
SOCIOLOGY OF SCIENCE, EDUCATION AND YOUTH

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RESEARCH POTENTIAL AND SOCIAL STATE OF HEALTH OF POST-GRADUATE STUDENTS*

SUMMARY. In article the problem of research potential and an estimation of social state of health of post-graduate students is considered. The authors consider data of the all-Russian statistics and results of the sociological research conducted by authors in which the following indicators were studied: quantity of publications of the post-graduate student; professional socialization of the young scientist through interaction with chair and participations in realization of Scientific Research Works; activity in attraction of grant financings; the relation of post-graduate students to various types of the academic swindle; the priority factors influencing scientific career and competence of post-graduate students in sphere of foreign languages. The analysis of the basic complexities of education allocated with post-graduate students in postgraduate study and ways of their solution is carried out.

KEY WORDS. Postgraduate study, post-graduate student, young scientist, scientific supervisor, education as a way of life, plagiarism, academic swindle.

One of the main reasons for the apparent decline in the quality of higher education is a personnel problem: the majority of most qualified professors and docents are near retiring age, and as a result, a lot of scientific schools of thought disappear. In the years of reform universities lost a considerable part of their staff and still suffer a shortage of young academic staff (the present academic staff

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in many universities, especially in metropolitan ones, resembles “gerontological reservations”).

Today a special attention is paid to the training of young generation involved in research activity and teaching. The most acceptable way to organize scientific work of young people is **post-graduate education**. In three or four years of study and research they are likely to become qualified teachers and researchers with an academic degree.

The average rate of effectiveness of the universities providing post-graduate education made 31% in 2008, compared to 34.7% in 2007. Accreditation rate for the universities is 35% of those who have defended their theses a year after finishing postgraduate studies.

Improvements are needed in the system of post-graduate education: a special stress should be laid on post-graduate education in the spheres of natural and technical sciences. It seems strange that more than a half of post-graduate students in some universities study humanities and social sciences, especially, economics.

It is difficult to rationally explain the situation, when in the process of preparation of scientific personnel in separate branches of science (physic-mathematical or technical) a post-graduate gets post-graduate courses in economics or sociology.

The analysis of major data of post-graduate courses in Russia shows a 3 times increase in the number of post-graduates since 1992 till 2001 (from 51.9 to 156.3 thousand people). The admission to post-graduate courses has increased during the stated period by 3.6 times (from 13.8 to 50.6 thousand people). There is also a growth (though not as significant) of people who finished the post-graduate courses with a scientific degree, showing 21.1% in 1992, 30.2% in 2000 and 29.1% in 2011 [1; 386].

There is a noticeable difference in the number of the post-graduates (1.5-2 times), getting scientific degrees in research institutes and universities. In 2011 in research institutes only 17.2% of post-graduates defended their dissertations. In universities this figure is almost twice higher (30.7%), what shows a higher degree of quality of post-graduate preparation and methodical support of the research activity.

The analysis of scientific branches of post-graduates shows that the most numerous are technical sciences (26% of all post-graduates in the 2011), economical (17%), legislative and medical sciences (7% each). The most effective are medical post-graduates — 41 % defend their dissertations (Figure 1). The minimal result belongs to Art Criticism (11%, when the average level throughout all sciences is 29.1%) [1; 387].

