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Abstract. *Scientific research activity (SRA) of the future nature subject teachers during university studies is a significant their professionality / skilfulness component. Teacher research activity at school and education quality improvement are directly related. On the other hand, teacher as a researcher (research) competence is formed not only during studies at university or performing pedagogical practices, but also during continual professional improvement activities, as for example, reflexive research. It is obvious, that learners' scientific research activity is one of the main activity directions in natural science education process. Such activity effectiveness, and also natural science education quality for the most part guarantees properly prepared teacher. A qualitative research was performed, in which 84 two Lithuanian university bachelor and master study programme students participated. The main research aim is to analyse SRA significance to teacher profession, contribution to professional readiness, and also to evaluate study process favourableness to scientist (researcher) career choice and personal student readiness for SRA. Data analysis was carried out applying content analysis method. It has been stated, that the biggest part of respondents relate SRA with professional improvement, and essential such activity contribution is professional readiness improvement (knowledge acquisition, experience and competence development). It has been fixed, that study process is partly favourable, however unsuitable conditions, teachers' lack of interest and unfocused orientation to career hinder its improvement. Regardless of the fact that 50 % of research participants evaluated their personal readiness to participate in SRA as improper, still the attitude to researcher career remains positive.*

Key words: *qualitative research, scientific research activity (SRA), teacher education, university students.*

Vincentas Lamanauskas,
Dalia Augienė
Šiauliai University, Lithuania

SCIENTIFIC RESEARCH ACTIVITY OF STUDENTS PRE-SERVICE TEACHERS OF SCIENCES AT UNIVERSITY: SIGNIFICANCE, READINESS, EFFECTIVENESS AND CAREER ASPECTS

Vincentas Lamanauskas,
Dalia Augienė

Introduction

World practice shows that studies at university are grounded on science, by them it is sought to prepare an educated man, compatible with the present world demands. Universities are not oriented only to concrete specialist preparation. In a wider context, a very important is university scientific activity, its level and society and economy demand conformity, contribution to the society and state development, preparation of educated, far-seeing people for active work.

University as the most important higher education institution, developing scientific cognition of various spheres, creating innovations, carrying out high level scientific research and experimental development trends, preparing scientists and carrying out the highest level university studies grounded on scientific research, has all possibilities to provide education and special (also including scientific research) competences, conforming to the present and future society and economy demands.

Scientific research activity at university is an inseparable study process part. From the didactic point of view such activity is one of the most effective ways to increase cognitive activeness of the learners. Scientific research activity increases the intellectual student's potential, expands his creative power. It is not less important, that in the process of such an activity social-communicative abilities and skills develop. It is very important to deepen students' scientific knowledge, educate their critical thinking, encourage students' scientific research work and active scientific section work. In this way not only proper professional readiness is guaranteed, however constructive

attitude to further person's professional self-determination as well, e.g., to choose scientist's career. As it is stated in the document "A contribution to the Horizont 2020 Mid-term Review" (2016) university future is related with their scientific activity development and achievements. Therefore, it is very important for the students to actively participate in SRA, to acquire this activity basics and part of them would enlarge the scientists' ranks. University scientists have to do this for them during lectures, seminars, discussions, practical tasks, encouraging students to participate in students' scientific societies, together with the scientists to perform the research. Scientist's work requires scientific creativity and talented, creative personalities, because, in order to understand or reveal reality, one needs to be able to predict it and imagine.

However, not only scientist's career aspect is important here. Teaching obviously is and should be research-based profession. As K. Taber (2010) notices, teachers have to be capable of undertaking small-scale classroom research to address professional issues and problems that arise in their work. Teacher is not omniscient. Teacher has to be open, curious, not afraid to be wrong and seeking new knowledge. After all, he/she is continually learning himself. Teacher as researcher competence actualisation has been very important recently. Teacher researcher not only allows students to investigate / explore, do various experiments, but also forms necessary conditions to discover new things. It is obvious, that teaching/learning process is inseparable from research. As researchers notice, teachers with the research skills to share and critique their practice become key collaborative professionals in the change processes within school communities (Gray, Campbell-Evans, 2002). It is known, that research activity is diverse, therefore it is not easy to define what abilities reveal teacher as researcher competence. However, it is obvious, that this competence is one of the essential teacher's as professional conception elements (Beattie, 1997), very significant in the future teacher preparation process (Goodlad, 1999). Thus, university study role in this respect is crucial. In university educational practice teacher researcher competence forms in two levels: theoretical – carrying out the study process and practical – when future teachers perform pedagogical internship in educational institutions. Therefore, study process and especially content should be favourable for the teacher researcher competence formation. Contemporary teacher's professional readiness requires special attention, educating his general cultural intellect, educational skilfulness (Galkienė, 2011).

