Trans-professionalism as a predictor of adaptation of a person to digital professional future

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Abstract. In the modern world, which follows the path of digitalization, there is a demand for professionals who are capable and ready to adapt to the rapidly changing conditions of the socio-professional environment - transprofessionals. The purpose of the research was to study the educability of teachers as a key construct of transprofessionalism and to describe the psychological peculiarities of trans-professional competence "capable and motivated to continue learning throughout life, to independently master new professional knowledge and skills" as a predictor of personality adaptation to a digital professional future on the example of preschool teachers. Research methods: theoretical analysis of scientific sources (generalization, analysis, synthesis, classification), empirical method (interrogative), methods of mathematical data processing (descriptive analysis, Kruskal-Wallis H-test), interpretation methods. Statistically significant differences were found among teachers of preschool education with different ages in standards of the expression of general reflexivity (at the trend standard), self-esteem and performance, and depending on the length of service - in standard of introjected motivation. The obtained data demonstrate a sufficient standard of expression of indicators of the cognitive-mnemonic component among teachers of the preschool education system, while differences in the expression of particular elements of the organizational, motivational and volitional components of learning are revealed. This article is the first in a series of researches devoted to solving the scientific problem of determining the structure and evaluation of trans-professional competencies. The materials may be useful for workers of the socionomic sphere in relation to forecasting and adaptation workers to a digital professional future.

Keywords: Trans-professionalism, trans-professional competencies, digitalization, educability, teachers

INTRODUCTION

In the post-industrial society the definition of a profession lost its initial meaning as that of a sphere of social labor division whose essential characteristic is systemic certainty, concrete forms and types of actions (activity), and a certain finished result. Along with this definition, a new term "transfession" is being established in the professiology denoting a type of labor activity which is carried out basing on the synthesis and convergence of professional competences of different specialized sphere adults (Ananiev, 2008; Stepanova, 1981). The theoretical ground of is multidimensionality which involves the trans-discipline synthesis of different sciences: natural, technical, socio-humanitarian and philosophical (Utemov et al., 2018). The applied aspect of transfessions is expressed in integration of competences of hard-, soft- and digital skills.

Transfessions have a multidimensional network structure and universal qualificative characteristics through use of convergent technologies from various spheres of professional activity. The professiological characteristics of transfessions is trans-professionalism, that is, the ability to perform a wide scope of specific activities. This term is used in professiology as an alternative to professionalism (Zeer & Symaniuk, 2017).

Professional diffusion of traditional professions is conditioned by their dynamism, uncertainty and turbulence (Dorozhkin, Kopnov, & Romantsev, 2015). New tendencies of professional becoming of a person are being affirmed in the professiology – post-professionalism and trans-professionalism as the alternative to professionalization. The definition of "professionalism" reflects such a degree of a person's mastering of the psychological structure of professional activity which corresponds to the social standards and objective requirements. Professionals are being replaced by specialists who are ready and able to work in an inter-professional environment. These social and technological renovations provoke the necessity of building of the trans-professionalism – that is, a qualitatively new qualifying feature of subjects of activity (Perkin, 1996).

Trans-professionalism is a challenge to the traditional understanding of competence and qualification. The phenomenon of trans-professionalism is expressed in multi-professionalism, application of convergent technologies, readiness to go beyond the formed experience. Only in this way a specialist will be ready to meet social and professional innovations and able to adapt to the digital professional future which is becoming a reality on our days already.

The thematic nucleus of trans-professionalism is universal competences and meta-professional features of a person, which form trans-professional competences. Additional education, whose effective forms become minors and media-informational competences widening social and professional abilities of specialists, acquires importance in development of trans-professionalism (Feinberg, 2017; Kislov, 2018; Zeer and Krezhevskikh, 2018). It is necessary to highlight that trans-professionalism does not deny the significance of an initial basic profession but contributes to its going beyond its limits, enriches it with knowledge, competences and technologies from other professional types of activity.

Thus, trans-professionalism is the simultaneous co-existence and mixture of multiple types of professional qualifications which are acquired in accordance with individual educational paths (IEP) in the main and additional education, plus during all the professional life of a subject.

The reality is that modern productive sectors demand specialists who are perfect in internet and mobile technologies and striving to raise their skills via the digital education, easily orienting in the digital space. It might be noted that the digital revolution is occurring in the world which will lead to a global alteration of the labor market, appearance of new competences, and reorganization of the educational process on the all stages and spreading of artificial intellect technologies (Dorozhkin, Zeer, & Shcherbina, 2017).

