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NOVICE TEACHERS COMPETENCY THROUGH SCIENTIFIC RESEARCH

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Abstract

The transformation of a teacher's portrait is postulated by the changes happening in society, thus a contemporary teacher is a person equipped with techniques of scientific oeuvre and having flexible mind to adapt to requirements of a professional environment. The graduate of teacher training programs is supposed to apply theoretical knowledge and experience; to use research design; to conduct qualitative, quantitative and practitioner research. To shape competent teacher stakeholders have to create the motivating environment that provokes novice teachers' loyalty to scientific work, strive to initiate individual research as a factor to boost professional development. The paper aims to give a comprehensive account of Science immersion environment (SIE) in providing appropriate conditions and benefits for novice teachers to enhance their scientific involvement. The basic advantage of SIE is to create fertile ground for profound scientific investigation. The study which lasted 18 months was conducted within the foreign languages department involving 32 novice teachers of KFU. Our two-stage survey provided data for the analysis. The survey demonstrated no strong motive of novice teachers to write scientific papers. However, SIE caused gradual increase in the number of published papers produced by novice teachers. They admitted that all measures taken had a great impact on establishing their way in the scientific community and SEI was said to be an effective tool. The authors observed positive approach to broadening scientific potential and professional lifework of novice teachers. The study proved that novice teachers competency could be achieved through scientific research by forming well-functioning SIE.

Keywords: Scientific work, research, novice teacher, motivation, environment, competency

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1. Introduction

Recently, the Russian government announced the main priorities higher educational establishments (HEE) have to consider while making strategies for further development and growth. The main attention is drawn to the involvement into scientific researches and technologies, which are supposed to be integrated into the studying process. According to governmental programs, Russian HEEs have to be able to compete with world class universities, become more reputable and provide highly effective teaching practices. Moreover, new policy concerns changes in teacher training education and mainly the transformation of teacher's portrait, since the novice teachers as pedagogical university graduates are the core of future successes of educational institutions. They have to be equipped with techniques of scientific oeuvre, possess multidisciplinary purview, apply methodological, theoretical and philosophical knowledge, conduct qualitative, quantitative, collaborative and practitioner research.

Immersion into science is viewed as a means to present research findings to the worldwide audience, share ideas, introduce new approaches as well as the way to prepare highly qualified specialists by collaborating with overseas colleagues and acquiring efficient methods and concepts. Science as a focus area is a difficult issue and all members who are supposed to deal with it have to be educated, scientifically literate and motivated to make commitments into it. HEEs' teaching staff is the main agent of scientific researches.

However, in practice HEEs face the problem that not all teachers and especially novice teachers are capable of scientific work. From one side, they cannot initiate individual researches, they are often unfamiliar with its methodology, from another one they do not look at scientific work as at a factor that can boost both their professional development and status. This paper looks upon the possibilities of introducing scientific work to the novice teachers, shows its opportunities for broadening teaching spectrum and states conditions for retaining beginning teachers' interest in conducting researches throughout their career.

2. Problem Statement

Lytle, Susan L. et al (1993) define teacher research as "systematic, intentional inquiry by teachers. It is explained by the dynamic nature of teaching profession and the principles of life-long learning which accompany educators throughout their career. Those teachers who are involved in continuous research are "practitioners who attempt to better understand their practice, and its impact on their students, by researching the relationship between teaching and learning in their world of work" (Loughran et al., 2002).

Sharing David Hargreaves's opinion (1996), we agree that education, "like medicine, should be an 'evidenced-based' profession in which research findings are used by teachers in ways which take into account the varying contexts in which different schools operate".

It could be supposed that novice teachers will understand the necessity of the research at the time they face real classroom and teaching difficulties. So, they should be allowed to comprehend everything by themselves and at the right time. What if this time never comes and the entire teaching process will suffer. Teaching demands flexibility, ability to work in contrasting classroom environments, adaptability to students' mental, psychological, physical peculiarities. The training teachers get at pedagogical

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universities might not be enough or might be different from what novice teachers have to really deal with. It is obvious that educational theory needs to be integrated with 'teacher's craft knowledge' (Galton, 2003).