Thus, "teacher researcher" is a synonym for "teacher professional" (Fueyo, Koorland, 1997), and research abilities are critically important within teacher education and the teaching profession (Hine, 2013). Scientific research activity becomes also teacher's educational practice realia, which allows analysing concrete teaching/learning situations, making assumptions to consider about your actions, pedagogical interaction with learners, and allows to be convicted in the applied new teaching method effectiveness.

The research object is scientific research activity conducted by the students pre-service teachers of sciences at the university. The research aim is to analyse SRA importance to teacher's profession and contribution to professional readiness, to evaluate student personal readiness for this activity and study process favourableness to scientist career choice.

Research Methodology

General Characteristics of Research

The research was carried out between January and February 2016, i.e. at the beginning of the second term of studies. The research is based on the attitude that student opinion and the assessed research play an important role due to the fact that they allow establishing urgent problems and clarifying the already known ones. Referring to the analysis of the proposals made by the students, the ways of finding a solution to the problem and the assessment of the possible consequences should be suggested. Investigation into opinions is an effective means seeking to initiate changes, in this case, to improve scientific research activity of the students pre-service teachers of sciences. This examination is based on the previously conducted expert research (Lamanauskas, Augienė, 2014; Lamanauskas, Augienė, 2015). The research results related with the aspects of understanding, situation and improvement, have already been published (Lamanauskas, Augienė, 2017).

Research Instrument

The questionnaire (answer sheet) prepared by the authors was used in the research and included 10 major open questions/tasks.

- How do you understand scientific research activity of the students at university? Comment
- Are you interested in scientific research activity? Comment
- What do you think mostly hinders the students to involve (participate) in scientific research activity at university?
- What do you think mostly encourages/motivates students to involve (participate) in scientific research activity at university?
- What importance do you think scientific research activity has for teacher's profession?
- Do you think the study process at university is favourable and promotes to choose scientist (researcher) career in future?
- Please comment how scientific research activity contributes to your professional readiness?
- Comment about your personal preparation to take part in scientific research activity?
- Would you like to have a researcher (scientist) job in future?
- How would you recommend to improve study process, seeking to strengthen/make more effective students' scientific research activity?

The questions cover the basic parameters of scientific research activity such as awareness, interest, interfering and motivating factors, importance to the teacher's profession, a personal level of training, professional readiness, researcher career, recommendations, etc. The results, obtained on the basis of 5-10 questions, are presented in this article.

Research Sample

Fourth year BA students pre-service teachers of sciences and some master students from two Lithuanian universities – Siauliai University (38 students) and Lithuanian University of Educational Sciences (46 students) participated in the research. In total, 84 students took part in the research (10 of them male students). The above mentioned universities are the main institutions, training science teachers in Lithuania. According to the study programmes, the respondents were divided into six groups (Table 1).

Table 1. Distribution of respondents (N).

Study programme	N
Geography	20
Biology	18
Chemistry	8
Health education	12
Kinesiotherapy	12
Bio-education	14

For the formation of sample, non - probability purposive research group formation method was chosen, when the people included in a research group are the most typical in respect to the researched quality. Referring to Morse (1994), the sample of 30-50 participants is suitable for such kind of research. On the other hand, basically, there are no strict and specific rules forming the sample for qualitative research. Qualitative sample size may best be determined by the time allotted, resources available, and study objectives (Patton, 1990). Forming the mentioned sample, it was taken into consideration that the respondents are the fourth (final) year bachelor's degree students. The attitude that such sample is sufficiently representative in a qualitative research is maintained.

