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The Real Picture of Professional Multidimensionality

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Abstract

Professional multidimensionality is ability of a specialist to correlate the directions, approaches (integrity) and/or to combine performance of several functions (multifunctionality), to conjoin the simultaneous solution of several tasks (multitasking). The empirical research on identification of a real picture of professional multidimensionality of specialists in three fields of activity was performed by research associates group of the Nizhnekamsk office of UNESCO department at A.I. Herzen Russian State Pedagogical University under the leadership of the authors of this article. In their professional activity specialists most often apply such basic multidimensional competences as multifunctionality, multitasking and integrity. Empirical experiment covered 180 representatives of different spheres of professional activity. On the basis of experimental studies we received the following results. Rather high level of professional multidimensionality is shown by research associates – 27,9% of them possess multifunctionality, 23,3% – multitasking, 18,6% – integrity, 13,8% – the combined multidimensional competences. Among elementary school teachers professional multidimensionality is demonstrated thus: 21,1 % of them show multifunctionality, 24,7% – multitasking, 15,3% – integrity, 7,2% – the combined multidimensional competences. Professional multidimensionality among drivers of buses is demonstrated thus: 15,4 % of them possess multifunctionality, 13,5% – multitasking. Drivers of buses show absence of integrity and the combined multidimensional competences.

Keywords: Professional multidimensionality, Multidimensional competences, Multifunctionality, Multitasking, Integrity.

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Introduction

Professional multidimensionality is the ability to *correlate* several directions, approaches and/or to *combine* performance of several functions, to *conjoin* simultaneously solution of several tasks. Ability to correlate in one's professional activity several directions, technologies, scientific or practical approaches is usually called as *integrity*. Multidimensional competence, connected with one's ability to combine several functions is well-known, and it is called *multifunctionality*. The following multidimensional competence – ability to conjoin simultaneously solution of several tasks is called *multitasking*. Its meaning is conveyed by the Russian saying: "To kill two hares with one shot". Specialists who are able to conjoin accomplishment of the main production target with simultaneous solution of additional accompanying tasks, become multitask. For elementary example the multitask people are able to conjoin useful tasks with pleasant ones.

Professional multidimensionality is competitive advantage of modern specialists today. They obtain higher working efficiency due to manifestation of multifunctionality and multitasking. New horizons in professional self-development and self-improvement are opened up before multidimensional specialists (Stephen, 2008). Questions of education of a multidimensional person, forming of multidimensional thinking received reflection in works of Y.C. Yeh (2002), A.S. Richmond, H.M. Krank, R. Cummings (2006), L.F. Zhang (2001) and others.

Y. Kozeletsky marks out five distinctive features in education of a multidimensional person: forming of a research stance; implementation of multidimensional approach to training; structuring knowledge from various areas, their code conversion into larger units; realization of subjectivity in the teaching and educational activities recognizing a person not only as the learning subject but also a subject generating new knowledge; awakening of motivation to self-education on the basis of development of multidimensional thinking (Kozeletsky, 1991).

A personality in B. Morgun's multidimensional concept is considered as actively mastering and consciously transforming the nature, society and one's own identity person which has a unique dynamic interrelation of existential orientations, need-willed experiences, substantial orientations and levels of mastering experience, multidimensional forms of implementation of one's activities (Morgun, 1992).

On the basis of the logical-semantic models, V. Shteynberg (2002) developed multidimensional didactic tools aimed at development of multidimensional abilities of a person. Using synergy principles of openness, integrity and variety, A. Ostapenko (2007) created a theory and technology of modeling of multidimensional pedagogical reality.

A multidimensional model of mathematical training of a teacher was realized in works of A. Dorofeyev. Questions of forming of multidimensional pedagogical competences of future elementary school teachers in the course of their training in teacher training college are considered in F. Manikhova's (2012) dissertation research. Problems of forming of multidimensional competences of public transport drivers are reflected in A. Kaymanov's (2012) works.

During a research of professional multidimensionality problems, questions of forming of multidimensional competences of specialists in various fields of activity, significant contribution was brought by research associates of the Nizhnekamsk office of UNESCO department at A.I. Herzen Russian State Pedagogical University under the leadership of one of the authors of this article.