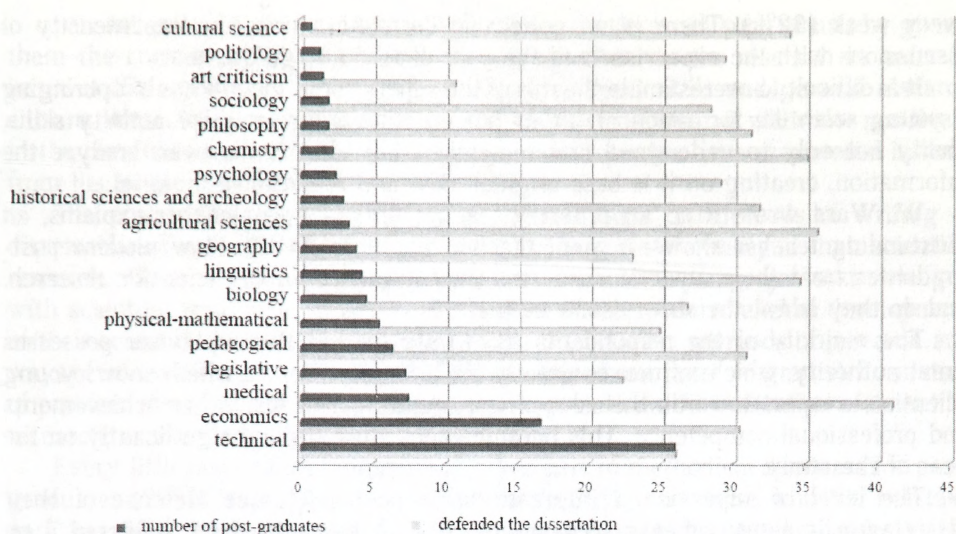


Figure 1. The main data of the post-graduate activity of different sciences in 2011 (in %).
 Created by the authors on the basis of the data: [1,386-387]

In order to assess the research potential and social condition of post-graduates of both daily and extramural forms of study we conducted a sociological research in May 2012.

First of all, we would like to pay attention to scientific publications as parameters of effective research activity of a post-graduate. Together with others, they are the necessary criteria of successful defense of the candidate's dissertation. The young scientists' answers on the question regarding the number of scientific works were the following: every fifth has no publications yet (23%). One or two publications were done by every third post-graduate (33%). Every sixth has from 3 to 5 publications (6%). Every third has from 6 to 18 published scientific works (31%).

The publications in leading reviewed scientific magazines have the biggest value. Every fourth post-graduate has one such article (26%). 2/3 of the post-graduates do not have articles in leading scientific magazines (63%).

Cross analysis showed the predictable connection between the number of the articles and the number of years spent on post-graduate courses. Every third post-graduate in the first year of study does not have any publications (34%). More than a half of second-year post-graduates have published at least one or two scientific articles (52%), noting that every third article was published in a high rating scientific magazine (39%).

The results of the research show that every third post-graduate of the third year does not have any articles in high rating magazines (38%), though the fact of having such publication is a criterion for admission to the defense of candidate's dissertation.

The interaction between post-graduates and their supervisors is the key element of successful study in post-graduate courses as well as the defense of the candidate's dissertation in the set period of time. The most common type of interaction is monthly discussion (39%), every third post-graduate consults his or her supervisor

every week (32%). There is no noticeable correlation between the intensity of discussions with the supervisor and the year of the post-graduate.

It is difficult to overestimate the role of the supervisor in the process of upbringing a young scientist, formation of his or her creative transformative activity skills, ability not only to understand and remember, but also to discover, analyze the information, creating on it is base original, new and remarkable material.

W. Ward wrote that “an ordinary teacher tells, a good teacher explains, an outstanding teacher shows, a great teacher inspires” [2; 92]. How modern post-graduates treat their supervisors, assess their influence on the scientific research, and do they admit the supervisor’s authority?

The majority of the respondents (85%) stated that the supervisor possesses great authority, which influences greatly their way in science, which shows young scientists’ respect towards their supervisor, admission of his or her achievements and professional competence. This parameter does not depend significantly on the year of the study.

The level of supervisor’s interest in his post-graduates’ defense of their dissertation in time is measured as high. 78% of the respondents assessed it on the maximum score (4 and 5). It is disturbing that in every fifth case post-graduates state their supervisor’s interest to their research results as medium or low.

Let us pay attention to the post-graduate’s professional socialization, as involvement in the scientific cooperation with the staff of the department, it is the key characteristic of a young scientist’s professional socialization and gaining of the scientific research skills. At present this parameter can be characterized as insufficient — more than half of the respondents (53%) think that they are not connected with the scientific staff of the university and are not involved in the scientific research. Every fourth post-graduate (28%) works together with the staff of the department on scientific projects, the results of which will be the base of his or her dissertation. Every seventh (16 %) stated that he or she cooperated actively with the scientific staff in the process of research that does not refer to his or her dissertation. Obviously, such tendency reflects negatively on the quality of post-graduate’s education, leads to his or her professional restraint and orientation on discussion only with his or her supervisor.