Data Analysis

Research data were expressed in writing. The obtained respondents' answers were coded. The most frequently repeating semantic units were grouped until the initial groups called sub-categories appeared. In the second stage the sub-categories were combined into categories. The qualitative research data were processed using content analysis, when in the informative array essential characteristics are distinguished. The obtained verbal data array, referring to conventional *content* analysis methods, was analysed in three stages:

- multiple answer reading;
- semantically related answers and "keywords" are sought;
- semantic unit interpretations.

Content analysis method distributes the research material according to categories and is suitable for sensitive phenomena analysis. The advantage of this method is a big size of data basis, used confirmative statements. The grouped categories are the result of the researched phenomenon. (Elo, Kyngas, 2008).

In order to guarantee data analysis reliability, semantic unit distinction and later on grouping was carried out independently by two researchers. In the later stage, the researchers were looking for a consensus due to sub-category attaching to categories. The coordination degree was higher than 85%.

Research Results

Having analysed the respondents' positions about scientific research activity significance to teacher's profession, three categories were distinguished (Table 2).

Table 2. Scientific research activity significance to teacher profession.

Categories	N (%)	Subcategories	N (%)	Statements	N (%)
Professional improvement	56 (66.8)	Competence development	37 (44.0)	Knowledge extension, deepening	15 (17.8)
				Conditions are formed for improvement	14 (16.6)
				Teacher competences develop	8 (9.6)
		Applicable research performance	8 (9.6)	Teacher researcher competence is developed	5 (6.0)
				Conditions are formed to ascertain various problems, to find solution ways	2 (2.4)
				It would increase at a school level performed research quality	1 (1.2)
		Experience accumulation	6 (7.2)	A lot of experience is acquired	5 (6.0)
				The acquired experience will be applied in the work with pupils	1 (1.2)
		Learner cognition	5 (6.0)	It helps teacher to find out about learner's wishes, aims, interests	3 (3.6)
				It is easier for the teacher to cognise pupils	2 (2.4)
Personality improvement	26 (30.8)	Growth of intelligence	19 (22.5)	Big significance	15 (17.8)
				Increases teacher's universality, general intelligence	4 (4.7)
		Outlook development	6 (7.1)	Broadens teacher's outlook, knowledge	4 (4.7)
				Educates self-criticism	2 (2.4)
		Teacher's prestige growth	1 (1.2)	Increases teacher's status, prestige	1 (1.2)
Minimal significance	2 (2.4)				2 (2.4)

Note: Totally, 84 semantic answers were distinguished.

The first category *"Professional improvement"* (66.8%), which consists of four sub-categories, comprises the most of the respondents' statements and obviously shows, that students first of all relate the significance of student scientific research activity for teacher's profession with professional improvement. In students' opinion, due to scientific research activity teachers *develop competences* (44.0%), learn *to perform applicable research* (9.6 %), *accumulate experience* (7.2%), can better *cognise the learners* (6.0%).

The second category *"Personality improvement"* (30.8%), which contains three sub-categories, shows, that a third of students relate student scientific research activity significance for teacher's profession with his personality changes: *intelligence grows* (22.5%), *develops outlook* (7.1%), *increases teacher's prestige* (1.2%). Only a small part of students (2.4%) think, that scientific research activity significance for teacher's profession is minimal.

The obtained results show, that students highly value scientific research activity significance for teacher's profession and understand multifaceted this activity influence on teacher's activity: both teacher's professional activity and teacher's personality improve.

It is obvious, that a very important condition is study process favourableness / suitability for further career. Having analysed the respondents' positions on this question, two categories were distinguished (Table 3).

Table 3. Study process at university favourableness for the scientist (researcher) career choice.

