The Role of Creativity in the Process of Competitive Teacher Training Subject to Russian Professional Standard Requirements

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Abstract
This article provides research results concerning the influence of creative qualities on teacher’s general competitiveness level. We examined the pedagogical experiment results in strengthening teacher's competitiveness in the context of personal creative qualities development. The structure of uniquely designed creativity development program as competitiveness determinant in would be teachers was introduced. Its basic characteristics were also reviewed. Obtained data allowed to confirm the role of creativity as competitiveness determinant in would be teachers. Objective measuring tools made it possible to observe positive changes in experimental group in the context of increased competitiveness level as a result of influence on a person's creative qualities.

The results confirm the correct choice of competitiveness components and formation model of the quality under discussion in pedagogical process, which was carried out in creativity formation program as competitiveness determinant in would be teachers and the process of its implementation.

Keywords: educational standards, competences, teacher's professional standard, competitiveness, creativity, development program.

1. Introduction
More than 20 years ago there was a transition to market-oriented economy in Russia, which changed the existing structure of goals and tasks in education system. Thus, training of creative and critically thinking graduate students motivated to express creativity and innovation activity (The Federal State Educational Standard...) was offered as an example of one of the basic goals in secondary general education. Furthermore, this kind of personality can be trained only by a highly qualified and competitively active teacher possessing developed creative abilities, divergent

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thinking, and other personal qualities, which allow him or her to carry out professional activity successfully under present conditions.

This reformation process also affected regulatory environment of the education system. Basic principles of the Russian Federation state policy concerning education were put forward in the Federal Law no. 273-FZ “About education in the Russian Federation” (The federal law..., 2012). In the context of market-oriented transformations possibility to provide commercial educational services is one of the most significant points in this Law. In connection with this fact, educational sector can be regarded as one of the industry segments in Russian economy, which means that such economic features as competitiveness can be also applied to teachers and their pedagogical activity.

Critical changes in regulatory environment of the education system in Russia are also connected with introduction of new professional standard, namely “Educator (pedagogical activity in the sphere of pre-school, elementary general, compulsory, and secondary general education) (schoolmaster, teacher)” (Professional standard...). This standard’s content is both a characteristics of the teacher’s required qualification for carrying out professional activity and a ground for designing materials, which allow to estimate the quality of educational services provision. It is obvious that professional standard will primarily define teacher’s competitiveness.

Thus, the goal of this research is formation of competitive pedagogical staff possessing developed creative abilities with due regard to new professional standard requirements.

2. Materials and methods

In the process of studying creativity and competitiveness phenomena (Grebennikova, Rybkin, 2017) it was discovered that these integrative qualities have a number of common elements such as flexibility (of thinking), readiness to risk, eccentricity and independence of thinking, operational thinking, intellectual abilities, and mind-set. On this ground the conclusion about the given qualities correlation was made. Such discovered interrelation provides possibility to form teachers’ competitiveness in the process of their creative qualities development.

The next step featured detailed studying of “Educator (pedagogical activity in the sphere of pre-school, elementary general, compulsory, and secondary general education) (schoolmaster, teacher)” professional standard content (Professional standard...) and Federal State Educational standards of the Russian Federation higher education in the following educational programs: 44.03.01 Pedagogical education (bachelor degree) (The order of Ministry of Education..., 2015), 44.03.05 Pedagogical education (with two majors) (bachelor degree) (The order of Ministry of Education..., 2016), 44.04.01 Pedagogical education (master's degree) (The order of Ministry of Education..., 2014) The goal of the given research was interrelation analysis of teacher’s competitiveness and creativity elements with a number of competences specified in the Federal State Educational Standards (The order of Ministry of Education..., 2015; The order of Ministry of Education..., 2016; The order of Ministry of Education..., 2014) labor activity, and necessary skills mentioned in the Federal Educational Standard (Professional standard...). The result of this analysis was theoretical substantiation of correlation between creativity and competitiveness elements development and formation of competences necessary for teachers, and as a consequence, successful carrying out of work in future.

Creativity development program as competitiveness determinant in would be teachers was developed on the basis of research results. A wide range of creativity formation and development methods and strategies was used in the program. They are heuristic approach (Khutorsky, 1999; Khutorsky, 2001), methods of creative search, decision making, information presentation, goal-setting business technologies, analysis and solutions searching in problem situations.

