Training Elementary School Teacher in Accordance with Professional Standard for Teachers

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Doi:10.5901/mjss.2015.v6n6s3p245

Abstract

The work describes a module in "Mathematics, IT and Natural Sciences" for bachelor's degree program in Education and Pedagogical Science (major fields of study: Psychological and Pedagogical Education). The basic research problem is characterized by the necessity to define the content and the form of elementary teacher training; training of a teacher able to correspond to the new requirements of the federal professional standards for elementary teachers and carry out necessary activities. The module content offers the model of such training. The module is an integrated unit; the content of theoretical disciplines is integrated in the practical session the students carry out at school. The work within the module results in the integrated educational outcomes. The module structure includes students' participating in scientific and research work (analytical and empirical) from their first term at the university. In order to implement a research and reflexive approach to educational outcomes the novelty of the module is supported by the innovative products (electronic portfolio and others) which the students use throughout the term. The content and the forms of control are worked out for all the disciplines of the module. There are the three levels corresponding to the presented educational outcomes (reproductive, productive, and constructive). The probation of the module took place in the network cooperation with general secondary, secondary professional and higher education institutions. The work presents monitoring of the outcomes – the competencies developed within the multi-stage concept of training.

Keywords: *modernization, education, professional standard, meta subject, approach.*

1. Introduction

The work on developing a module in Mathematics and Natural Sciences is closely connected with implementing the Program in modernization of pedagogical education in the Russian Federation – Project 1 "Strengthening practical orientation of training", Task 2 "Developing and probation of basic educational programs for an applied bachelor's degree in accordance with the new professional standard for teachers aimed at raising the level of practical training by means of network interaction of secondary professional and higher educational institutions".

This module includes such disciplines as Mathematics, Social Studies, Information Technology in Teacher's Professional Activity (invariant part of the curriculum) and ePortfolio in Developing and Assessing Educational Achievements (variable part of the curriculum). The variable part of the module may include Methods of Mathematical Statistics in Psychology and Pedagogical Science, Theory and Technology of Elementary Mathematics Education, and Multimedia Technologies in Education.

The requirements of the program in modernization of pedagogical education, the need in strengthening general methodological and cultural training of elementary teachers in Russia, the necessity to form the students' scientific worldview and the ability to understand the laws of nature make the module content urgent (Bolotov, 2014a; Bolotov, 2014b; Zabrodin, 2014 & Margolis, 2014).

2. Method

In accordance with the Federal state educational standard in elementary education (Federal state educational standard…, 2009 & On approval and implementation of the federal state educational standard…, 2009) modern elementary school should be aimed at reaching personal, subject and meta-subject results within the process of teaching the basic program. In these conditions a teacher should obtain new competences. A teacher should be prepared to organizing educational activity aimed at developing the basis of theoretical thinking which lays the grounds for meta-subject competences (V.V. Rubtsov, A.A. Margolis, V.A. Guruzhapov) (Rubtsov *et al*., 2010 & Guruzhapov, 2014). The basis of theoretical thinking and the general educational activities are formed in the process of organized teaching and learning activity. That is why teacher training may be described as two stages. The first stage is individual training when the trainee teacher studies subject and meta-subject tools and achieves personal results. The second stage is developing the skills and competences in forming the pupils' personal, meta-subject and subject outcomes within studying the basic program. The new approach to understanding educational outcomes defines the necessity of transforming to the activity-based paradigm in education (Guruzhapov, 2010a; Guruzhapov, 2010b; Davydov, 2000; Kasprzhak & Kalashnikov, 2014; Rubtsov, 2011; Peterson, 2007 & Continuing education…, 2005) using activity-based technologies in the process of teaching and learning (case-studies, problem-based learning, discussions, work in small groups, project work, brainstorming, etc...).

The development of the academic programs for the disciplines included in the module was carried out on the basis of the systematic activity-based approach and cultural and historical approach (Margolis, 2014a & Margolis, 2014b).

The following module objectives directly correlating with the activities set by the professional standard for teachers were discerned (On approval of the professional standard…, 2013; Professional standard of a teacher, 2014):

- formation of the students' logical thinking and communication ability;
- formation of the skills in organizing research (observation, finding regularities and proofs in separate and general cases);
- formation of the students' ICT skills;
- formation of the students' behavior skills applicable in virtual reality and social networks, formation of the students' tolerance and positive patterns of polycultural behavior;
- formation of the students' ICT competencies (ICT competence of a general user, ICT competence of a teacher, ICT competence of a subject teacher (professional ICT competence in the according professional activity)).