Categories	N (%)	Subcategories	N (%)	Statements	N (%)
Process is favourable	46 (58.8)	Suitable conditions and possibilities	28 (35.9)	Favourable and encourages	14 (18.0)
				Partly favourable	8 (10.3)
				Possibilities are formed to be interested in researcher's activity	3 (3.8)
				Researcher career possibilities are constantly accentuated in the study process	2 (2.5)
				Conditions are formed at university to acquire both theoretical and practical knowledge	1 (1.3)
		Student interest	15 (19.1)	It depends on individual student's demands and future plans	8 (10.3)
				This is individual student's aim	3 (3.8)
				Favourable for those, who are interested in becoming a researcher	2 (2.5)
				This is individual student's choice	2 (2.5)
		Lecturer / Teacher encouragement	3 (3.8)	Lecturers / Teachers encourage only gifted students	3 (3.8)
Process is unfavourable	32 (41.2)	Unsuitable conditions and possibilities	20 (26.0)	Does not encourage, unfavourable	12 (15.8)
				Does not encourage, because in research activity are interested only as much as it is necessary for final work preparation	3 (3.8)
				Too little attention is paid to this	2 (2.5)
				Students are given very few possibilities	1 (1.3)
				Unsuitable, or weak infrastructure	1 (1.3)
				Little time is allotted for practices	1 (1.3)
		Lecturers' lack of interest	7 (8.9)	Poor lecturers' interest	5 (6.4)
				Scientist career at university is presented more as altruistic work	2 (2.5)
		Unfocussed orientation to career	5 (6.3)	Constant accentuation teacher, but not researcher profession	2 (2.5)
				University oriented to other career spheres	2 (2.5)
				Does not encourage, because study process is oriented to pedagogue preparation, but not the researcher.	1 (1.3)

Note: Totally, 78 semantic answers were distinguished.

The first category "*Process favourable*" (58.8%) contains three subcategories: "*Suitable conditions and possibilities*" (35.9%), "*Students' interest*" (19.1%), "*Teacher encouragement*" (3.8%) University studies devote an important place for students' scientific research activity and seek the students not only to acquire scientific research competence, but for a part of students to further study in Doctoral (PhD) studies, to be interested in scientific research activity and their professional future relate with the scientist (researcher) career. The first category "*Process favourable*" (58.8%) illustrates, that at university suitable conditions and possibilities are formed (35.9%) not only to be occupied in scientific research activity during studies, but also one is encouraged to relate further professional activity with

scientific research activity. Students note that in the study process possibilities are formed for them to be interested in research activity, constantly are accentuated researcher career possibilities, conditions are formed to acquire both theoretical, and practical knowledge. Students' interest is encouraged to be interested in scientist career. However, this, as students mark, usually depends on individual student's demands and future plans, individual student's ambitions, interest to become a researcher, individual student's choice. A small part of students point out that teachers encourage only gifted students to be interested in scientist's career.

The second category "*Process unfavourable*" (41.2%) contains three sub-categories: "*Unfavourable conditions and possibilities*" (26.0%), "*Lecturers' lack of interest*" (8.9%), "*Unfocussed orientation to career*" (6.3%). The obtained results show, that a big part of students accentuate unfavourable conditions to be interested in scientist (researcher) career. They note, that they are not encouraged to be interested in scientific research activity, they are interested in research activity only as much as they need for final work preparation; too little attention is devoted to this, students are given very few possibilities, infrastructure is unsuitable and weak. Poor teachers' interest to encourage students to be interested in scientist career is indicated, and scientist career itself at university is presented more as altruistic work. Part of the students notice lack of focussed orientation to scientist career. They mark, that teacher, but not researcher profession is constantly accentuated at university, the orientation is to the other career spheres, and study process itself is orientated into pedagogue preparation, but not the researcher.

It is no doubt, that scientific research activity influences professional future teacher's readiness. Having analysed the respondents' positions, two categories were distinguished (Table 3).

Table 4. Scientific research activity contribution to professional readiness.

Categories	N (%)	Subcategories	N (%)	Statements	N (%)
Professional readiness improvement	78 (82.2)	Knowledge acquisition	31 (32.6)	This activity gives more knowledge	18 (18.9)
				Helps deepen the possessed knowledge	5 (5.2)
				A lot of new things are learnt	4 (4.2)
				A lot of various information is obtained	3 (3.2)
				Helps to consolidate the acquired knowledge	1 (1.1)
		Competence development	11 (11.6)	Teacher researcher competence is developed	8 (8.4)
				Such activity educates professional competences	3 (3.2)
		Experience development	10 (10.5)	More different experience is acquired	6 (6.3)
				It is learnt to perform a lot of things precisely, methodically	2 (2.1)
				Helps to apply the acquired knowledge practically	2 (2.1)
		Scientific research activity improvement	10 (10.5)	It is learnt to analyse research	2 (2.1)
				It is learnt to analyse, value, collect information	2 (2.1)
				It allows to better cognise the researched objects, their specifics	2 (2.1)
				Motivates to find out unknown things	2 (2.1)
				One gets acquainted with various research methods	1 (1.1)
				One can more exhaustively, deeper understand what indeed is research activity	1 (1.1)
		Final work preparation	10 (10.5)	Helps to better prepare bachelor/master work	10 (10.5)
		Environment cognition	6 (6.4)	Possibility to find out new, innovative things	2 (2.1)
				Encourages to be interested in various things	2 (2.1)
				Helps to better understand certain regularities	1 (1.1)
				One gets acquainted with various activities, environments	1 (1.1)