FSBEI of Higher Education “Kuban State University” was used as experimental facilities for program introduction and quality estimation. Students who entered this university in 2016 to study at bachelor degree departments on educational programs 44.03.01, 44.03.02, and 44.03.05 participated in this experiment. A number of these students formed both experimental group, in which studies specified by the program were carried out, and control group, in which no such studies occurred. Experimental group consisted of bachelor degree students trained according to educational program 44.03.05 Pedagogical education (with two majors) – Economics, Law. Control group included students following pedagogical training programs but different specializations such as primary, pre-school education; history, law education; engineering
education, economic education; mathematics, informational technologies; physical education; philological education; psychological and pedagogical education.

The creativity development program as competitiveness determinant in would be teachers wasn’t singled out as a separate discipline. It was integrated into already existing disciplines specified in basic and variable parts of the main educational bachelor degree program 44.03.05 Pedagogical education (with two majors) – Economics, Law. These disciplines include “Educational economics”, “World economics”, “Economic and financial education practical course”, “Business and entrepreneurship”, “Economics and Law teaching method”, “Family economics”, “Practical course on professional problem solving”, “Practical course on business problems solving”, “History”. Such variety of disciplines allowed to reach maximum coverage of competences formed during educational process and made it possible to ensure integral effect of the program on examinees.

The program content was developed on the basis of topics included into the chosen disciplines, which allowed to reach full potential of the studies forms and methods used for forming creativity and competitiveness. Within the framework of “Economic education” program some tasks were carried out in the form of interactivity combined with method of brainstorm and “635” method. Tasks featuring method of frames, methods of block table and construction of structurally logical schemes were used in the “World economics” discipline. Method of cinquain creation and case method were used for tasks within “Economic and financial education practical course” unit. Mind-mapping and “headstand” techniques were used for “Business and entrepreneurship” unit. Case method, SMART goals business technologies and “SWOT” analysis as well as “Cluster” critical thinking development technology were put in use for tasks within “Economics and Law teaching method” unit. Tasks involving case method, method of frames, method of block table and construction of structurally logical schemes, empathy method, method of client benefit matrix designing were used for “Family economics” unit. On the basis of “Practical course on professional problem solving” materials tasks involving case method were created. Students were offered to solve problems with the help of “Cluster” critical thinking development technology and morphological box method within the framework of “Practical course on business problems solving” program. Tasks prepared on the basis of such heuristic methods as symbolic vision, hypothesis, and “If...” methods were used for “History” unit.

Studies were held in 2017/2018 and 2018/2019 academic years with due regard to course schedule of disciplines involved in experimental program.

In order to estimate the effectiveness of creativity development program as competitiveness determinant in would be teachers we designed a measuring tool called “Competitiveness diagnosing test for would be teachers” (Grebennikova et al., 2017). Materials proving validity of this tool can be found at (Rybkin, 2018).

The program effectiveness estimation was carried out during monitoring of general competitiveness level development. 300 students participated in monitoring, 150 of which were part of experimental group, while 150 people belonged to control group.

Measurements were performed within the framework of the theory of latent variables measurement based on the Rasch model (Rasch, 1960). Monitoring was carried out in two steps. The first step included estimation of initial competitiveness level in both control and experimental groups before the program implementation. The second step of the research occurred after the program implementation.

Data of the monitoring was transformed to linear measures with a Rasch model for rating scales, which computes a log-odds transformation of indicators and objects, then computes differences between indicators and objects also guided by the one-parameter logistic function to establish a common dimension (Wright, Masters, 1982). A simple mathematical model is implemented for this transformation:
Where $\beta_n$ = object's location parameter on the competitiveness latent trait, $\delta_i$ = indicator location parameter on the latent trait, and $\tau$ = rating scale thresholds.

$\Pi_{nix}$ is the probability that any indicator $\delta_i$ will be coded X for any object $\beta_n$ where X takes a value from a fixed range ($j = 0, 1, 2, 3, 4$), $m =$ number of steps for an indicator, and $k =$ $i_{th}$ step. The conformability of raw data to mathematical expectations was assessed with a Chi-square derived fit analysis of indicator and institutions residuals (Wright, Masters, 1982). Logit is used as a measurement unit within the framework of the theory of latent variables measurement. Logits can be converted into another scale if required.

3. Results

In early stage of monitoring we made an estimation of measuring material quality we used (Competitiveness diagnosing test for would be teachers) on the basis of chi-square criterion. It was discovered that empirical level of chi-square statistics significance for a set of indicators in this questionnaire exceeds the nominal value of 0.05 and equals 0.324. These measurement results make it possible to illustrate the indicators compatibility (the questionnaire items), which means that this tool is valid for measuring such latent variable as competitiveness.

According to the set of objectives in our research we single out the following factors under inquiry:

– Factor A — period of research, which varies at two levels (before the experiment implementation and after its implementation);
– Factor B — group, which varies at two levels (experimental and control groups).

