking As Basis Of Formation Of Professional Multidimensionality Of A Philologist

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Abstract

Based on the correlation and analysis of results of theoretical research on integrative thinking with data on the real picture of professional multidimensionality of language education teachers, the authors of the article have come to the conclusion that the cognitive basis of formation of professional multidimensionality of a philologist is gained thanks to the integrative activity of the brain. The combination of several didactical functions, conjunction of solving several pedagogical tasks is implemented by the integrative activity of the brain through the afferent synthesis connected with checking, selection and synthesis of streams of nerve signals from various receptors relating to different functions and production tasks of a multidimensional philologist. Functions of efferent integral and acceptor are connected with distribution of the nerve impulses predicting ways of combination of didactical functions, conjunction of the solution of pedagogical tasks. Efferent-afferent convergence acts as some physiological mechanism of an acceptor of action result: prediction of the future result, intuition, creativity and innovation necessary for functions combination and conjunction of tasks solution. The return afferentation is connected with control over adequacy of the planned purpose and the multidimensionality effect gained by a philologist from combining didactical functions and conjunction of solving pedagogical tasks. Will function of mentality is connected with ensuring necessary mental processes reaction rate, in particular, the speed of switching of attention and contextual-associative memory of a philologist from one kind of activity to another.

Key words: multidimensionality of a philologist, multifunctionality, multitasking, integrative thinking, afferent synthesis, efferent-afferent convergence.

1. Introduction

Achievement of global competitiveness of national education in modern conditions is impossible without training of multidimensional philologists having integrative thinking, metasubject competences which are beyond concrete specialty, a certain professional sphere. The concept of professional integrative thinking development is connected with a name of Roger Martin who has worked more than 15 years as the dean of Rothmans school of management at the University of Toronto [1]. According to R. Martin integrative thinking is ability of a specialist to combine in the organization of different processes various approaches and models [2]. The specialists who have seized similar thinking show abilities to innovation and an inventiveness in the solution of the complex problems facing the company [3].

We understand ability of a specialist to combine performance of several functions (multifunctionality) and/or to conjoin the simultaneous solution of several production tasks (multitasking) as professional multidimensionality. In other words, the professional multidimensionality of a specialist is defined by presence of such metasubject competences as multifunctionality and multitasking use of which promotes increase in efficiency and productivity [4]. In any field of activity using of multifunctionality and multitasking by the expert results in the boost effect which was named as "Effect of multidimensionality". The boost effect from use of multidimensionality is formed due development of the productivity, increase in efficiency. Under multifunctionality the increase of the productivity is reached due to reduction of number of specialists whose functions are replaced with multipurpose experts. Increase in productivity is proportional to the volume of the saved financial means received owing to the reduced positions. Under

multitasking the increase of the productivity occurs due to increase in volume of development, thanks to a combination of the solution of several specialist's tasks. Increase in productivity is proportional to the volume of the costs saved due to use of multitasking by experts.

In the known saying "Chief cook and bottle washer" is about the people capable to combine performance of two and more functions in professional activity. And there is a lot of people having such abilities among us. When we talk about professional multidimensionality, i.e. combination of professions, conjunction of the solution of several production tasks, we pay attention, firstly, to the outer side of integrative activity of the person. There is the inner side of multidimensionality connected with integrative activity of a brain [5].

Objective of this research is definition of the place and a role of integrative thinking in formation of language teachers' professional multidimensionality [6].

2. Methods

In search of a cognitive basis of professional multidimensionality we have used methods of the content analysis, systematization of the semantic massifs received by domestic and foreign authors, results of the empirical researches relating to a studying subject. Questions of education of the interactively conceiving person, the system organization of integrative processes in development of mental capacities of a child have found reflection in Yu. Kozeletsky's, M. Knyazeva's works, [7, 136-167]. So, Yu. Kozeletsky marks the following requirements to training and education of the integrative person: implementation of multidimensional approach to teaching, structuring knowledge from various areas, their association in larger didactic units, realization of the subjectivity recognizing the person not only as the learning individual, but also as the subject generating new knowledge [8].