Categories	N (%)	Subcategories	N (%)	Statements	N (%)
Personality improvement	17 (17.8)	Intelligence growth	15 (15.7)	Helps to personally improve	6 (6.3)
				Broadens outlook	5 (5.2)
				Develops common understanding, perception	2 (2.1)
				Encourages to critically think	2 (2.1)
		Self-cognition	2 (2.1)	In such an activity one can better understand himself as personality	2 (2.1)

Note: Totally, 95 semantic answers were distinguished.

The first category *"Professional readiness improvement"* (82.2%), which contains six subcategories, has the biggest weight. Students' expressed opinion obviously shows, that students highly value scientific research activity contribution to their professional preparation. First of all, students (32.6%) accentuate *knowledge acquisition*. They claim, that scientific research activity provides a lot of knowledge, helps to deepen the possessed knowledge, a lot of new things are learnt, a lot of different information is obtained, helps to consolidate the acquired knowledge. Part of students (11.6%) point out, that scientific research activity helps *to develop competences*: teacher researcher competence, professional competences. Students (10.5%) note, that due to scientific research activity *experience is developed*: a lot of various experience is acquired, a lot of things are learnt to perform precisely, methodically, possibility appears to apply the acquired knowledge practically. The same number of students (10.5%) point out, that their *scientific research activity improves*, because participating in scientific research activity they learn to analyse research, value, collect information, better cognise researched objects, their specifics, they are motivated to find out unknown things, can get acquainted with various research methods, more exhaustively, deeper understand what indeed is scientific research activity. The acquired scientific research activity experience, in students' (10.5%) opinion, helps to better *prepare final works.* Part of students (6.4%) specify, that scientific research activity encourages to better *cognise environment,* because possibility appears to find out new, innovative things, encourages to be interested in various things, helps to better understand certain regulations, to get acquainted with various activities, environments. It is obvious, that participation in scientific research activity includes various students' study process spheres, activities and makes the main influence on their professional preparation improvement at university.

The second category *"Personality improvement"* (17.8%) consists of two sub-categories: *"Intelligence growth"* (15.7%), *"Self-cognition"* (2.1%). The obtained results show, that students discern scientific research activity influence on personality improvement. They point out, that participating in scientific research activity they personally improve, broaden outlook, develop common understanding, perception, learn critically think, better cognise oneself as personality. It is obvious, that students understand, that personality improvement undoubtedly is an important scientific research activity contribution to one's professional readiness.

An important condition for scientific research activity development is preparation of the students themselves, motivation, interest. Having analysed the respondents' positions, two categories were distinguished (Table 4).

Table 5. Personal readiness to participate in scientific research activity.

Categories	N (%)	Subcategories	N (%)	Statements	N (%)
Improper readiness	47 (55.3)	Minimal readiness	18 (21.2)	Readiness is just poor	10 (11.7)
				No readiness	6 (7.1)
				Poor collaboration with people conducting research	2 (2.4)
		Lack of motivation	9 (10.6)	Lack of desire and efforts	4 (4.7)
				Poor readiness because of lack of motivation	4 (4.7)
				Lack of courage and initiative	1 (1.2)
		Lack of knowledge	8 (9.3)	Poor readiness, because of lack of knowledge	5 (5.8)
				Lack of subject knowledge	3 (3.5)
		Time shortage	6 (7.1)	Readiness is poor, because of shortage of time	6 (7.1)
		Lack of experience	4 (4.7)	Lack of experience	4 (4.7)
		Lack of abilities	2 (2.4)	Lack of abilities	2 (2.4)
Proper readiness	38 (44.7)	Good readiness	16 (18.8)	Readiness is not bad, average	12 (14.1)
				Overall readiness to participate	4 (4.7)
		Readiness to prepare final works	14 (16.5)	Such activity is done only writing final works	14 (16.5)
		Practical readiness	8 (9.4)	Experience acquired only during the practices	5 (5.8)
				A lot of various experience accumulated in this sphere	2 (2.4)
				Independent readiness	1 (1.2)

Note: Totally, 85 semantic answers were distinguished.