Methods

During a research of cognitive bases of professional multidimensionality connected with the ability of a person to perform several functions or to carry out at the same time several types of activity, we faced

functional limitation of classical thinking. Traditional thinking, created within classical determinism, that is directed at determination of cause and effect relationship is now considered to be linear. Objects of the shown world and direct abstractions (abstractions of the first level) evolving from their comprehension act as the ontologic basis of linear thinking (Yang, 2004). Multidimensional thinking represents more difficult thinking in which there are more dimensions than in a linear one, at least one unit more (Kao, 2008). Additional dimension is used for a sense making, i.e. generation of new meanings in the course of cogitative activities of a person (Bogataya, 2012). Unlike linear thinking oriented to defining of cause and effect regularities, multidimensional thinking is directed at detection and extraction of new meanings (Albaili, 2006). The thinking subject is able to actualize and correlate at the same time several semantic spaces, and on their basis – to generate new meanings.

To define the real picture of professional multidimensionality of specialists in various fields of activity on the basis of system approach, the methodology and technique of the empirical research was developed. For quantitative assessment of skill level in professional multidimensionality we approved 6 basic indicators:

- *Multifunctionality I* is ability of a multidimensional specialist to combine execution of 2 professional functions at his work;
- *Multifunctionality II* is ability of a multidimensional specialist to combine execution of 3 and more professional functions in his work;
- *Multitasking I* is ability of a multidimensional specialist to conjoin the solution of 2 production tasks;
- *Multitasking II* is ability to conjoin the solution of 3 and more production tasks;
- *Integrity I* is ability of a multidimensional specialist to correlate in professional activity 2 approaches or directions;
- *Integrity II* is ability of a multidimensional specialist to correlate in professional activity 3 and more approaches or directions.

Besides basic multidimensional abilities, in practice there are specialists possessing the combined multidimensional abilities, for quantitative assessment of which 4 types of the combined indicators were approved:

- *Multifunctionality I + multitasking I* is the combined ability of a multidimensional specialist to combine execution of 2 functions and to conjoin the solution of 2 production tasks;
- *Integrity I + multitasking I* is the combined ability of a multidimensional specialist to correlate in professional activity 2 approaches or directions and to conjoin the solution of 2 production tasks;
- *Integrity I + multifunctionality I* is the combined ability of a multidimensional specialist to correlate in professional activity 2 approaches or directions and to combine execution of 2 professional functions;
- *Integrity I + multifunctionality I + multitasking I* is difficultly combined ability of a multidimensional specialist to correlate in professional activity 2 approaches or directions, to combine execution of 2 professional functions and to conjoin the solution of 2 production tasks.

Empirical experiment covered 180 representatives of different spheres of professional activity: 52 intercity passenger bus drivers of Public Transport Enterprise JSC, 85 Nizhnekamsk elementary school teachers and 43 research associates of Nizhnekamskneftekhim JSC Scientific and Technological center.

On the basis of the professional standards, duty instructions of the intercity passenger bus drivers, the elementary school teachers, the research associates, their professional functions, production tasks having

systematic nature, and also technological approaches practiced in each field of activity were accurately registered.

Despite various contents of the professional functions, production tasks and practical approaches relating to different fields of activity, a consistent for three spheres technique of the experiment was developed, which is characterized by variability of contents, having invariant structure, identical stages and procedures.

Results

Our respondents have completely solved problems of empirical research: the multidimensionality forms practiced in three fields of activity of Nizhnekamsk city, the Republic of Tatarstan were revealed, quantitative and percentage ratios of multidimensional competences were defined, and overall picture of professional multidimensionality of the experts was made. The quantitative indices received during the experiment are presented in the following four tables.

Table 1. Picture of multidimensionality of bus drivers (52 people)

No	Name of multidimensional competences	Number of manifestations	%
1.1	Multifunctionality I (combination of 2 functions)	8	15,4
1.2	Multifunctionality II (combination of 3 and more functions)	0	0
2.1	Multitasking I (conjunction of solution of 2 tasks)	7	13,5
2.2	Multitasking II (conjunction of solution of 3 and more tasks)	0	0
3.1	Integrity I (correlation of 2 directions)	0	0
3.2	Integrity II (correlation of 3 and more directions)	0	0
4.	Multifunctionality I + Multitasking I	0	0
5.	Integrity I + Multitasking I	0	0
6.	Integrity I + Multifunctionality I	0	0
7.	Integrity I + Multifunctionality I + Multitasking I	0	0