Based on the findings presented by Fullan (1993), Fuller & Brown (1975), Elliott & MacDonald (1975), Nixon (1981), Rudduck & Hopkins (1985), Lytle Susan et al. (1993) it could be concluded that teacher research:

- supplies teachers and novice teachers in particular with international experience in their sphere of knowledge;
- broadens pedagogical experience;
- refines conceptual and pedagogical skills (Department of Education & Training, 2005);
- stimulates critical thinking;
- leads to effective classroom and teaching practices;
- facilitates adaptation process;
- stimulates collaboration with colleagues;
- bridges the gap between trained practice and real classroom environment;
- helps to achieve effective teaching;
- brings competitiveness to HEE teachers work at.

The Department of foreign languages in economics, business and finance, Kazan Federal University opts for engaging novice teachers into effective, ongoing professional learning to develop 'progressively higher levels of expertise' (Department of Education & Training, 2005).

Figure 01. Science immersion environment

Having created the mentoring program which also supposes assistance in scientific research, the Department puts into practice large-scale project of forming science immersion environment (SIE) which embeds the main objectives of HEE and government policy concerning teacher research (Figure 01). The environment presupposes the aggregation of social, cultural, personal, global conditions that influence all life aspects of an individual and community including professional and scientific. All parties involved generate knowledge affecting local academic environment as well as global one having an opportunity to share gained results and findings in their professional field.

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We define SIE as a kind of knowledge environment that includes social practices, technological and physical arrangements, promotes scientific oeuvre, new knowledge production, enriching professional competency. SIE intends to stimulate novice teachers' strive for becoming active participants of scientific community both locally and internationally. SIE comprises interdependent and interacting elements such as: society prerequisites and sentiments (public attitude toward the profession, qualification requirements, the moral character of teachers); government policy and strategy 2020 (governmental strategy and measures on the education including laws, standards, rules and regulations in order to reshape the portrait of a contemporary teacher); university and institute administration (university policy on creating favorable working conditions to increase competitiveness); department staff activity (measures to develop professional and scientific competency of the staff); world knowledge challenge (collection of knowledge generated by individuals and communities); individual needs and self-realization (personal impetus of novice teachers defining professional life). The SIE is guided by the following principles:

1. Inductions for teachers who are new to school which explain the necessity of teacher research (Department of Education & Training, 2005);

2. The use of multiple sources of involving novice teachers into science and providing high quality feedback on their scientific progresses;

3. Individualized teacher scientific plans based on personal development needs;

4. Systemic scientific mentoring by experienced educators.

SIE having its aim to enhance beginning teachers' involvement into scientific research will be gradual and somehow difficult. It requires time and effort to learn how to be a part of a scientific community and increases teachers' workloads. The aim of the Department and university officials to develop in novice teachers the trust and confidence in joining new sphere, help them with expertise and collaboration, motivate them to take risks and achieve scientific goals (Sungatullina et al., 2016). To implement the main principles of SIE it is crucial to identify the level of readiness of novice teachers to the involvement into science. Questionnaires and group interviews are the tools to be used at this stage.

Being surrounded by SIE beginning teachers are influenced by intrinsic and extrinsic motives. Professional development, promotion, ability to take part in conferences sharing scientific findings, life-long employment, highly educated students are intrinsic motives that make teachers immerse into active scientific research (Zalyaeva &Solodkova, 2014). Individual teacher scientific plan requirements, performance related bonus scheme, HEE's scientific programs, promotion requirements, salary increase are said to be extrinsic motives. The best practice is to be involved into science when teachers really feel to be engaged in it and at the same time to cover the requirements the stakeholder proposes.

3. Research Questions

The authors of the study assigned two main questions to be researched:

1. How far are beginning teachers ready to be integrated into scientific research community?

2. What are the effects of science immersion environment in stimulating the novice teachers' interest for involvement into scientific research needed for professional development, higher educational establishment's competitiveness and higher education quality increase?