Integrative activity of the brain, questions of system organization of children's cerebration have found reflection in M.N. Fishman's works. L. Bogataya has made a significant contribution to philosophical comprehension of integrative thinking, to a research of its applied aspects [9]. Research associates of the Nizhnekamsk office of UNESCO department of the Herzen University have made a contribution to a research of metasubject competences of the multidimensional teachers in the field of language studies[10].

Research associates of the Nizhnekamsk office of UNESCO department of the Herzen University were set the task to define a real picture of professional multidimensionality i.e. in what ratio such metasubject competences as multifunctionality and multitasking appear at specialists in different fields. The research has captured representatives of three fields of activity in the city of Nizhnekamsk, the Republic of Tatarstan: 85 language teachers of high comprehensive schools of the city, 52 drivers of intercity passenger buses of JSC Passenger Motor Transportation Enterprise and 43 research associates of Scientific and technological center of JSC Nizhnekamskneftekhim. The data on the level of multifunctionality and multitasking of experts received during the research in three fields of activity are consolidated in one table (Tab. 1).

Table 1

No	The metasubject competences providing professional multidimensionality	The number of performances which bus drivers amongst 52 persons have.		The number of performances which language teachers amongst 85 persons have.		The number of performances which research associates amongst 43 persons have.	
		times	%	times	%	times	%
1.	Multifunctionality (combination of performance of two functions)	7	13.4	15	16.4	11	25.5
2.	Multitasking (conjunction of the simultaneous solution of two production tasks)	6	11.5	16	18.8	13	30.2
3.	Total	13	25	31	36.4	24	55.8

Drivers of passenger buses show professional multidimensionality due to use of multifunctionality and multitasking in routine work on service of passengers. Drivers show a combination of two functions (driving of the bus, execution of control and cash operations) 7 times (13.4%), a combination of the solution of two production tasks (safety of passengers, performance of sales volume) – 6 times (11.5%). Among drivers the professional multidimensionality is shown by every fourth (25%). Representatives of the creative sphere – language teachers, unlike drivers of buses, present the professional multidimensionality more widely (36.4%). Language teachers differ in ability at the same time to solve several didactic, developing, educational problems The multitasking among philologists appears 16 times (18.8%), multifunctionality – 15 times (16.4%). Staff of scientific and technological center differs in rather high level of multidimensionality, more than a half of them actively show metasubject competences (55.8%) in the activity. 43 research associates show the multifunctionality 11 times (25.5%), multitasking – 13 times (30.2%).

Carrying out integrative activities of a brain by today’s perspective is connected with physiological function of a hypothalamus and a nonspecific nucleus of an optic thalamus, a reticular formation of a brainstem, the amygdala and limbic system [11]. Realization of an initial link of integrative process is provided with the sensory system of a brain [12]. Information from various receptors through a lemniscus layer comes to a thalamus area. Further, transformed information is sent to receptive and associative fields of sensory cortex where processes of convergence and divergence of impulses are carried out [13].

Convergence of nervous impulses is a meeting of two or several excitations from various sensory irritants in one neuron. Convergence is called sensory-biological when at the same time two or several excitations from sensory and biological irritants converge to one neuron (noise, hunger, light and thirst). This type of convergence acts as mechanism of training, formation of conditioned reflexes and afferent synthesis of functional systems. Efferent-afferent convergence represents a simultaneous convergence of two or several afferent and efferent excitations to one neuron. This type of convergence is one of mechanisms of an acceptor of action result (prediction of the future result) [14].

Multidimensional professional activity of a driver is connected with combination, i.e. performance at least of two professional functions (driving of the bus, execution of control and cash operations) and a conjunction – the simultaneous solution not less than two production tasks (safe service, performance of sales volume). Formation of a philologist’s professional multidimensionality is defined, first of all, by

realization of integrative activity of a brain and manifestation of will function of mentality. We will show this interdependence on the example of multidimensional activity of language teachers. (Tab. 2).