2.1 Modern state of the art

2.1.1 Competences of a teacher

Most scientists in Europe, US, Canada and other countries believe that the main problem of training elementary school teachers is the big gap between university education and practical work. Successful teacher training programs underestimate the importance of practical skills for pre-service teachers who need to know not only what to teach but also how to teach. Many authors see the solution of this problem in strengthening practical training pre-service teachers in undergraduate programs.

In recent years many countries (UK, Australia, Canada, US and other) adopted professional standards for teachers. In the US such standards exist in some of the states, in Canada there are the standards in the provinces. In Germany teacher training standards were approved in 2004, they are different in different federal states. These documents contain a list of professional knowledge, skills and competences that demonstrate the ability of the teacher to plan the process of teaching and learning, work with children with different needs within the system of inclusive education, use different teaching and evaluation methods, set interaction with colleagues and many other characteristic features of a qualified teacher.

In Australia there are four levels in the professional standards for teachers: university graduate, qualified teacher, highly qualified teacher and leading teacher. The document consists of seven standards which are divided into three areas – professional knowledge and skills; professional practical work and professional development. The standard was developed in 2011 and put into effect in the 2013–2014 academic year. This document is also used in New Zealand (Agbenyega, 2012).

Thus we can distinguish the following teachers' competences: interpersonal, pedagogical, expert in subject matter and teaching methods, organizational.

These requirements may be applied to all teachers. However there may be differences. The full text of the required competences can be found on www.lerarenweb.nl.

The standard for elementary school teachers in the Netherlands implies the following competences:

Interpersonal competence

An interpersonally competent teacher displays good leadership. He/she creates a friendly and cooperative atmosphere and stimulates and achieves open communication. He/she encourages the students' autonomy.

Pedagogical competence

A pedagogically competent teacher offers the students a safe learning- and working environment, where they find their hold and a structure for social, emotional and moral development.

Knowledge of subject matter & methodological competence

A methodologically competent teacher with a thorough knowledge of subject matter helps his/her students to acquire the necessary cultural baggage knowledge every citizen needs to function as a full member in our society.

Organizational competence

An organizationally competent teacher makes sure that his/her students can work in an orderly and task oriented environment.

Competence to cooperate with colleagues

A teacher who is competent in collaborating with his/her colleagues makes a contribution to a good pedagogical learning climate in the school, to a good mutual cooperation and to a good school organization.

Competence to cooperate with the school's working environment

A teacher who is competent in cooperating with people in his/her working environment realizes a good communication, involving the students' parents or guardians, as well as the companies or institutions the students have dealings with as part of their education or training.

He/she makes effective use of the school's professional network where the student's education, training or other concerns are at issue. He/she handles the contacts he/she keeps on behalf of the school with responsibility and care.

Competence for reflection and development

A teacher who is competent in terms of reflection and development gives regular thought to his/her professional views and competence. He/she keeps his/her professional practice up to date and improves it.

2.1.2 Interrelation of university theoretical training and practical sessions at school

D. Anagnostopoulos, E.R. Smith, K.G. Basmadjian from the University of Washington, Michigan State University and Fairfield University, US (Anagnostopoulos *et al*., 2010) believe that in the process of training pre-school teachers it is necessary to have close cooperation between schools and universities. Such an approach will help to avoid the gap between education at the university and practical work at school.

Kenneth Zeichner (University of Washington, US) (Zeichner, 2010) describes a new approach which became popular in the US when the university courses in training pre-school teachers are closely linked to practical work at schools. It is important not only for fundamental training of future teachers, but also for consolidating theoretical knowledge in practical work experience at school. Such approach implies the necessity of both fundamental and practical training.

R.C. Pianta, B.K. Hamre (University of Virginia, US) agree that regular monitoring of the teaching and learning process improves the quality of teacher training. Standardized monitoring includes the analysis of teacher-student interaction, analysis of the mistakes, identification of prospective students' achievements, suggestions on improving the work of a teacher to increase the learning outcomes. This is a prospective method athough it requires considerable research investments (Pianta & Hamre, 2009).

Scientists from the University of Johannesburg, South Africa S. Gravett N. Petersen and G. Petker (Gravett *et al*., 2007) studied the opinions of university teaching staff and students. This study shows that there is the need in strengthening practical component in teacher training, it demonstrates the urgency of close cooperation between the world of science and the world of practice.

A problem of close interrelation of science and practical work is considered in the work by E. Henning and S. Gravett (Henning & Gravett, 2011) (Center for Education Practice Research, University of Johannesburg). Such approach allows university and college graduates make the first steps in their practical work as teachers.