Students' competitiveness in this research is the yield (output variable).

Considering that the factors mentioned above are qualitative, we used analysis of variance for processing results acquired during the experiment. Results of multifactor ANOVA for competitiveness level in would be teachers depending on factors under consideration are presented in Table 1.

Table 1. Analysis of variance for competitiveness level in would be teachers depending on the program effect

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>Degrees of freedom</th>
<th>Mean sum of squares</th>
<th>F</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor A</td>
<td>0.478</td>
<td>1</td>
<td>0.478</td>
<td>4.27</td>
<td>0.04</td>
</tr>
<tr>
<td>Factor B</td>
<td>0.834</td>
<td>1</td>
<td>0.834</td>
<td>7.453</td>
<td>0.007</td>
</tr>
<tr>
<td>Interaction AB</td>
<td>0.853</td>
<td>1</td>
<td>0.853</td>
<td>7.63</td>
<td>0.006</td>
</tr>
<tr>
<td>Error</td>
<td>62.384</td>
<td>597</td>
<td>0.112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>64.549</td>
<td>600</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis data shown in Table 1 indicate that all sources of variation were statistically significant. This can be seen from the empirical significance level (Factor A – 0.04, Factor B – 0.007, Interaction AB – 0.006).

This being said, Factors AB interaction is the item of utmost interest in the context of our research goals. This interaction reflects the program impact on competitiveness development in experimental group and illustrates dynamics of this quality development in control group. Other sources of variance (Factor A, Factor B) provide the mean sample indexes. In this connection they are not examined in detail in our research.
In order to determine positive and negative dynamics of competitiveness development in control and experimental groups we should consider results obtained from analysis of variance of interaction between Factor A (period of research) and Factor B (group). The respective data can be found in Table 2.

Table 2. The mean value of students’ competiveness depending on the research period and group

<table>
<thead>
<tr>
<th>Factor A (Measure period)</th>
<th>Factor B (group)</th>
<th>Level of competitiveness (logits)</th>
<th>Standard error (logits)</th>
<th>95 % confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before program</td>
<td>control</td>
<td>0,422</td>
<td>0,033</td>
<td>0,358 - 0,486</td>
</tr>
<tr>
<td>implementation</td>
<td>experimental</td>
<td>0,421</td>
<td>0,078</td>
<td>0,268 - 0,573</td>
</tr>
<tr>
<td>After program</td>
<td>control</td>
<td>0,384</td>
<td>0,032</td>
<td>0,321 - 0,446</td>
</tr>
<tr>
<td>implementation</td>
<td>experimental</td>
<td>0,688</td>
<td>0,069</td>
<td>0,551 - 0,824</td>
</tr>
</tbody>
</table>

Data shown in Table 2 make it possible to come to the following conclusions:
- before program implementation approximately equal level of competitiveness was seen both in control and experimental group (0,422 logits in control group and 0,421 logits in experimental group);
- measurement carried out after program implementation made it possible to discover significant growth (over 63 %) of competitiveness level in experimental group, going up from 0,421 to 0,688 logits;
- a slight reduce in development level of the quality under research occurred in control group.

Dynamics of creativity development in control and experimental groups is graphically shown in Figure 1.

Fig. 1. Program effect

The graph on Figure 1 clearly illustrates positive effect of the program on general level of competitiveness in would be teachers. Provided data make it possible to come to conclusion about effectiveness of creativity development program as competitiveness determinant in would be teachers.
4. Discussion

Despite a considerable number of theoretical studies in the context of teachers’ creativity and competitiveness development, nowadays creation of programs for these qualities development is still a crucial task both in Russia and abroad.

Taking into consideration the role of a teacher in the process of creativity formation among students Afzal Sadat Hosseini (Iran) created a 70 hours’ program for developing creativity in Iranian teachers. The program included theoretical and practical sections. Within the framework of theoretical section teachers were familiarized with the notion of creativity, its basic characteristics, and its development methods. Practical section included using acquired knowledge by teachers at their classes (Afzal Sadat Hosseini, 2014).

Scientific group headed by Sakipzhamal Uzakbaeva (Sakipzhamal Uzakbaeva, B. Baimukhanbetov, K. Berkimbaev, B. Mukhamedzhanov, R. Pralieva) created a methodology of creative competence development in would be teachers for providing more effective professional training of teachers in Kazakhstan (Uzakbaeva et al., 2013).

In Russia T.G. Kiselyova and M.L. Zueva introduced the model of creative competence development in teachers in the context of continuing education system. They regarded ability to produce effective uniquely designed tools for achieving results in education as the highest level of a teacher’s creative competence, so the authors of the model suggest to form this quality during positive teaching experience exchange, advances studies, and research activity (Kashapova et al., 2013).