The process of preparation of the post-graduate is mainly the result of work of both post-graduate and his or her supervisor (77%). The staff of the department supports him or her (in form of consultation) only in every seventh’s case (14%). Apart from them, post-graduates address friends, “people close to the research topic”, discuss their work in the Internet and write electronic letters to “specialists in the research topic”.

The perspective of financial income from the results of the dissertation was stated by less than a half of the respondents (41%). Every third (31%) denies such an opportunity.

Post-graduates do not show special interest in search of the financial support for their research, applications to grants and contests. Only one person of all the respondents stated that during his post-graduate course he had won a grant (money for realization of scientific, educational and innovative projects from federal purpose-oriented programs, funds etc.) and with the help of it made a research on the topic of his dissertation.

It is necessary to promote the post-graduates' interest in such events by giving them the corresponding information, to engage them in the research in order to improve their professional knowledge, methodological skills and general research culture. When the young scientist joins the professional staff, it will show positively in the results of his or her dissertation and create perspectives of material income from his or her research.

The post-graduates' participating in the seminars on methods of writing of dissertations has a significant influence on the increase of quality of their scientific research. At such events they gain skills of academic writing, get acknowledged with scientific traditions, discover peculiarities of the modern level of development of their scientific branch, the structure of the dissertation, methods of research and ways of information processing (including specialized computer programs). Formation of problem statement of the dissertation and professional formalization of scientific research, articles, reports is also important.

Every fifth respondent "constantly" takes part in methodical seminars for post-graduates (20%), every third — "sometimes" (30%) and those who "do not take part" are 26%. It is noticeable that in every fourth case the post-graduates stated that they "do not take part in the seminars as we do not have them" (24%).

It is necessary to control the regular conduct of methodological seminars for post-graduates, to assess their efficiency. Apart from this it is possible to organize universal scientific methodological seminars of post-graduates of different scientific branches.

Sincere interest of a post-graduate to the topic of his or her research is one of the main criteria of his or her high motivation during all the post-graduate period. The majority of the respondents are happy with the topic of their research (88%).

The correlation analysis stated that this variable is closely connected with others: the number of published articles (the higher the degree of interest is, the larger is the number of publications) (Pierson's correlation ratio = -0.310), frequency of consultations with the supervisor (0.0340), his or her authority (0.288) and post-graduate's interest to defend the dissertation in time (0.336) (the higher the interest is, the more frequent the consultations are and the bigger the supervisor's authority is). Cases of academic cheating (plagiarism and forgery) are rarer when the post-graduate is interested in the topic of research, involved in the scientific sphere and wants to develop the scientific problem (*the correlation coefficient is -0.668 and -0.439 respectively*).

The post-graduates were asked to figure out the main **difficulties of post-graduate study** and offer the most effective (in their viewpoint) ways to overtake them. All the stated difficulties were combined in **8 groups** of factors. The most actual problem is *lack of resources* (25%), then come *claims to the department staff* (20%), *difficulties of scientific character* (14%), *difficulties connected to the permanent work of the post-graduate* and *claims to the supervisor* (13% each). The least popular were *problems with plan and organization of studies* (2%) and *low motivation* in the process of work on the dissertation (3%).

There is a noticeable fact: in undergraduate and graduate courses girls prevail, in post-graduate courses the picture is completely different. The most of the post-graduates are men. Many of them combine studies in daily post-graduate courses

with full-time work, including work in commercial structures, where the salary is high enough; study in post-graduate courses takes second place. The reason is not in the scholarship, but in the provided deferment from the army. As a result we face low efficiency of university post-graduate courses, slow formation of university's scientific potential, violation of continuity of scientific and pedagogical personnel.