Great Britain has a centuries-old traditions in education, but a system of teacher training was formed only in the XXth century. Whithin implementing the principles described in the Bologna Declaration the UK managed to maintain the specific features of the national higher education system, in teacher training in particular.

The system of teacher training in the UK is constantly being reformed and improved. One of the innovations is professional standards for teachers developed by the Department for Education and Training and Development Agency for Schools (TDA) used in England since 1998. Over the decade these documents have been repeatedly revised (the latest version 2007).

In the UK continuing education is a common practice, it is focused on the employers' requirements. Unfortunately this approach limits teachers' professional development to social networks, professional associations, schools, universities, businesses, local communities, authorities, etc. This problem is disclosed in the work by D. Gleeson, J. Hughes, M. O'Leary and R. Smith (University of Wolverhampton, UK) (Gleeson *et al*., 2015).

Modern Swedish universities offer students a variety of organizational models in teacher training. Modular training programs and cyclic structure of curricula are widely spread for teacher training.

A new model of teacher training implies that universities carry theoretical training of teachers and practical training takes place at schools (Stronge, 2013).

Study of theoretical training of pre-service teachers was carried out at the Gothenburg University and Kristianstad University, Sweden by G. Brante , Olander M. Holmqvist, P.-O. Holmquist and M. Palla (Brante *et al*., 2014).

Recently in Australia much attention is given to theoretical training of pre-servicem teachers, to the process of transfer of theoretical knowledge into practice. The work by J. Agbenyega (Monash University, Australia) contains recommendations on how to improve the practical sessions of pre-service teachers (Agbenyega, 2012).

2.2 Innovative character of the module

Innovative character of the module is displayed in applying the activity-based approach; orientation on the new professional and educational standards; students' involvement in research work from the first term as the necessary part of the disciplines. Analytical and empirical research work is part of the students' practical course. In the process of study students' academic knowledge is employed within their practical work at school. There is the transition from the disciplinary approach toward integrative approach. Within the integrative approach a module is regarded as one unit, the content of theoretical disciplines is displayed on the example of practical work at school; integrated educational outcomes are presented as module outcomes.

The novelty of the module comprises innovative products which are developed and used by the students (realization of the scientific and reflexive approach towards educational outcomes) within the term. One of the outcomes is an ePortfolio which the students start at the beginning of the first term within the course in ePortfolio in Developing and Assessing Educational Outcomes. ePortfolios are used within the whole period of study. The novelty includes the changeable module structure, the opportunity to construct the theoretical part of the module individually and present the results of practical and research work carried out within the module. The students' portfolio presents the results of educational, scientific and social activities of the students within the whole period of study and helps in planning individual educational and scientific trajectory.

Network interaction with secondary schools, secondary professional and higher educational institutions of Krasnoyarsk takes place within the module.

Network interaction is realized by means of using educational resources:

- electronic library system of SibFU (access to learning and methodological materials in Mathematics, Information Technologies in Teacher's Professional Activity, ePortfolio in Developing and Assessing Educational Outcomes);
- elearning systems of SibFU (http://e.sfu-kras.ru/) on the basis of LMS Moodle (electronic courses in ePortfolio in Developing and Assessing Educational Outcomes, Information Technologies in Teacher's Professional Activity);
- interaction with schools and pedagogical colleges in organizing and holding projects, events, regional Olympiads in Mathematics and IT, conferences (including virtual conferences), holding webinars and consultations (e.g. on creating an ePortfolio at the web-site of the Institute of Education, Psychology and Sociology, SibFU)).

The specific feature of the module is its practical character. The module contains such practical assignments as laboratory works and practical studies the students carry out while studying the module disciplines. Active methods of teaching and interactive lectures are used extensively within the module.

Lecture materials, test materials and self-study materials are presented in the university elearning system which gives a student more opportunities to study the material independently; and supplies a teacher with more instruments to set instructional discipline by using control tools. The elearning system may be used for feedback and communication

both with students and colleagues.

Developing the skills obtained within the work at the module disciplines continues through the period of practical session when the students carry out the tasks set by the teaching staff. The students enrich their *personal electronic portfolios*. Electronic portfolio is used as an assessment and self-assessment tool for evaluating educational outcomes; and as a professional development tool.

2.3 The outcomes of the module

The module curriculum is aimed at satisfying the requirements set by the professional standard for teachers (Professional standard for teachers, 2014), requirements set in the Federal state educational standard 3+ in psychological and pedagogical education (elementary teacher) (Federal state educational standard…, 2013) and Federal state educational standard in general elementary education (Federal state educational standard…, 2009 & On approval and implementation of the federal state educational standard…, 2009).