The first category *"Improper readiness"* (55.3%), which comprises six subcategories illustrates that more than half of the students value their personal readiness to participate in scientific research activity as improper. The main improper readiness cause, in students' opinion is *minimal readiness* (21.2%) They claim, that readiness is just poor, poor collaboration with the people performing research. The second cause of improper readiness to participate in scientific research activity is *lack of motivation* of the students themselves (10.6%): there is lack of desire and efforts, readiness is poor because of lack of motivation, there is lack of courage and initiative. Part of students indicate, that poor readiness to participate in scientific research activity is because of *lack of knowledge* (9.3%), *time shortage* (7.1%), *lack of experience* (4.7%), *lack of abilities* (2.4%).

The second category "Proper readiness" (44.7%), which consists of three subcategories, illustrates that less than half of the students value their personal readiness to participate in scientific research activity as proper. Students' expressed opinion allows asserting, that 18.8% of students think, that their readiness to participate in scientific research activity is good, 16.5 % of students claim, that they are *ready in a good way to prepare final works*. Only 9.4%, in students' opinion, have *practical readiness* to participate in scientific research activity.

Future teachers' expectations, i.e. intention / wish to relate their professional activity with scientific research work in future also determine SRA development. Having analysed the respondents' positions, two categories were distinguished (Table 6).

Table 6. Intention to do researcher (scientist) work in future.

Categories	N (%)	Subcategories	N (%)	Statements	N (%)
Positive attitude	38 (50.7)	Interest in activity	20 (26.6)	Yes, I would like	10 (13.4)
				I would like it to be very interesting	5 (6.7)
				Yes, I would like to apply the acquired competences in my work with pupils	2 (2.6)
				It would be useful	2 (2.6)
				Yes, I would like, because I have had such purpose for a long time	1 (1.3)
		Partial self-determination	18 (24.1)	Partly I would like, there is no clear self-determination	17 (22.8)
				I would like to try if there was such a possibility	1 (1.3)
Negative attitude	37 (49.3)	Uninteresting activity	30 (40.1)	No, I wouldn't like	25 (33.4)
				Such activity is uninteresting	4 (5.4)
				This activity is not actual	1 (1.3)
		Hard/unvalued activity	4 (5.2)	I wouldn't like because such activity is unvalued	2 (2.6)
				I wouldn't like, because this is hard and complex work	2 (2.6)
		Interesting other activity	3 (4.0)	I prioritise pedagogical work	3 (4.0)

Note: Totally, 75 semantic answers were distinguished.

The first category *"Positive attitude"* (50.7%), which consists of two subcategories (*"Interest in activity"* and *"Partial self-determination"*), illustrate, that half of the students positively look to researcher (scientist) work. Part of the students (26.6%) express interest to do researcher (scientist) work and claim, that it would be very interesting, they would like to apply the acquired competences in the work with students, it would be useful, they would like, because they have had such purpose for a long time. Part of the students (24.1%) express partial self-determination. These students claim, that they would partly like to do scientific work, but there is no clear self-determination, that they would like to try if they had such a possibility.

The second category *"Negative attitude"* (49.3%), which consists of three subcategories (*"Uninteresting activity", "Hard/unvalued activity", "Interesting other activity"*), illustrates, that almost half of the students have negative attitude to researcher (scientist) work. The biggest part of the students (40.1%) think, that scientist career is uninteresting, that this is hard/unvalued activity (5.2%). The obtained results allow making a hypothetical assumption, that contemporary students are not interested in scientist career because, scientist activity in society is valued less and less.

SRA improvement, effectiveness remain actual. Having analysed the respondents' positions, two categories were distinguished (Table 7).