Due to these tendencies, such workers became demanded and successful in the society who are able to build a trans-professional (multi-various) career and to be a trans-professionalist, as these phenomena are interrelated and interdepended to a high extent.

Status of the problem

There are multiple different types of careers in the scientific literature. However, in the modern society workers more often are oriented to realization of a trans-professional career the sources whereof can be found in the concept of a multi-variative career by Hall (2004): a career of each person is unique and unrepeatable and consists of a group of career cycles, each of them consisting of mini-stages of professional re-education. These processes can take place not just within a single profession but in various spheres of activity, organizations and functional goals. The main characteristics of a trans-professional career: it's the worker who is responsible for the career; the main values are freedom and development; a high level of professional mobility. The success criterion is not the level of a job or a salary but the awareness of the psychological success and perspectives in a professional future.

Today foreign authors actively emphasize that development of a new form of professionalism, namely trans-professionalism, is necessary for an innovative solution of problems. As Horsburgh, Lamdin, and Williamson (2001), Powell and Pickard (2005), Rasko, Oborn, and Barrett (2017), and others note, the necessity in this form of trans-professionalism is caused by the very logics of development of the post-industrial society: the quick change of technological patterns and intensive development of informative technologies require that a

specialist would widen his range of professional knowledge, flexibility, ability to adapt quickly to changing conditions of professional environment and skills of team work.

So, trans-professionalism is viewed as a vital challenge to subjects of professional activity, orientation to the building of one's individual trans-professional career and a condition of its successful self-realization. As for digitalization of all life spheres, it determines the vectors of transformation of professions into transfessions. The noted trends allow formulating the following provision: actual trans-professionalism of a person is a tool of his adaptation to the digital professional future. Consequently, the trans-professionalism of an activity`s subject in the conditions of the digital future involves developed knowledge, competence (Shurygin & Sabirova, 2017) and features which would help to manage the accelerating changes, uncertainty and ambiguity of the future.

Foreign authors, such as Horsburgh et al. (2001), grounding the necessity for training multi-professionals, propose to carry out multi / inter-professional learning, while this type of educational activity refers to learning related to three or more groups of professionals. Powell &Pickard (2005), supporting the ideas of previous authors, pay special attention of scientists to the organization of the communicative side of interprofessional activity.

Analyzing sources devoted to the phenomenon of transprofessionalism, we can state that there are at least three views on the understanding of the term "transprofessional competence":

• the ability to create, organize transdisciplinary teams in order to solve cross-industry problems (Malinovsky, 2007);

• the specialist's possession of relevant knowledge, skills, and personal qualities necessary to carry out the activities of various professional fields (Gabitova, 2014; Sotnikova & Sotnikov, 2015).

Successful adaptation to a complex professional present and future is determined, among other things, by trans-professional competencies that are mastered by all specialists, irrespective of the sphere of a specific professional activity.

Previously, a team of scientists – authors of the article, conducted a research (based on an expert survey) aimed at identifying the composition of trans-professional competencies. As a result, the composition of 14 trans-professional competencies was determined, which are predictors of the formation of personality trans-professionalism (that is, they are predictive in relation to it) in modern digital conditions of personality self-actualization: for example, able to carry out a critical analysis of problem situations (TC-1); able to manage people, show leadership skills, make decisions and take responsibility for them (TC-7); capable of self-organization and self-development, able to set goals and achieve them, the ability to reflection (TC-9); able to work in a mode of high uncertainty and a quick change of task conditions (TC-10), etc. One of the competencies was the ability and motivation to continue learning throughout life, to independently master new professional knowledge and skills (TC-12). According to an expert survey, this competency is considered as the most significant for employees of socionomy professions. Learning is the basic category of this competency (the publication is in print).

As far as trans-professional competencies have not been studied until present days, and their structure has not been determined, this article will be the first in a series of studies devoted to solving this scientific problem.

The development of adult education and self-education is becoming one of the central issues of psychology and pedagogy of the 21st century; however, the psychological peculiarities of adult education were studied at the beginning of the 20th century (Thorndike et al., 1931). The desire for competitiveness, for achieving success in one's professional activity strengthens the adult's motivation to master new educational paths.

It should be noted that age-related psychophysiological changes in the body caused by the natural process of aging lead to rigidity of mental processes, conservatism, a decrease in adaptability, flexibility, mobility in behavior, activity, social relations. On the other hand, in an adult, the compensatory mechanisms of the body can actively turn on, allowing levelling these age-related changes.