Table 1 presents correlation between educational outcomes (professional activities in accordance with the professional standard for teachers) and the types of activities carried out by the students while studying the disciplines of the module.

Table 1. Educational outcomes and types of activities carried out by the students in the process of studying the disciplines of the module.

Educational outcomes (work)	Types of activities	Module content
W.1.8. Formation of the ICT skills. "Professional standard for teachers", 3.1.1. General pedagogical function. Training.	– Observation, – analysis, – reflexion, – using ICT	Information Technology in Teacher's Professional Activity, ePortfolio in Developing and Assessing Educational Achievements
W.3.10. Working out and realization of the programs in developing general teaching and learning activities, templates and values of social behavior, behavior skills in virtual reality and social networks. "Professional standard for teachers", 3.1.3. Developmental activity	– Observation, – carrying out micro research	Mathematics, Social Studies
W.4.1. Developing logical thinking and communication ability. "Professional standard for teachers", 3.2.4. Module "Subject Training. Mathematics"	– Observation, – analysis, – reasoning, – carrying out micro research	Mathematics

On completion of the module a student will be able to *demonstrate*:

- thinking and communication skills (credit requirements include completion of the credit task);
- skills in carrying out a micro research within the disciplines of the module, and organizing elementary pupils to carry out research work (materials revealing the pupils' participation in the micro research), references and media materials proving the student's participation in organizing the pupils' micro research;
- the ICT skills (creating, taking part in and writing blogs, creating wikis and web-sites);
- behavior skills applicable in a virtual reality and social networks, developing tolerance and positive patterns of polycultural behavior (distance group projects, blogs, web-sites, wikis, ePortfolio, and web 2.0 technologies);
- skills to employ modern psychological and pedagogical technologies based on the laws of personal development and rules of behavior in real and virtual environment (social networks and blogs);
- ICT competences: general user competence, general pedagogical competence, subject based ICT competence connected with professional ICT competence (documents worked out in different program environments).

The disciplines of the module are interconnected by the cross-cutting content issues:

- methodological (realized by means of different stages of the scientific method (observation, measuring, setting questions, working out a hypothesis, solving problems in accordance with the given models, planning and carrying out experiments));
- information (search, selection, processing information, preparing to create a multimedia educational environment, preparing a self-presentation, project tasks which include presentation and discussion);
- applied (performing the tasks aimed at strengthening the received knowledge, preparation for competitions, organizing teacher training in two stages, construction of new educational paradigms).

The disciplines of the module are interrelated by means of the content with the disciplines from the other modules within the basic bachelor's degree curriculum in Psychological and Pedagogical Education (Elementary teacher). The module we describe lays the ground for these other modules and simplifies further training.

2.4 A course in Mathematics

A course in Mathematics gives experience and methodological grounds to understanding modern innovative approaches toward education on the example of teaching Mathematics. The course is connected with such disciplines as Theory and Methods of Teaching Mathematics; General Teaching and Learning Activities in Mathematics.

In teaching Mathematics reflexive and analytical approach is used (e.g. define the means for solving the problem – for a student; and organize this work – for a teacher). It implies organization of self study lessons when the students are offered a set of the research topics to choose and carry out a micro research to develop activity-based approach in education. The received experience may help students in writing course papers and final projects.

Every student's research experience is assessed by the teacher, the teacher provides consultancy support when it is required, individual or within the academic sessions; the students also study "perfect works". There are two assessment systems: traditional one ("credit") and multi-level system. The levels are "reproductive", "productive" and "constructive"; they are discussed with students and demonstrated on the example of small research works in a specific discipline (Mathematics).

Thus, the student has the opportunity to focus not only on formal assessment, but also on the assessment of the content (level); students having received a formal satisfactory assessment have the opportunity to deepen their research and make it more specific. In addition, each student is required to submit two analytical reports on the two micro research works (in the electronic form), the students also complete reflective reports concerning their activity within the micro research works. A reflective report allows reconstructing the level the student had at the beginning of the university training.

The typical statements are: "I chose this task because I found it more interesting and less complex"; "Initially the task was a" brain explosion" because it was not easy to assess how difficult it is"; "The problem was how to describe correctly the process of finding the decision"; "After reflection I realized that I need to learn to transform the logical problem from images into figures, compose formulae and structure information"; "It was necessary to stop doing a lot of unnecessary work…; then we felt glad and proud we did what at a first glance seemed difficult".