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4. Purpose of the Study

The purpose of the current study is to identify the effects of science immersion environment on novice teachers' competency. The idea is to the increase motivation for scientific researches as it ensures professional and career development, broadening teaching spectrum, university's competitiveness and growth. To achieve this it is needed to investigate new teachers' perception of their involvement into scientific research, find out their motives and weaknesses and later to compare these results with the ones obtained after introducing science immersion environment.

The discrepancies and common weaknesses found could underlie the improvements in science immersion environment to make the process of involvement into science favorable and stress-free for novice teachers.

5. Research Methods

To answer the research questions two-stage survey was conducted covering the period of 18 months from the second half of 2015 up to the end of 2016. The survey data were obtained from 32 novice teachers who were purposefully selected from the teaching staff of the foreign languages department in economics, business and finance, of KFU (Institute of Management, Economics and Finances). The findings are based on responses of novice teachers aged from 22 to 28 who completed questionnaires. The researchers combined quantitative systematic observations from the novice teachers' perspective, contextual data drawn from group interviews and general qualitative observations to form methodology adapted to serve the purpose of the study.

The primary aim of the first stage was to define how far novice teachers are ready to 'explore the field of science'. Teachers were asked a number of questions to investigate their perception of involvement into scientific research. Binary response questions: the first one showed the novice teacher desire to be involved in science; the second one was devoted to the importance of science for novice teacher's professional activity; the third was designed to find out if novice teacher has any background in science. Teachers were further asked questions which are expected to provide more than one answer: the fourth question was generated to learn the reasons of their involvement in science; the fifth one was about novice teacher's achievements in the field of science; the sixth was designed to define what science for novice teacher is; the seventh and the eighth were asked to find out what novice teacher is encouraged by and discouraged from science; the ninth was devoted to learn what novice teacher's science field is.

The second stage was connected with scientific progress tracking due to the forming well-functioning SIE and novice teachers' involvement in it. The main tools were the quantitative analysis and qualitative observations of novice teachers' scientific activity. The results obtained at this stage evidenced the effectiveness of SIE for enhancing novice teacher's competency.

6. Findings

The results of the first stage survey revealed low interest towards scientific activity and research. Only 9 out of 32 novice teachers expressed the wish to be involved into science. Moreover, 81% didn't bridge educating with scientific research or consider it essential for a teaching career. Although 29% had

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some prior experience of participation in science only 19 % acknowledged academic researches as an instrument to gain more professional competency. The negative answer of 71 % to the question about their involvement into academic activities made us assume that writing term papers, graduation theses and reports were not viewed by the respondents as participation in science. The momentum to extend their efforts to academic activities was the environment requirements (19 %) and personal pursuit (10%). That identifies the gap between the perception of science and professional activity and the weak role of science in university instruction.

Hence a need to define the notion of science imprinted into the mind of novice teachers, their position and background in science arose as these could give the ground for integrating novice teachers into university academic community, reformulating their professional priorities and meeting governmental and social expectations.

The Figure 02 shows that 94% regarded scientific activities are represented by conducting a research, 84 % - by writing theses and scientific papers. Science as requirements for promotion of a teacher career is viewed by 60%. Around 20-30% respectively found science to be a good opportunity to become a member of professional community, a way to be updated, and resource to self-realization.

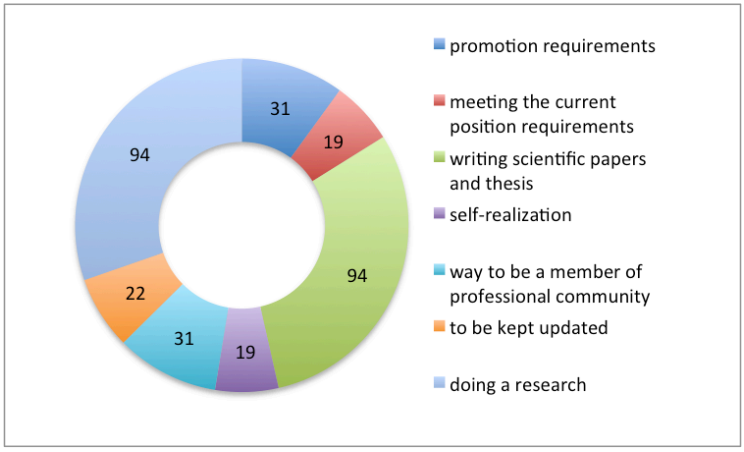

Figure 02. Perception of science by novice teachers (percentage)

On balance, the overall picture seems to be that novice teachers envisaged science as new knowledge producing instruments and media to communicate with academic environment as well as method to professionalize teaching.