Table 7. Recommendations for students' SRA effectiveness enhancement in the study process.

Categories	N (%)	Sub-categories	N (%)	Statements	N (%)
Study process improvement	63 (70.0)	Study content improvement	40 (44.7)	Allot more time to practices and trainings	15 (17.0)
				More lectures and other occupations about research activity	12 (13.3)
				Gradually from the first course implement knowledge about research activity	6 (6.7)
				More optional subjects about scientific activity	3 (3.3)
				Organise long term research, in which students could participate	2 (2.2)
				Allot more time for research	2 (2.2)
		Event organisation	13 (14.3)	Form better conditions for students to participate in such an activity, involve them	5 (5.5)
				Arrange more events related with such an activity	3 (3.3)
				Arrange trips to scientific laboratories	2 (2.2)
				Support and encourage SSA activity more	2 (2.2)
				Arrange student scientific conferences	1 (1.1)
		Lecturer / Teacher activity activating	10 (11.0)	Lecturer encouragement, causing interest	5 (5.5)
				Change lecturers`/ teachers' attitude towards students' participation in research activity	4 (4.4)
				Good specialists of this sphere are necessary	1 (1.1)
Student involvement	27 (30.0)	Student motivation strengthening	17 (18.9)	More motivate	16 (17.8)
				Encourage students financially	1 (1.1)
		Information supply	10 (11.1)	Give more information	10 (11.1)

Note: Totally, 90 semantic answers were distinguished.

The biggest weight having first category "*Study process improvement*" (70.0%), which consists of three subcategories (*Study content improvement, "Event organisation" and „Lecturer / Teacher activity activating")*, illustrates, that seeking to enhance student scientific activity effectiveness it is necessary to improve study process. The biggest part of students (44.7%) think, that student scientific activity effectiveness would grow if *study content was improved*. Students suggest allotting more time for practices and trainings, it is suggested organising more lectures and other occupations about research activity, gradually from the first course implementing knowledge about research activity, more optional subjects about scientific activity, organising long term research, in which students could participate, devoting more time for research. Part of students (14.3%) think, that special event organisation would enhance scientific research activity effectiveness in the study process. Students suggest forming better conditions for student participation in scientific activity, involving them, organising more events related with such an activity, organising trips to scientific laboratories, supporting and more encouraging student scientific society activity, organising student scientific conferences. In students' (11.0%) opinion, seeking to enhance student scientific activity effectiveness in the study process, *lecturer / teacher activity activating* is necessary. Lecturers` / teachers' encouragement, support is necessary for students, they think, that it is necessary to change teachers' attitude to student participation in research activity.

The second category "*Student involvement*" (30.0%) consists of two subcategories ("*Student motivation strengthening*" and "*Information supply*"). It is obvious, that a third of students think, that scientific research activity effectiveness in the study process depends on student activeness. Students accentuate student activation, encouragement, information supply importance.

Discussion

Scientific research competence is important today for many professions and activities: one needs not only creatively apply acquired knowledge, but also create new knowledge, perform applicable research. Therefore, already during bachelor studies a student has to acquire scientific research competence. On the other hand, constantly changing teacher's activity requires research activity competence. Teacher researcher is constantly considering his activity, organising pedagogical activity research, applying various research methods, creatively applying research results (Caena, 2011). The aim, that teacher has to develop research activity in education practice and to become teacher researcher, has been especially accentuated recently in Lithuanian and foreign researcher (Lepeškienė, Butkienė, Steevens, Werkhoven, 2001; Pollard, 2006) works.

The research results show, that students basically perceive SRA significance to teacher profession. First of all, it is related with competence development and applicable research performance. Effective teaching inevitably has to connect the very teaching and research process (Healey, 2005). It is natural, that students consider SRA contribution to professional readiness very significant. Even 82.2% of the respondents describe such contribution as knowledge acquisition, experience and competence development and SRA improvement. As the researchers notice, this namely shows real SRA importance, because it may lead to rethinking and reconstructing what it means to be a teacher or teacher educator (Stremmel, 2007), on the other hand, destroys the limits between teaching practice and research activity / research (Cochran-Smith, Donnell, 2006).