2.5 A course in Social Studies introduces

A course in Social Studies introduces the students to logics and history of theoretical ideas about the laws of nature and which way people use the laws of nature in their practical work. For future elementary teachers it is important to be aware of modern scientific approach to understanding society and non-empirical constructs for studying objective reality. This course is connected with such disciplines as Philosophy, Methods of Teaching Natural Science (The World Around Us) in Elementary School, Developing Personal Qualities and Meta Subject Abilities in Elementary School.

A course in Social Studies is aimed at 1) working out experience in quasi-research work, in solving training problems; and 2) forming a general understanding of the principles according to which a scientific research is organized, and the methods of scientific knowledge construction.

In terms of content the aim of the course is to study the origin and evolution of the most important concepts of natural science, the history of scientific research methods and a scientific method formation. It also traces the relationship of different fields of natural science, the most important scientific achievements of the XX century and scientific challenges.

The objectives of the discipline are:

1. Developing the students' system-based understanding of the interaction between theoretic and empirical knowledge.
2. Introduction into logics and the history of scientific (physical in the first place) notions. Introduction into theoretical description of the world around us.
3. Constructing system-based understanding of a scientific research as a cyclic process including systematization of results of the empirical research and observation, making hypotheses on the mechanisms of the researched subjects, verifying hypotheses, presenting and modification of theories and natural laws as the highest level of a scientific research.
4. Developing the skills in setting a research problem, carrying out the research of simple physical objects and

describe the process and the results of the research.

The expected outcomes of the discipline:

- The skills in logical thinking and communication, understanding of the important role of this ability and its value.
- The skills in organizing the research cycle – observation, disclosing regularities, making a hypothesis, experimental work.
- Fundamental understanding of the world structure and the ability to use this understanding in discerning particular natural scientific problems.
- Assessment of educational outcomes is carried out in the form of defending the students' reports on the chosen topic.

The basic educational outcome of the disciplines such as Mathematics, Social Studies is acquiring competences (of different levels) in carrying out observation and doing a micro research.

2.6 A course in Information Technologies in Teacher's Professional Activity

At present the efficient use of the entire spectrum of available information and communication technologies is taking the leading position in the system of professional competences of a teacher. The course realizes interdisciplinary approach to humanitarian disciplines of students' fundamental training. It creates conditions for strengthening the courses in ePortfolio in Developing and Assessing Educational Outcomes and Multimedia Technologies in Education.

The goals of the course in Information Technologies in Teacher's Professional Activity are:

1) teaching the basic methods and tools of using modern IT for scientific and research work and teaching and learning activity;
2) formation of professional responsibility of a teacher-to-be for using ICT tools in the professional activity.

The course is devoted to methodological foundations of informatization in education and the problems of implementing particular information technologies in everyday scientific and pedagogical practical work.

The course is focused on the modern trends in developing electronic learning environments (LMS, CLE) and allows understanding and discussing issues of how the students' information and communicative competences are formed and professional thinking is developed.

A course in Information Technology in Teacher's Professional Activity allows the students to obtain and demonstrate such outcomes as:

- Giving definitions to the basic terms, studying the components and functions of information school learning environment.
- Selecting and using the necessary types of educational materials.
- Using information technology tools for professional communications, information management, self-education.
- Selecting appropriate ways of presenting educational materials by means of information technology.
- Using social media services when creating personalized teaching and learning environment.

The course has a structured block of students' independent work which includes follow-up, motivating and creative problem-oriented tasks for independent work. Students' independent work is aimed at deepening the student's knowledge. It includes:

- work with the lecture material, search and review of the literature and electronic sources of information on a given topic within the course structure,
- homework,
- working out materials for seminars,
- preparing materials for tests, colloquiums, exam.

Creative independent work may include the following types of tasks devoted to the basic course topics:

- search, analysis, structuring and presentation of information;
- implementing a project, work at an interdisciplinary projects;
- research work and participation in student research conferences, seminars;
- analysis of scientific publications on the topic specified by the teacher;
- analysis of statistical and empirical data on a given topic, carrying out calculations, preparing schemes and models on the bases of statistical data.

To assess the quality of educational outcomes of the discipline there are the following test materials (assessment tools): questions for assessing the initial level; control questions for practical sessions; questions for self-control; test questions; exam questions, etc.

In teaching the course the following assessment tools are used:

1. Aural forms (survey; general questioning; individual questioning; conversation; mutual interviewing; public speaking, debates; interviewing).
2. Written forms (short-term (dictation); solving professional problems; testing; essay writing; supportive notes; tasks based on situations).
3. Practical (work with handouts; work with equipment (netbooks, digital laboratories PROClass, testing system PROLog, digital microscope, camera, projector, etc.), training and pedagogical practical sessions).
4. Complex (theoretical generalization; educational projects; research projects; portfolio; self-control sheets).