Based on the idea that the past achievements can shape the behaviour patterns and affect the perception we ascertained the record of performance in science: papers on education 1, papers on linguistics – 9, conference presentations – 8. The detected low numbers of science product highlighted the necessity to specify factors increasing and decreasing scientific activity. Thus we organized the collected answers into 4 groups of factors:

1- concerning career development;
2- concerning teaching as a professional activity;
3- concerning science involvement;
4- concerning personal issues and motives.

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Table 01. Encouraging and discouraging factors

	Encouraging factors	Discouraging factors
Career	promotion –59% job security– 63% pay rewards –75%	career challenges – 53% unclear job prospects –63% first year career frustration – 63%
Profession	professional needs – 41% workload reduction – 47%	mismatch professional lifework – 50% work overload – 44%
Science	writing scientific papers and thesis – 25% joint research – 19%	lack of scientific skills – 38% no scientific advisor – 31%
Personal motives	my personal pursuit – 34% recognition – 31%	don't know what contribution I can make – 28% money input – 19%

As it is shown in the Table 01 novice teachers' career and professional factors are the most encouraging (59-75%) and simultaneously discouraging (53-63%) over personal and scientific respectively. However, scientific motives and personal issues take different priority in the novice teachers stimulating scale- personal motives facilitate science involvement whereas science-related hardship intimidate that. The pay reward was the most incentivizing factor (75%) in the contrast joint research could inspire only 19%. Meanwhile unclear job prospect along with first-year career frustration abash 63% of novice teachers and money input prevent 19% from science engagement. The problems of first year career frustration, inability to transmit theory into applied knowledge and unclear job prospects were brought into focus by respondents themselves.

The survey demonstrated that novice teachers are affected by various controversial factors that obstruct science facilitation and variety of factors proved the necessity of complex actions implemented by various participants of the novice teachers environment and served as impetus for the formation of the science immersion environment.

Sophisticated multidimensional SIE asserted influence over novice teachers by means of career promotion, participation in planned academic research, enriching professional competency, inner scientific drive, scientific advisory, scientific workshops and seminars, payment motivation. The basic advantage of SIE is to set the course and to create fertile ground for profound scientific investigation.

We measured the result of the 18 months impact through tracking the beginning teachers' scientific work: participation and presentations at conferences, paper writing, and participation in grant projects (Figure 03). Comparing their past achievements we can talk about the beneficial influence of the SIE. The positive influence of the environment made it possible to increase gradually the number of published papers from 17 made during the university training to 53 by 2016. It should be mentioned that those figures measured are the results of all 32 novice teachers as they preferred to work in teams thus the personal input is impossible to be calculated. The socio-science component in the form of conference presentation grew fivefold which evidences novice teachers' strive to merge into the academic and professional communities and represent the university on the national and international scale.