METHODS

Research Design

Methods of the research:
1. A brief orientation test (BOT) (Razorenov, 2019).
2. Methods of diagnosing reflexivity (Karpov, 2003).
3. The scale of academic motivation (SAM), (Gordeeva Sychev, & Osin, 2014).
4. Questionnaire "Estimation of industry and capacity for work" (Andreev, 1998).

The methods listed above have been repeatedly used in other studies (Gordeeva, Sychev, & Osin, 2017; Gordeeva et al., 2017) and are widely used in the practice of psychological research in the pedagogy of elementary and higher schools in Russia.

A brief orientation test (BOT) It is a type of IQ-test for intellectual abilities, in which separate groups of questions, some of which are carried out under conditions of limited time for an answer, allow you to assess the level of development of intelligence, ability to abstract thinking, the flexibility or speed of thinking, the ability to quickly switch between different tasks and make decisions different levels of difficulty, etc. BOT involves a more detailed decryption, which allows you to give recommendations regarding the development of those abilities that have been less effective. BOT also allows you to give an adequate integrated assessment of the intellectual abilities of the test, expressed in the number of points.

Motivation for educational activity is a complex, multidimensional structure that includes not only motives, but also goals, strategies for responding to failures, perseverance, cognitive components and mechanisms (Karpov, 2003).

All scales of the questionnaire have acceptable reliability (0.71 << α <0.91) and, according to studies by the compilers of the questionnaire, show predictable correlations with indicators of curiosity, other questionnaires of internal and external motivation, as well as indicators of basic needs (for autonomy, competence and connectedness) (Gordeeva et al., 2017). Gender differences in academic motivation rates were weaker than differences related to university specifics. Analysis of holistic motivational profiles both for groups and for individual students allows us to give a qualitative description of their educational motivation.

Variables and Learning Components for each step of the statisticщal analysis below, taken from the four questionnaires described above, as a form of presentation of the integral assessment, which is the result of evaluating the responses of each respondent for each of four questionnaires. The measurement scale in each of four tests is normalized in such a way that the test results are summarized in the range from 0 to 100 for each of the parameters for the convenience of the study.

The scientific approach of Pligin (2010) was the methodological basis of the research, according to which the structure of learning is made up of the following components:

• motivational (cognitive motives and motives that indirectly contribute to learning);

• cognitive-mnemonic (development of cognitive abilities: perception, representation, thinking, fantasy and memory);

• organizational (development of reflection on learning conditions, readiness to solve problems of a certain level of complexity, learning activities and intellectual operations and the achieved level of self-regulation, especially the development of managerial skills in learning);

• volitional (industry and capacity for work).

The purpose of the research is to study the educability of teachers as a key construct of transprofessionalism and to describe the psychological peculiarities of trans-professional competence "capable and motivated to continue learning throughout life, to independently master new professional knowledge and skills" as a predictor of personality adaptation to a digital professional future on the example of preschool teachers.

Object of research: trans-professional competence "capable and motivated to continue learning throughout life, to independently master new professional knowledge and skills".

Subject of study: educability.

Hypothesis: there are empirically significant differences in the expression of the components of learning among teachers depending on experience and age.

The final calculation of the results using the Kruskal-Wallis H-test method is due to the fact that this method is designed to study changes in one independent variable in the case of two or more levels or groups of variables. In this case, we have the groups of teachers, divided by age and experience categories, and the studied constant factor is the composite indicator obtained as a result of the four described tests. This composite indicator is presented below as object pf research (trans-professional competence).

Research Group and Sample

The study was conducted on the basis of preschool educational institutions in Yekaterinburg. Participants – 98 teachers of preschool education, age from 24 to 53 years. Work experience from 2 years to 42 years. All participants in the study represent different educational institutions of Yekaterinburg, but not all of them (there are 163 educational institutions of primary and secondary schools in the city) and were not familiar with each other until the time of the study. The sample of participants was made in such a way that the distribution of experience and work time in the school of study participants is completely stochastic.

Ethical statement

In order to follow the ethical principles of the study, the results of the questionnaires were provided only to the studies and were completely anonymous, none of the participants in the studied group of teachers received any information about the other participants, just as the researchers did not have any information about what test results belong to which subjects.