The post-graduate's income is mainly formed from such a source as **“additional work”**, then with a large gap come **“relatives' \parents' help”** and **“salary in the university, institute”**. Additional work, not connected with scientific research and teaching in the university, gives every third post-graduate from 40 to 60% of their income (32%), and for every fourth (26%) it is the main source of money (from 70 to 100% of all the income). Help from parents and relatives is received by more than a half of post-graduates (53%) and every twelfth stated it as their main source of money (8%) (Figure 2).

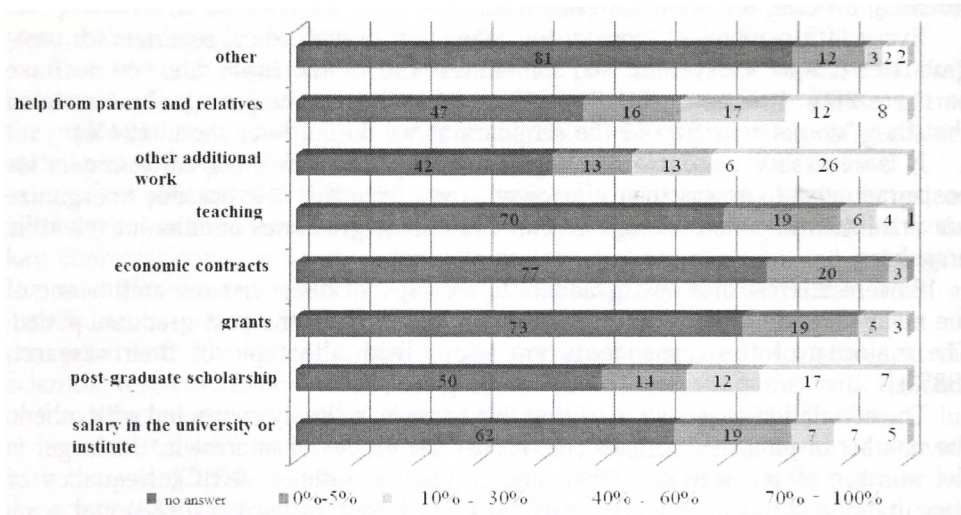


Figure 2. The frequency distribution of respondents' answers to the question: "What part of your budget did the stated below sources of income make?" (in %, N=101)

As a result of low involvement of post-graduates in the sphere of scientific research in the department, the least popular sources of post-graduates' income are economic contracts and grants (97 and 92% of respondents respectively do not get any income from them), and scholarship — no one stated it as the main source of money.

Regarding different forms of academic cheating, the majority of post-graduates showed a clear principle position — they are not likely to violate the ethical principles, accepted in the professional community. Still every eighth post-graduate accepts several elements of academic cheating if nobody will know about it or if it will be profitable.

Forgery (*an attempt to resort to outside help in order to make a work, which will be later introduced as their own*) and artificial "twisting" of scientific publications ratio is possible for every sixth (16%) and every eleventh (9%) post-graduate

respectively. Every eighth accepts such forbidden trick as “falsification” (*forgery of the results of the research, manipulation with the statistics*) (13%).

As for plagiarism (*borrowing another’s text without reference to the real author*) every fifth respondent (20%) turned out to be fine with it. The correlation analysis stated that the more often the post-graduate consults his or her supervisor, the rarer he or she accepts non-ethic behavior (plagiarism and forgery) (-0.206 and -0.224 respectively).

The cross-analysis of the year of study and the acceptance of academic cheating showed that the importance of the ethical code of the scientist increases up to the end of study.

In the sociological research post-graduates were asked to define the characteristics, which most influence the formation of a successful scientific career. On the basis of accentuated priorities we have divided all the characteristics into 3 groups: “prior,” “significant” and “insignificant” (Figure 3).

The prior characteristics turned out to be the following: “talent, capacity for scientific work” (97% of answers), “intellect” (95%), “diligence, purpose” (93%) and “capacity for creative thinking” (92%). All these variables are inner, personal characteristics and they describe personal responsibility for a scientific career.