Table 2. Picture of multidimensionality of elementary school teachers (85 people)

No	Name of multidimensional competences	Number of manifestations	%
1.1	Multifunctionality I (combination of 2 functions)	15	17,6
1.2	Multifunctionality II (combination of 3 and more functions)	3	3,5
2.1	Multitasking I (conjunction of solution of 2 tasks)	17	20
2.2	Multitasking II (conjunction of solution of 3 and more tasks)	4	4,7
3.1	Integrity I (correlation of 2 directions)	13	15,3
3.2	Integrity II (correlation of 3 and more directions)	0	0
4.	Multifunctionality I + Multitasking I	2	2,4
5.	Integrity I + Multitasking I	1	1,2
6.	Integrity I + Multifunctionality I	2	2,4
7.	Integrity I + Multifunctionality I + Multitasking I	1	1,2

Table 3. Picture of multidimensionality of research associates (43 people)

No	Name of multidimensional competences	Number of manifestations	%
1.1	Multifunctionality I (combination of 2 functions)	8	18,6
1.2	Multifunctionality II (combination of 3 and more functions)	4	9,3
2.1	Multitasking I (conjunction of solution of 2 tasks)	7	16,3
2.2	Multitasking II (conjunction of solution of 3 and more tasks)	3	7
3.1	Integrity I (correlation of 2 directions)	7	16,3
3.2	Integrity II (correlation of 3 and more directions)	1	2,3
4.	Multifunctionality I + Multitasking I	2	4,6
5.	Integrity I + Multitasking I	1	2,3

6.	Integrity I + Multifunctionality I	2	4,6
7.	Integrity I + Multifunctionality I + Multitasking I	1	2,3

Table 4. Overall picture of multidimensionality of specialists (180 people)

Name of competency	Drivers, %	Elementary school teachers, %	Research associates, %
Multifunctionality	15,4	21,1	27,9
Multitasking	13,5	24,7	23,3
Integrity	-	15,3	18,6
Combined multidimensional competences	-	7,2	13,8

Discussion

Professional multidimensionality of passenger bus drivers (table 1) is shown due to the use in their routine work generally of two forms of multidimensionality, namely, multifunctionality and multitasking. Level I multifunctionality (combination of two professional functions) was detected 8 times, whereas level I multitasking (a combination of simultaneous solution of two production tasks) was detected 7 times.

Professional multidimensionality of representatives of the creative sphere – elementary school teachers, unlike bus drivers, is presented more widely (table 2). In their pedagogical work teachers along with multifunctionality and multitasking demonstrate such difficult-to-achieve competency as integrity. Teachers differ in ability to solve several pedagogical problems at the same time. Multitasking among teachers is shown by 24,7%. Teachers' multifunctionality makes 21,1%. Integrity among teachers is demonstrated by 15,3%, the combined multidimensional competences – by 7,2%.

The staff of scientific and technological center shows the highest level of multidimensionality among the representatives of all three fields of activity (table 3). Research associates have all variety of multidimensional competences: their multifunctionality makes 27,9%, multitasking – 23,3%, integrity – 18,6%. A certain part of research associates shows the combined competences, and also multifunctionality and multitasking of the second level (combination, conjunction of three and more functions or tasks) – 13,8%.

Conclusion

The empirical research made by research associates of the Nizhnekamsk office of UNESCO department at A.I. Herzen Russian State Pedagogical University has shown the real picture of professional multidimensionality of the Nizhnekamsk specialists occupied in three fields of activity (table 4). Rather high level of professional multidimensionality was shown by employees of Nizhnekamskneftekhim JSC scientific and technological center: 27,9% of them possess multifunctionality, 23,3% – multitasking, 18,6% – integrity, 13,8% – the combined multidimensional competences. The elementary school teachers have

professional multidimensionality: 21,1% from them demonstrate multifunctionality, 24,7% – multitasking, 15,3% – integrity, 7,2% - the combined multidimensional competences. The bus drivers have professional multidimensionality: 15,4% of them demonstrate multifunctionality, 13,5% – multitasking. Representatives of the routine sphere - drivers of public transport – show absence of the combined multidimensional competences and integrity in professional activity.

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