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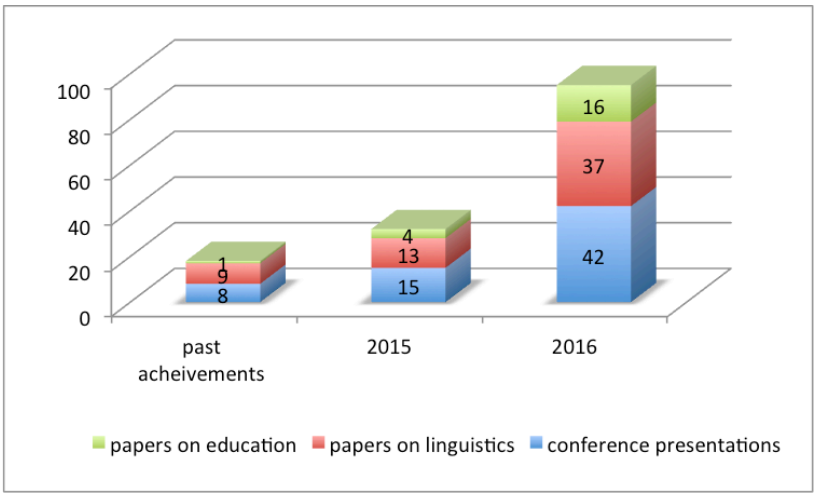

Figure 03. Scientific output in number of works

Consequently the second stage showed the gradual growth in science involvement of novice teachers that is regarded to be the efficient and productive functioning of SEI.

An increase in education-oriented papers illustrates the shift of science projection to researches grounded in the frameworks of practitioners and can contribute to the existing body of knowledge in the field of education. Since they acted as practitioners and studied issues relevant to their practical professional activities and achieved certain results, we can talk about increasing the competence of the beginning teachers and expanding their scientific potential. Along with that, authors observed positive approach to broadening scientific potential and professional lifework of novice teachers.

7. Conclusion

Science immersion environment positively correlates with the novice teachers expectations towards scientific researches and strong relationship with it could be certainly expected due to the positive tendency presented in the Findings. The novice teachers have developed professionally in a special context of their work environment under the constant exposure of SIE. The feedback from the novice teacher on functioning of the SIE revealed the equal value of all taken measures to enhance their involvement in science. They admitted SEI to be an effective tool and its great impact on establishing their way in scientific and professional community. Moreover, the commentaries from novice teachers would allow to better adjust SIE elements to their needs. Taking into account the change in paradigm in teacher training education we recommend to use the findings in designing the syllabus for students of Pedagogics and thus to install the connection between Higher education establishment and employers.

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References

Cochran-Smith, M., & Lytle, S. L. (Eds.). (1993). *Inside/outside: Teacher research and knowledge*. Teachers College Press.

Department of Education & Training (2005). Professional Learning in Effective Schools. The Seven Principles of Highly Effective Professional Learning published by Leadership and Teacher Development Branch Office of School Education Department of Education & Training, Melbourne, 2-6.

Elliott, J., & MacDonald, B. (1975). People in classrooms. *occasional paper*, (2). Norwich, UK: University of East Anglia, Center for Applied Research in Education.

Fullan, M. (1993). *Change Forces: Probing the depths of educational reform*, London: Falmer Press.

Fuller, F. & Brown, O. (1975). 'Becoming a Teacher' in Ryan, K. (Ed.), *Teacher Education: The Seventy-fourth Yearbook of the National Society for the Study of Education*. Chicago: University of Chicago Press, 25-52.

Galton, M. (2003). Integrating Theory and Practice: Teachers' Perspectives on Educational Research (*Homerton College)*.

Hargreaves, D. H. (1996). *Teaching as a research-based profession: possibilities and prospects* (p. 7). London: Teacher Training Agency.

Loughran, J. (2002). Teacher as researcher: The PAVOT project. *Learning from teacher research*, 3-18.

Nixon, J. (Ed.) (1981). *A teacher's guide to action research*. London: Grant McIntyre.

Rudduck, J. & Hopkins, D. (1985). *Research as a basis for teaching: Readings from the work of Lawrence Stenhouse*. London: Heinemann.

Sungatullina, D., Zalyaeva, O., Gorelova, Y. (2016). Teaching Career-Oriented Majors in the English Language: Challenges and Opportunities (Kazan Federal University case study). *The European Proceedings of Social & Behavioural Sciences EpSBS, Volume XII. IFTE 2016*. 396-403.

Zalyaeva, O., Solodkova, I. (2014). Teacher-student collaboration: Institute of economics and finance Kazan federal university approach. *ERPA international congress on education*, (152), 1039-1044.