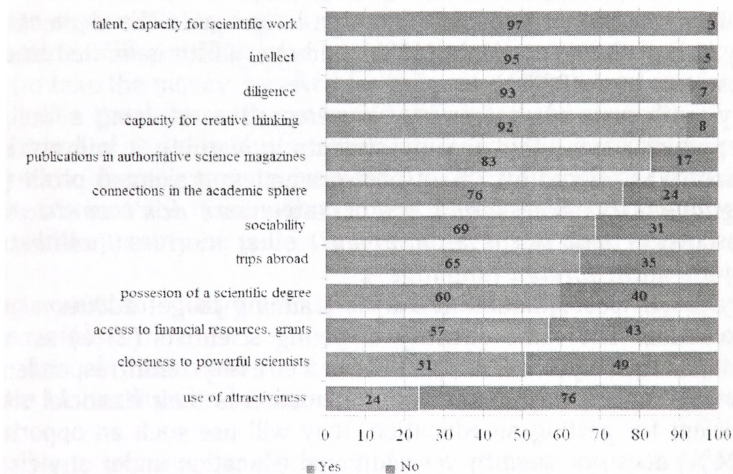


Figure 3. The frequency distribution of respondents' answers to the question: “What is the basis of a successful scientific career today?” (in %, N=101)

“Publications in authoritative scientific magazines” (83%), “connections in the academic sphere” (76%), “sociability” (69%), “trips abroad” (65%) belong to the category of “significant” factors. These characteristics are united by a common idea — career development in the scientific sphere provides the ability and desire to communicate with the representatives of scientific community (through publications, discussions, scientific events etc.).

The “insignificant factors” are: “possession of a scientific degree” (60%) and “access to financial resources, grants” (57%), “closeness to powerful scientists” (51%), “use of attractiveness” (24%). The low quantity of these variables states

that post-graduates reasonably take such methods of making a scientific career with caution. An exception here is possession of a scientific degree, although it is not able to give its owner any career development in the sphere of education and scientific research without possession of more significant characteristics.

Linguistic competence of scientists in modern scientific world is becoming the necessary criterion both for entrance in the international scientific community and reflection over up to date information about the results in a specific scientific branch in the dissertation. This criterion is especially important for young scientists. As the respondents stated in the questionnaire, one of the problems is that post-graduates do not know how their scientific problem was researched in other countries.

19% of the post-graduates stated *free* knowledge of foreign language. More than a half can *speak* a foreign language (56%) and every fifth is able to *read professional texts with the help of a dictionary*, necessary for writing a dissertation (22%). 3/4 of the respondents (74%) use foreign language in their everyday life. The range of spheres is wide: educational and scientific sphere, work, everyday life and rest, travelling and entertainment.

The rating of popularity of the foreign languages is led by English (88%), German is in the second place (36%). Post-graduates know such languages as Swedish, Latin, Spanish, Polish and Chinese (12% total).

The desire to learn an additional foreign language in the elementary level was stated by half of the respondents (49%), and every fifth is limited to do it because of financial situation (22%).

Every tenth respondent does not see perspectives of using a foreign language in future, which means that the investments in learning it will not return. Their own variant was offered by 7% of post-graduates: prolonged profit ("*will study new language if it is necessary*"), lack of motivation ("*don't want to study new*"), lack of resources ("*may be if I have money*"), other priorities ("*will better continue studying my main foreign language*").

Every fourth post-graduate (23%) is planning to get additional education or other profession. The same quantity of young scientists (21%) accepts such an opportunity if their boss will support them. For every tenth respondent (12%) the main obstacle on the way to additional education is their financial situation — if it is sufficient for getting an education, they will use such an opportunity. Every fourth (24%) does not want to get additional education under any circumstances.

On the basis of the received data we can state a high orientation of young scientists to the realization of the strategy "**education as lifestyle**", and presence of perspectives for increase in the number of young people, who want to get additional professional knowledge on the condition of a direct interest from their boss and the improvement of financial position of the post-graduate.

The financial status of post-graduates can be stated as "satisfactory" — more than a half of the respondents belong to categories "independent", "rich" (56%). Other post-graduates need to improve their financial status.