Stages of the research

The research was conducted in two stages. On the first stage, the analysis and systematization of scientific literature on the researched problem were implemented, the definitions of trans-professionalism, trans-professional career were clarified, the aim and the methods of the research were determined and its plan was built. On the second stage, the learnability of teachers of different educational organizations with different age and different working experience was studied.

RESULTS

In order to confirm or refute the hypothesis, a comparative analysis of empirical data was performed using the non-parametric H-Kruskal-Wallis test. The choice of this criterion is due to a different distribution of empirical data from the normal one and the need to compare three or more subgroups (selected by age and length of service).

Table 1. *Statistically significant results of the comparison of groups of teachers (grouping variable "age")*

Variable	H	p	Age period		
			Early maturity (20-35 years old)	Average maturity (36-44 years)	Late maturity (46-53 years)
General reflectivity	4.949	0.084	36.83	26.08	26.38
Self-esteem motivation	5.743	0.050	27.61	25.33	37.88
Working capacity	6.117	0.047	32.61	23.17	35.50

As a result of a comparative analysis of teachers with different ages on the scale of "general reflexivity", a tendency to statistically significant differences was revealed (H = 4.949; p = 0.084). This means that with an increase in the number of participants in the research, this indicator will go into a zone of statistical significance, and the standard of expression of general

reflection among teachers aged 20-35 years will be statistically higher than among teachers 46 - 53 years old and 36 - 45 years old (36.83 > 26.38> 26.08).

As a result of the comparative analysis, statistically significant differences were revealed among teachers with different ages on the scale of "self-esteem motivation" (N = 5.743; p = 0.057). The standard of expression of motivation for self-esteem is statistically higher among teachers in late maturity (46-53 years) than among teachers at the age of early and middle maturity (37.88> 27.61> 25.33).

As a result of the comparative analysis, statistically significant differences were found among teachers with different ages on the "workability" scale (H = 6.117; p = 0.047). At the same time, teachers in late maturity (46-53 years old) have a higher standard of expression of workability than teachers in early (20-35 years old) and middle age (36-45 years old), (35.5> 32.61> 23.17).

The study participants were divided into groups according to the variable "length of service" based on periodization of professional development (Zeer, 2006):

the first group - teachers with a work experience of 1 to 5 years;
the second group - teachers with work experience of 6-10 years;
the third group - teachers with experience of 11 to 20 years;
the fourth group - teachers with over 21 years of experience.

Table 2. *Statistically significant results of the comparison of groups of teachers (grouping variable "length of service")*

Variable	H	p	Seniority Group			
			1	2	3	4
Introjected motivation	12.599	0.006	33.30	20.17	37.08	20.50

As a result of the comparative analysis, statistically significant differences were revealed among teachers with different lengths of service on the scale of "introjected motivation" (N = 12.599; p = 0.006). This means that the standard of expression of indicators of introjected motivation is statistically higher among teachers with experience of 11 to 20 years (group 3) and 1 to 5 years (group 1), compared with teachers with experience of 6 to 10 years (group 2) and more than 21 years (4 group) (37.08 1> 33.30> 20.50> 20.17).

It should be noted that statistically significant differences on the remaining scales of the methods performed, aimed at diagnosing the four components of learning ability, were not revealed among the study participants (Table 3).

Table 3. *Group indicators of the components of learning and their expression*

Learning Component	Scale	Average	Standard of expression
Cognitive mnemonic	Intellec	28.38	Above the average
Organizational	General reflexivity	Statistically significant differences	------
Motivational	Cognitive motivation	16.69	Above the average
	Achievement motivation	14.93	Above the average
	Self-development motivation	15.10	Above the average
	Self-esteem motivation	Statistically significant differences	------
	Introjected motivation	Statistically significant differences	------
	External motivation	10.59	Average
	Amotivation	6.83	Below the average
Strong-willed	Capacity for work	Statistically significant differences	------

DISCUSSIONS

The research allows us to state:

1. teachers of early maturity have a more expressed reflection of the learning conditions, readiness to solve problems of a certain level of complexity, learning activities and intellectual operations compared to teachers of middle and late maturity;

2. teachers of late maturity have a desire to learn for the sake of self-importance and increase self-appraisal due to academic achievement, the need for respect and self-esteem compared to teachers in early and middle maturity;

3. teachers of late maturity are more responsible in their work activities and responsibilities, are distinguished by hard work, responsibility for their work, love of their profession, and a desire to work for the good of society compared than teachers of early and middle maturity;