An important aspect of the study process at university is favourableness to scientist career choice. However, analysing research results one can see, that only about 60% of students value study process as favourable. In this case, favourableness is understood as proper conditions and possibilities and interest of the students themselves. Lecturer / teacher attitude problem remains, because the latter tend to encourage only the brightest students for the researcher career. About 40% value study process as unfavourable. The other researcher performed research show, that identifying possible influences of career choice it is important as such influences may have an impact on job entry behaviour as well as subsequent career outcomes (Ozbilgin, Kusku, Erdogmus, 2004). In a wider sense, this can be named as university social responsibility in scientific activity management (Tauginienė, 2013).

Only a little less than half of the respondents (44.7%) value personal preparation to participate in SRA as proper. It doesn't calm, that the bigger part of students value such preparation as improper, mostly explaining this by lack of motivation and knowledge. From this point of view, teachers' activity motivating, involving students in SRA is very important. Student scientific research cannot be an end in itself, but have to be a device for educating student scientific work experience, for developing non-standard, critical, creative thinking, for preparing intellectual nation elite Tidikis, 2001). Students notice, that mostly SRA is focused on final (qualification) work (bachelor, master and so on) preparation. However, this should be consequent, lasting and complete activity, embracing the whole study process. As the researchers notice it is important to seek to change students' experiences and orientations towards research into a more positive direction, students might be better prepared for their future work (Murtonen, Olkinuora, Tynjälä, Lehtinen, 2008), it is hopeful that they will be research-active teachers (Breen, Lindsay, 1999).

Research showed, that even 70% of students understand SRA effectiveness as study process improvement. They relate this with study content improvement (more time is devoted for trainings, scientific practices, optional / elective subjects and so on). A third of students think, that it is important student motivation strengthening. Student expressed positions confirm the opinion that it is very important to more actively involve students in scientific research activity, to form scientific work skills, encourage analytical abilities and independent thinking, guarantee closer and more effective student and teacher collaboration. Such effectiveness direction is expressed by other researchers as well, stating, that students research is a high-impact practice (Walkington, 2015), moreover, 'students as researchers' pedagogy should be adopted in the university study process (Kuh, 2008). Thus, student involvement in scientific research activity and experienced learning coordination allows achieving the subject aims, students acquire positive experience, which is related with personal quality and professional improvement, finally, it is formed positive attitude to scientific activity on the whole.

Conclusions

Research results revealed, that students highly value scientific research activity significance to teacher's profession and understand this activity multifaceted influence on teacher's activity: both teacher's professional activity improves and teacher's personality. More than half of the students value study process at university as favourable

for scientist (researcher) career choice. On the other hand, quite a big part of students value study process at university as unfavourable for scientist (researcher) career choice.

The majority of students value the contribution of scientific research activity at university to their professional readiness as a phenomenon making overall influence – starting with professional readiness improvement, finishing with personality improvement. On the other hand, students are self-critical enough and value situation objectively. More than half of the students value their personal readiness to participate in scientific research activity as improper. Most often it is related with minimal readiness, lack of motivation, lack of knowledge, lack of time and experience.

Researcher career aspect is obviously double-sided. Two basically equal groups have been discerned. One of them claimed, that their attitude to scientist career is positive and they express wish when having opportunity to do scientific work. The other half of students have negative attitude to scientist career and think, that this is uninteresting, hard and poorly valued activity.

Continuous scientific research activity improvement and enhancing effectiveness is important in the study process. For this, first of all, it is necessary to improve study process: improve study content, organize events, encourage teachers to more actively involve students in scientific research activity.

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Vincentas Lamanauskas	PhD, Professor, University of iauliai, Faculty of Education Sciences and Social Welfare, Department of Education & Psychology, P. Visinskio Street 25-119, LT-76351 Siauliai, Lithuania. E-mail: v.lamanauskas@ef.su.lt Website: http://www.lamanauskas.puslapiai.lt/
Dalia Augienė	Ph.D., Senior Researcher at the University of Siauliai, Faculty of Education Sciences and Social Welfare, Department of Education & Psychology, P. Visinskio Street 25, LT-76351 Siauliai, Lithuania. E-mail: augiene@gmail.com Website: http://www.su.lt