D.N. Sergeeva suggested a program of teachers’ creativity development in the process of conflicts resolution. The program consists of psychological studies carried out with the use of different forms and methods of work with teachers. The advantage of the program is in its positive effect not only on teachers’ creativity but also on a group of teachers’ personal and behavioral peculiarities such as tact, conflict tolerance etc. (Sergeeva, 2016).

“Competition science” professional training program of elected course for would be teachers created by E. V. Evplova is also of great interest. The course consists of 4 modules covering basic definitions and conceptual fundamentals of competitiveness in a would be teacher, motivation for professional pedagogical activity, competitive teacher’s activity peculiarities, and usage of social-psychological interaction methods by teachers. The author suggests using various active and interactive methods of teaching for carrying out lessons within the framework of the course (Evplova, 2013).

Despite similarity between the programs mentioned above the program of creativity formation as a competitiveness determinant in would be teachers described in the article has a number of significant distinctions. The program allows to develop a set of a teacher’s personal qualities being the elements of both his or her creativity and competitiveness, while the primary goal of Afzal Sadat Hosseini (Afzal Sadat Hosseini, 2014), Sakipzhamal Uzakbaeva, B. Baimukhanbetov, K. Berkimbaev, B. Mukhamedzhanov, R. Pralieva (Uzakbaeva et al., 2013), T.G. Kiselyova, M.L. Zueva (Kashapova et al., 2013), D.N. Sergeeva (Sergeeva, 2016) programs is development of teachers’ personal creative qualities. In “Competition science” elective course program E.V. Evplova (Evplova, 2013) specifies possibility to form and develop both creativity and competitiveness in teachers, meanwhile creative qualities development in the context of the course is regarded as one of the steps for competitiveness development in teachers, while development of these qualities within the program of creativity formation as a competitiveness determinant in would be teachers is viewed as a continuous process. Moreover, all the programs mentioned above should be grouped as a separate subject unlike the uniquely designed program of creativity formation as a competitiveness determinant in would be teachers, within the framework of which integration with subjects provided by the curriculum is suggested. The given program model has proved its effectiveness before in secondary school conditions. Materials testifying this can be found at (Rybkina, 2015; Maslak, Rybkina, 2015; Maslak et al., 2015; Maslak, Rybkina, 2015b; Rybkina, Maslak, 2016; Maslak, Rybkina, 2016; Mahova, Rybkina, 2016).

Major advantages of such program implementation model are as follows:
– absence of necessity to single out the program materials into a separate discipline, which is a significant advantage in conditions of limited study hours;
– educational process intensification doesn’t lead to significant increase in classwork activity for students because study hours are not increased;
– it forms a complete image of profession they master through discovering disciplinary connection;
– it allows to produce the model of problem tasks solving using their creative potential, which will further make it possible to solve professional and study tasks with less efforts.

As for the introduced creativity development program as competitiveness determinant in would be teachers, its high flexibility can be viewed as one of its major advantages. In the context of competitiveness formation among pedagogical universities graduates the offered program structure allows to adjust it for any specialization. Necessary result can be achieved by selecting the scope of disciplines from curriculum and adding structural elements if needed. Reaching maximum coverage of competences as well as creativity and competitiveness quality components connected with them can be viewed as the program adaptation validity criterion. However, according to experimental data, even the current version of the program allows to achieve positive results. In conjunction with offered measuring tools the process of competitiveness formation and development can be made more controllable, which can be achieved by means of timely provided corrections in educational process depending on monitoring results.

The research limits are related to the fact that the sample volume is not large enough and the ratees’ field of study is pedagogics only. The sample volume was conditioned by possibilities of experimental facilities. In order to make the measurement more accurate it is advisable to include students studying within similar fields and programs of other educational establishments in experiment.

5. Conclusion

Materials provided in this article confirm the effectiveness of creativity development program as competitiveness determinant in would be teachers and testify opinions about the role of creativity as competitiveness determinant in would be teacher. This conclusion is based on increased competitiveness level discovered with the help of objective measuring means in the process of influencing students’ creative qualities in experimental group and decreased level in control group, where creativity development was not viewed as a primary objective.

This determined and statistically significant positive dynamics of competitiveness development (63 %) in experimental group testifies correct choice of competitiveness components and the model of this quality formation in pedagogical process, which was successfully integrated into creativity development program as competitiveness determinant in would be teachers in the course of its implementation.

The research materials can be used in the process of competitiveness formation and creative abilities development in teachers, as well as in creation of disciplines educational programs and valid measuring tools.

References


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