4. teachers with experience of 11–20 years and 1–5 years, in comparison with teachers with professional experience of 6 to 10 years and more than 21 years, have a more expressed sense of shame for unsatisfactory learning results, they are more focused on a duty to themselves and significant people, in determining the purpose and learning strategy, they are interested in learning activities, the desire to obtain satisfaction from the study of new material;

5. teachers of the preschool education system who took part in the research, irrespective of experience and age, are characterized by a sufficiently high level of intelligence, developed cognitive motivation, strive to achieve success and self-development, they have an interest in learning activities, the desire to acquire knowledge, improve qualifications, while they are not alien to learning for external reasons (they study, since it is necessary to increase knowledge and follow the requirements of the Federal State Educational Standards, society in order to avoid loss of qualifications and their workplace), although it does not prevail over constructive motivation.

The differences between the groups of teachers by age and experience are unlikely to have fatal consequences, and in general, the obtained results can provide a good level of adaptation of preschool educators to the socio-professional environment in the context of the digitalization challenges of reality and the future due to the formed ability and motivation to continue lifelong learning, independently master new professional knowledge and skills. The problem of overcoming individual differences in the cognitive styles of participants in pedagogical groups was also considered in other works (Feinberg, 2017; Zeer, Tretyakova & Miroshnichenko, 2019). In the work of Taylor (2016) the importance of forming multi-professional teams of specialists is especially emphasized. This approach provides several critical advantages at once in stabilizing the quality of the learning process in new conditions:

- group members have the opportunity to learn from each other's skills, including unconscious ones;
- group members can replace each other due to a wide field of common skills;
- group members have greater collective capabilities in solving difficult situations, in particular in the pedagogical process, than the sum of individual teachers (synergistic effect) (Taylor, 2016).

A significant part of research has recently focused on the role of trans-professionalism in the work of medical personnel. In a number of works (Bachmann et al., 2016; Glen & Leiba, 2017; Klemenz, 2019), the features of special education and training of personnel for multifunctional activities and for quick switching between tasks of high complexity, but from different professional fields, were studied.

Changing the content of knowledge increases the requirements for continuing education of teachers, as well as readiness for lifelong learning (Isaikina et al., 2019). We believe that the content of the tests conducted in the study accurately determines the psychological profile of the teacher and makes it possible to predict the readiness for further training and effective activity of both an individual person and a group.

Now there are studies in which examples of the implementation of effective multi-professional training programs are presented, also mainly in the field of medicine (O'Loughlin et

al., 2017). Researchers' attention is focused on creating standards both in the field of personnel training and in determining the level of achieved special capabilities, abilities and knowledge (Silva, Rodrigues, & Leal, 2018). There are works also offer original testing methods for the same parameters that we used, but with some differences (Jones & Skaggs, 2016).

In connection with the new learning paradigm, the development of e-learning, distance learning, co-learning and other innovative techniques, the motivation of students comes first. The teacher's role is no longer dominant; individualization of the teaching style is playing an ever-increasing role in teaching (Bachmann et al., 2016). Accordingly, a teacher who does not have the skills of flexibility and is not suitable for a multi-professionalism program will experience difficulties in mastering these new teaching methods for students and schoolchildren.

Thus, the trans-professionalism can be stated to be an actual challenge to the subjects of professional activity, an orientation to the building an individual trans-professional career and a condition for their successful self-realization. Digitization of all spheres of life determines the vectors of transformation of professions to transfessions. The indicated trends allow formulating the situation: the actual trans-professionalism of a person is a tool of its adaptation to the digital professional future, and learnability is a factor of achieving it.

CONCLUSION

In the post-industrial society characterized by the acceleration of social and professional activities the variability and uncertainty of the world of professions, the need for fundamentally new specialists who are ready and able to work in a new technological environment will increase. These reformations lead to the transformation of traditional professions and the emergence of new ones. All these changes cause the necessity of qualitatively new qualifications of the activity's subjects – trans-professionalism and ownership of trans-professional competencies.

As a result of the research, it was found that among teachers in a wide age range from 24 to 53 years with experience from 2 to 42 years there are several groups with different abilities to learn and adapt to changes. At the same time, all subjects had high indicators and are characterized by a sufficiently high level of intelligence, developed cognitive motivation, strive to achieve success and self-development, they have an interest in learning activities.

The article studies the educability of teachers as key construct of trans-professionalism and describes psychological peculiarities of trans-professional competence "Able and motivated to continue learning throughout life, to independently master new professional knowledge and skills" as a predictor of adaptation of an individual to a digital professional future on the example of preschool educators.

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