In order to support young scientists it is possible to give material help and to organize various contests of scientific works for post-graduates. Having received money for development of their research, they can improve their financial situation and, at the same time, boost the development of their dissertation, not distracted by unstable work irrelevant to a scientific research.

As for the results of the scientific research it is possible to offer several **recommendations** how to change the current situation and modernize several elements of the educational process in post-graduate courses.

To make the post-graduate courses more effective, we need a more responsible attitude to the post-graduates' education and their upbringing as young scientists not only by the supervisor, but also by the head of the department; and orientation of the staff to comprehensive support of young specialists.

A positive effect can be reached by an increase in the number of hours of foreign language studies, as well as organization of free courses of foreign language on the elementary level. The perspective of foreign publications and probations for post-graduates, financed from the grants, can be a good stimulus for studying a foreign language.

Let us pay attention to one of the ways of solving the most significant problems, raised by post-graduates:

- Pay more attention to the scientific research in the university and departments, form scientific schools;

- Increase control over departments in the question of their support in the process of post-graduates' education, increase the level of requirements to the post-graduates' attestation;

- Meet the supervisor more often. Motivation of the supervisors to work with the post-graduates. Responsibility for unsuccessful defense of the post-graduates' dissertation (to take the money, received for the post-graduate's education, back — if it has not led to the defense, the university has to return money);

- Optimization of working hours, correction of working and studying schedule (to shift classes to evening time or weekends) — it is difficult to combine studies and work, the work on the dissertation is done only on holidays and at weekends;

- Increase the quantity of professional studies, make them really interesting and useful;

- Getting access to a large amount of scientific sources in foreign libraries, scientific magazines.

On the basis of these data the scientific potential of post-graduates of the Tyumen State University can be stated as **medium** with a perspective of further increase.

It is possible to improve the efficiency of post-graduate courses:

- improving the supervisors' responsibility for post-graduates' education (increase of interest in timely post-graduates' defense, support their motivation to scientific work, acknowledgment to ethic code of a researcher and understanding that plagiarism, forgery and other cases of academic cheating are inappropriate in dissertation);

- regular conduct of methodic and methodological seminars for post-graduates;

- intensification of publication activity of young scientists, including reviewed scientific magazines;

- enhancing post-graduates' cooperation with the staff of the department. Now it can be rated as insufficient — in the majority of cases post-graduates are not involved in scientific research, made by the staff of the department;

- stimulate the post-graduates' search for financial support in their research on the topic of their dissertation, taking part in a contest to get grants of different levels;
- optimize use of vacancies of the teaching staff and scientific personnel for post-graduates' job placement;
- provide regular payment of material support for needy young scientists; assign a higher scholarship for significant results in scientific research; organization of the scientific contests for post-graduates and young candidates.

It is necessary to pay attention to the model of **full-time post-graduate courses**, suggested by the High School of Economics in 2010. Now it is becoming popular among the leading universities of the country. Among its peculiarities there are: high scholarship (a good "financial airbag"), opportunity to be involved in the scientific work of the department, attraction of foreign experts for assessment of post-graduates' work etc. There is also a condition — a post-graduate does not have a right to work anywhere except scientific projects of the university (corresponding with the topic of their dissertation). The selection in such post-graduate courses is done according to professors' recommendations and presence of scientific publications.

In the "full-time" post-graduate courses there is an atmosphere of collective co-creation, the process of scientific search is intensified, there is also an opportunity to spend no less than one semester in one of the partner universities abroad. Post-graduates have an opportunity to get acquainted with foreign literature, take part in scientific seminars and conferences, gain a good academic reputation [4].

The perspectives of improvement of post-graduates' social conditions contain, as well, the formation of continuity of generations at the departments. A post-graduate should be assessed as a potential employee, not as a yesterday's student. The attitude to him or her is important, considering whether the results of his or her dissertational research will be interesting to senior colleagues, whether they will offer constructive recommendations how to improve the work and encourage early defense of the dissertation. It is necessary to stimulate the staff's interest to post-graduates' scientific research, organize regular seminars for discussion of the research results and timely error correction. These measures will positively reflect the quality of work and will help post-graduates to defend their dissertation in time or even earlier.

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