Table 2

External performance of professional multidimensionality	Dependence of professional multidimensionality from integrative activity of a brain
Languages teacher combines performance of didactical functions: - teaching grammar - develops students' speaking skills; conjoin the simultaneous solution of pedagogical tasks: - task of students' development; - task of students' upbringing.	Combination of several didactical functions, conjunction of the solution of several pedagogical tasks is implemented by integrative activity of a brain through: -the afferent synthesis connected with checking, selection and synthesis of streams of nervous excitations from various receptors relating to different functions and pedagogical tasks of a teacher; -formation of complex integral and the starting afferentation providing to the teacher's combination of functions and a conjunction of the solution of several pedagogical tasks; -the efferent integral and an acceptor predicting to the teacher ways of combination of professional functions and conjunction of the solution of pedagogical tasks; -the realization and the return afferentation which is carrying out control over adequacy of the planned purpose and the effect of multidimensionality gained by the philologist due to combination of functions and conjunction of the solution of pedagogical tasks; -function of the mentality providing the necessary speed of switching of attention and contextual-associative memory of the teacher from one type of multidimensional activity to another.

3. Results And Discussion

By comparison and the analysis of results of the theoretical researches connected with functioning of integrative thinking with data on degree of multifunctionality and multitasking of the experts occupied in different fields of activity we have received the following results:

1. The cognitive basis of formation of the expert's professional multidimensionality is made by the integrative activity of a brain uniting such psychophysiological processes as afferent synthesis (correlation and checking, selection and synthesis of streams of nervous excitations from various receptors), complex integral and a starting afferentation, efferent integral and an acceptor, realization and the return afferentation.
2. Efferent-afferent convergence acts as one of physiological mechanisms of an acceptor of action result: the prediction of the future result, an intuition and ingenuity connected with combination of performance of several functions, conjunction of the simultaneous solution of several production tasks.
3. Extent of formation of multifunctionality and multitasking is defined by will function of the mentality providing the expert the necessary speed for switching of attention and contextual-associative memory from one type of multidimensional activity to another.

On the basis of the analysis of multidimensional activity of a specialist we have determined dependence of multifunctionality and multitasking on integrative activity of a brain and will function of mentality. N. Geschwind pointed functional complexity, big degree of dynamism in formation of structurally functional system of the person. There are experimental works showing a role of limbic system in

realization of the highest brain functions: active behavior, spontaneity of behavioural reactions. The limbic system plays the leading role in process of training, processing of information. The extensive structure of projective and associative communications with starting and limbic systems promotes deeper information processing coming from receptors.

According to Andrianov recognition of information, its processing and decision-making happens at all levels of integration of sensory system, and each hierarchical structure keeps in itself features of other hierarchical structure according to a functional prerogative. Ways back carry out correctional and coordination interaction between the central and peripheral departments of the sensory systems. If the left cerebral hemisphere provides, mainly, procedures of abstract and logical thinking, and right – art and figurative perception of the world, then interhemispheric neurodynamic interactions are more prerogative for integrative activity of a brain.

4. Summary

On the basis of the received results authors of article have come to the conclusion that cognitive basis of formation of professional multidimensionality of a philologist is made by integrative activity of a brain. Combination of performance of several didactical functions, conjunction of the solution of several pedagogical tasks is implemented by integrative activity of a brain through the afferent synthesis connected with checking, selection and synthesis of streams of nerve signals from various receptors relating to didactical functions and pedagogical tasks of a multidimensional philologist. Functions of efferent integral and an acceptor are connected with distribution of the nerve impulses predicting ways of combination of professional functions, conjunction of the solution of pedagogical tasks. Efferent-afferent convergence acts as one of physiological mechanisms of an acceptor of action result: prediction of the future result, intuition and ingenuity necessary for combination of functions, conjunction of the solution of tasks. The return afferentiation is connected with control over adequacy of the planned purpose and the effect of multidimensionality gained by the expert due to combination of didactical functions and conjunction of the solution of pedagogical tasks. Will function of mentality is connected with ensuring necessary speed of mental processes in general, in particular the speed of switching attention and contextual-associative memory of a philologist from one kind of activity to another.

5. Conclusions

Multidimensional professional activity is carried out on the basis of integrative activity of the brain and will function of mentality thanks to which a philologist becomes capable to combine performance of several didactical functions, to conjoin the solution of several pedagogical tasks, on this basis – capable to gain the desired effect of multidimensionality in the form of increase in the teachers' abilities and increased productivity.

6. Acknowledgements

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

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