2.7 A course in ePortfolio in Developing and Assessing Educational Outcomes

A course in ePortfolio in Developing and Assessing Educational Outcomes was included in the variable part of the curriculum. Notwithstanding this fact it is significant both in terms of technology as students study the tool – the ePortfolio technology – which will be used within the whole period of university education; and in terms of methodology since it forms an understanding of the digital identity in the virtual environment and affects information security issues, evaluation and self-evaluation methodology. Involving the students in studying the advanced methods of assessing individual progress motivates elementary school trainee teachers to understand and study modern concepts of open education in a multicultural environment, it allows perceiving e-learning as a modern context for modernization of education.

The content of the discipline is connected with a course in Information Technology in Teacher's Professional Activity from the module devoted to Natural Sciences and with the disciplines represented in the following modules of the basic educational curriculum such as Methods of Assessing Students' Outcomes, Modern Educational Technology in Elementary School, Teacher's Professional Development Planning, Developing Pupils' Personal Characteristics and Metadiscipline Skills, Multimedia Technologies in Education.

The objectives of the discipline:

1. Formation of knowledge about the opportunities of ePortfolio for developing and assessing educational achievements, the specifics characteristics of ePortfolio design in different software environments, methods of presentation by means of ePortfolio, different software to create ePortfolios, modern methods of assessing individual progress of a student.
2. Formation of skills in developing individual pupil's ePortfolios and teachers' professional ePortfolios, in structuring ePortfolio for assessing pupils' individual achievements, in presenting the achievements and systematization of materials presented in the ePortfolio.
3. Developing the skills in creating ePortfolio in the open source environments (MAHARA); using modern software for designing ePortfolio materials.

While studying the course the students get involved in analyzing the existing teachers' and students' ePortfolios, articulate their own project ideas on the structure of ePortfolio for various educational purposes.

The discipline involves interactive methods of teaching which concentrate on the activities, high level of motivation, depth of the knowledge, communication skills, ability to work in a team, and the development of individuality.

In the course of studying the discipline students complete a large number of tasks independently; these tasks are aimed at making the process of teaching and learning more individual and develop creative activity of the elementary school trainee teacher.

The content of the course in ePortfolio in Developing and Assessing Educational Outcomes contributes to the formation of the students' knowledge, skills and competences helping to realize elementary education programs developed in accordance with the Federal state educational standard in elementary education. The course teaches the students to design their own individual lifelong learning trajectories; develop educational projects; consider career planning and promotes inclusion in the social electronic environment.

An ePortfolio created by a 1st year student is updated and used by the student during the entire period of study (for recording and assessing educational outcomes; presenting achievements and various activities within practical sessions, pedagogical and research experimental work; performing final qualifying works, for planning further education and career).

The success of the bachelor's program student in studying a course is measured by assessing current outcomes and final assessment – defending a personal ePortfolio (credit).

Current work includes laboratory studies (developing ePortfolios in different software environments and working out ePortfolio materials, designing an elementary pupil's ePortfolio for realizing a pupil's individual educational trajectory and reflecting his/her creative potential, etc.); students' independent work (doing assignments and tests implemented in

the SibFU e-learning system).

Independent students' work include tests in the SibFU e-learning system, work on their personal ePortfolios, teacher's and pupil's ePortfolios, essays "Why did I chose this field of study", "E-portfolio in my future professional activity", and creating reflective materials. Presenting the results of the students' independent work takes place in class with the help of presentation equipment. Every kind of work is evaluated according to the certain criteria.

2.8 The interdisciplinary character of the module

The interdisciplinary character of the module and interrelation with the other disciplines of the other modules may be revealed on the example of a course in a Foreign Language (a module devoted to Humanitarian and Economic disciplines).

A course in a Foreign Language allows students meeting modern requirements of the labor market. Students study to use a foreign language for educational, scientific and professional purposes.

The goal of the course is developing skills in intercultural communication for professional purposes.

Among the objectives there are:

- Developing skills in auditing, reading, writing and speaking.
- Using a foreign language as a means of intercultural communication for everyday, business and professional communication.
- Studying cultural specific features, reading authentic texts, developing skills in logical thinking and making conclusion on the material of foreign and native languages.

A course consists of in-class lessons and independent work. Independent work comprises nearly 60% of the student workload and includes reading and summarizing texts, making topical dictionaries, schemes, exercises, preparing reports, writing essays and making presentations. Students in their independent work use a course book and other sources of information including network resources. The students employ the skills they get within a course in Information Technology in Teacher's Professional Activity.

Topics for student essays are: "Introducing yourself", "The way we live – my home town, city or village", "My future profession. What do you want to do?", "Everyday life – having a lot to do", "My university", "Education". While writing the essays the students carry out reflexive work on their background, strengths and weaknesses, university study and plans for future: they employ the skills they get within a course in ePortfolio in Developing and Assessing Educational Outcomes.

A course in a Foreign Language employs ePortfolios for organizing and structuring independents students' work and for organizing reflexive activity. The students place their works in their ePortfolios, a teacher gives feedback, then correction work is done by the student in case of necessity. ePortfolios are used for feedback, interaction and for storing the artifacts. The works placed in the students' ePortfolios are part of the current, intermediate and final assessment. An ePortfolio is used for students' assessment and self assessment.

A course finishes with an examination. While preparing for an examination the students get ready to discuss the following statements and questions:

- Common life problems – how do I cope with them?
- My future – how do I see it?
- Tell about one very important event in your life.
- Why did you choose pedagogical profession?
- What peculiar features does the educational system in Russia have?

While analyzing the educational outcomes of the course in a Foreign Language the students learn to operate with English scientific terms, description of the academic process at the university and a practical course at school involves a research the students do and lays the ground for Business English and English for Specific Purposes. Here a course in a Foreign Language approaches Social Studies.

2.9 The Intermediate (current) and final assessment

The basis of the intermediate (current) and final assessment lays quantitative assessment system (calculated in points) and the system assessing the level of the students' competences. A systematic monitoring of the current students' work and monitoring of the students' activities are carried out.

The reflective materials presented in the ePortfolios in the beginning of the module allow reconstructing the original level and the expected learning outcomes of the module. These are some examples of statements: "When I was at

school I had a paper portfolio for documents. There I kept my certificates and diplomas. Now I know that it is possible to transform these documents in the digital form and store them all in the "electronic portfolio", which is very convenient. I did not know kinds and types of portfolio before, I did not know much. This is a new subject to me", "At school we worked with other programs, here at the university we are working with the SibFU platform, we study what we will be working with in future, both teachers and pupils, and we definitely need to figure it out. My knowledge in IT was useful, but I learned a lot about software", "My knowledge after graduation from school was not enough to study at the university. School gave me general knowledge, and at the university I get systematic knowledge connected with my profession. I have learned to analyze my actions and reflect about my work", "After entering the university I had to study some subjects from the very beginning as they were not part of the school program. For example, we did not study ePortfolio in Developing and Assessing Educational Outcomes", "After entering the university we started to learn how to think rather than follow a specific algorithm. That was strange and new. There are new disciplines such as IT in Teacher's Professional Activity and ePortfolio in Developing and Assessing Educational Outcomes. They simplify interaction with teachers, help us to study independently and check the tasks".

3. Results

The two activities (in accordance with the professional standard for teachers) were chosen as integrated educational outcomes of the module:

1. Formation of the skills related to information and communication technologies.
2. Working out and implementing training programs aimed at development of general educational actions, patterns and values of social behavior, behavior skills in virtual reality and social networks.

To our opinion the formation of the first mentioned above outcome occurs in studying a course in Information Technology in Teacher's Professional Activity and ePortfolio in Developing and Assessing Educational Outcomes.

Formation of the second outcome results from a course in Mathematics and Social Studies.

After generalizing the content of the curriculum in Information Technology in Teacher's Professional Activity and ePortfolio in Developing and Assessing Educational Outcomes we discerned the following levels of the declared outcomes:

Reproductive level. Possession of common methods to create, edit, save, copy and transfer information in the electronic form, common methods of searching information in the Internet. The students apply a pattern they know and easily get lost in an unfamiliar situation. This level is characterized by inability of students to select the necessary Internet resources to create their own products. When creating a new product (for example, a template structure for elementary pupil's ePortfolio) by means of ICT tools no more than one software environment is used. The students need teachers' help to create their products.

Productive level is characterized by the ability of students to create new information products. Students can choose Internet resources necessary to create new products. When creating their own products the students use multiple software environments (the product contains a sufficient number of elements worked out in different software). The teacher does not interfere in the process of creating a new product and acts as a consultant.

Constructive level is characterized by confident use of ICT and rapid studying of the new program environments. Students are able to create products and employ them in the educational process using a variety of software environments. The students are able to justify the structure sections as well as provide support on the application of these products.

After generalizing the content of the curriculum in Mathematics and Social Studies we discerned the following levels of the declared outcomes:

On the reproductive level a student presents the analysis of separate cases, articulates the basic assumption/hypothesis, registers the difficulty while proving his point of view.

The productive level presents a proof of the hypothesis in general, the analysis of difficulties and means to overcome these difficulties.

On the constructive level a student offers a further research by means of solving a similar problem.

Monitoring the students' level of competences and learning outcomes within this module was carried out in the form of a quest. The evaluation of the works presented in the ePortfolios and students' materials developed in the SibFU e-learning system (Figure 1) was also carried out.

Thus the modular design of the program allows monitoring the students' learning activities and educational outcomes, key competences development by means of a set of control and assessment activities employing various forms of control for current, intermediate and final control.

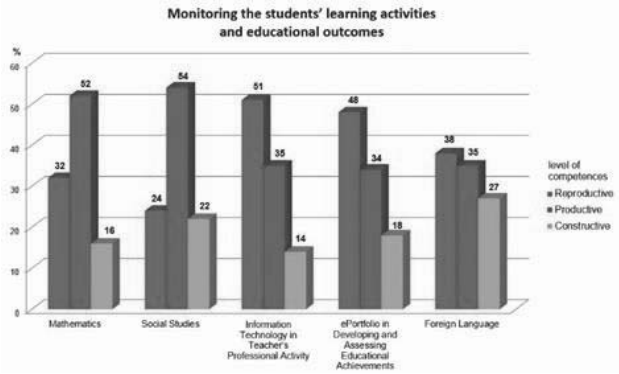

Figure 1 – Monitoring results (level of competences)

4. Discussion

Realization of the curriculum within this module supports the role of practical training in learning and changes the structure and content of practical training; it increases the number of undergraduate students considering teaching prospective in terms of career development.

Labor activities acquired within this module are the basis for subsequent labor activities of the next modules:

- Formation of general educational activities.
- Assessing students' educational outcomes, subject and metasubject competences on the basis of ePortfolio method.
- Managing groups of pupils, motivating them for learning and cognitive activity (networking, ePortfolio).
- Constructing a lesson including the use of ICT.
- Formation of rich information educational environment to support the children's development; the environment corresponding to the principles of mental activity education.
- Using information resources in working with children including distance resources and distance education; helping children to study and use such resources independently.

At this stage the students start preparing to enter a higher education program in Psychological and Pedagogical Education (Elementary teacher, MA) which is aimed at preparing the students for the following job functions:

- management of innovative educational programs;
- complex assessment and monitoring;
- tutor supervision;
- ability to support pupils' participation in competitions, research projects, intellectual marathons and student conferences.

These skills and knowledge are described in the professional standard for teachers (Professional standard for teachers, 2014). The authors highlighted them as landmarks for planning educational outcomes of students – the landmarks which should be reached upon completion of the module.

The developed materials can be used by higher educational teacher training institutions which, like the Institute of Education, Psychology and Sociology of SibFU, have a long experience in networking with teacher training colleges of the region both in the framework of federal experimental projects and in the joint innovative and research projects aimed at the development of human resources of the Krasnoyarsk Territory.

5. Conclusion

The project in training elementary teachers in accordance with the professional standard for teachers and the new Federal state educational standard in higher education (area of specialization "Teacher Education") is going on. During the second term the students study a module devoted to Theoretical and Experimental Grounds of Psychological and Pedagogical Activity and a module devoted to Child Developmental Psychology and Pedagogy.

Student's work within the modules is aimed at developing the competences and labor activities necessary for

future teachers – as it was planned by the developers of the modules. From the point of view of the authors the successful implementation of the third and fourth modules and reaching the educational outcomes becomes possible on the basis of the previous experience – implementing the first module in Mathematics and Natural Sciences, and after considering the errors and difficulties which might happen. The authors believe that special attention should be given to organizing students; practical sessions at schools, especially to building cooperation between school tutors and university supervisors.

It is necessary that school tutors receive continuous methodological support from university supervisors. For this purpose before the beginning of a practical session at school the university held a two-day workshop for school teachers (tutors). The workshop was devoted to the goals and objectives of the students' practical session. The school tutors were informed about the tasks the students were supposed to accomplish within this period of study. School tutors received guidelines and clear instructions about what kind of specific activities does the student practical work include and what support do the students need when they are at school within the whole period of the practical session. The university organized professional development courses for school teachers offering the tutors methodological support within the whole period of the practical session.

6. Acknowledgement

The study was supported by the State contract for execution of works (provision of services), Call # 2014-04.03-05-043-F-132.054. Project name "Supporting practical training in Elementary teacher training programs (bachelor's degree), area of specialization "Education and Pedagogy", program "Psychological and pedagogical education" (elementary teacher) on the bases of network interaction of educational institutions offering programs of higher education and secondary professional educational institutions".

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