Contents lists available at Science-Gate

International Journal of Advanced and Applied Sciences

Journal homepage: http://www.science-gate.com/IJAAS.html

On the training students to carry out researches

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ARTICLE INFO

Article history:
Received 12 January 2015
Received in revised form
28 March 2015
Accepted 3 April 2015

Keywords:
Methodological aids
Readiness for research activity
Master's professional training

ABSTRACT

The article is devoted to the actual problem of the master's training – the didactic support of the formation process of the master's research readiness. The analysis of scientific literature enabled to find out and summarize the efficient pedagogical conditions of fostering master's readiness for research work. The research and pedagogical practice programs have been developed in order to improve the quality of master's training and research activity. On their basis a set of the fundamental requirements of master's training has been defined at different levels: goal-setting, the relationship between a professor and a master's degree student, the principles of didactic planning, the training process management, control and analysis. The methodological recommendations on writing a master's thesis have been provided. The stages and elements of establishing the master's competence in the research activity have been set forth.

1. Introduction

Social, economic, political, scientific, technical, and cultural changes in the modern world define the requirements of society to the education system, which must be anticipatory, and timely response to the dynamic changes in the country and provide personnel support of the academic growth strategy with a reference to the progressive structural changes. An important area of focus in the development of education is "integration on a global scale, the expanding contacts, an intensive exchange of experience in all areas of educational activities in different countries, schools and directions" (Baydenko, 2009). Therefore, a turning point in the development of higher education has become the signing of the Bologna Declaration on 19 June 1999 by 29 European countries. This Declaration has initiated the Bologna Process, which aims at creating a single European educational space. In the main objectives, set out in the Bologna Declaration, special importance is paid to the transition to a multi-level system of education (Oleinikova, 2001).

The notion of "multi-level" refers to the organization of a multi-stage educational process, providing the possibility of achieving such an educational level at each stage that corresponds to the capabilities and interests of the person (Mikhailova, 2002). In addition, each educational level has its own objectives, apprenticeship and characteristics (Baydenko, 2009). A multi-level training system requires new philosophy of education. According to the Bologna Declaration, this kind of philosophy must be based on a solid system of the moral and ethical values in the traditions of people and the achievements of modern science (The European Higher Education Area, 2004).

The significance of the introduction of a multi-level system of education for the various subjects of society is shown in Table 1.

Master's training, as a component of a multi-level education, fitted succinctly into the structure of continuing learning, is a new paradigm in the development of education, which marks a radical transition from the previous, old paradigm which is usually called traditional (Senashenko and Komissarov, 1995).

According to a new paradigm in the development of education, training is aimed not only at passing a certain amount of knowledge to students, but also at "the development of personality, cognitive and creative abilities" (Skvortsov, 2009). The learning content involves the creative skills acquisition and their practical application, and it is focused on the acquisition of the methodological knowledge necessary for independent acquisition of the required knowledge in a particular period of life (Fokin, 2002).

Thus, without the support and implementation of the design and methodology of continuous education, none of the organizational forms of

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vocational training and retraining will not lead to the desired effect, because "… today it is not just about higher education, it is about new higher education associated with the realization of features of a new era; not about the development of the former, but about the creation of a new understanding of the essence of education, which is an act of creativity" (Kraevsky, Arlamov, & Berezhnova, 2006).

Table 1: A multi-level system of education: New opportunities

Subjects of society	Possibilities of a multi-level system
State	Possibility of filling vacancies with specialists of an appropriate level. Rapid response to the requests of the state.
Society	High educational level of population. Formation of high population mobility. Training specialists of the required specialties in a short time.
Personality	Choice of your own route to being educated. Opportunity to obtain a multi-disciplinary training. Possibility of continuous education.
Educational institutions (HEIs)	Possibility of the formation of the educational process at the university and full realization of scientific and pedagogical potential of the institution, taking into account its specificity. High susceptibility of the system to the innovations.

The analysis of the main tenets of the theory of continuous education, allowed defining a set of requirements for the implementation of the master's training:

a. At the level of goal-setting - growing potential of a person and raising his or her capacity for adequate activity in the upcoming substantive and social situations, the formation of professional competence.
b. At the level of relations between a teacher and a master's degree student – a master's degree student is a subject, a proactive and responsible person. A teacher is a tutor, an assistant.
c. At the level of principles – a scientific method of acquiring knowledge, its analysis and interpretation; its consistency and regularity are combined with an elective educational trajectory. Consciousness and activity of the students are connected with the maximum individualization of instruction; conscious use of the acquired knowledge in practice; problematic as the required condition in the construction of educational content. Availability of training involves the construction of the individual learning path based on the elective subjects. Visibility combined with the constant application of computer and information technology. Strength and cyclicality – the development of skills of the independent continuous acquisition of the necessary information (the enhancement of the research work of a master's degree student). Professional orientation – the focused modeling of the social context of the future professional activity in the educational process.
d. At the level of didactic planning – theoretical training is based on the logic of solving problems.
e. At the level of organization of the learning process – lectures, practical (seminar) classes in active creative forms.
f. At the level of control and analysis – priority of self-control and self-analysis of the master's work. Controlled self-educational activity.

The implementation of these requirements is possible only on condition that the process of the master's training is constantly improving.

2. Methods

Readiness for research is considered to be personal development, formed in the activities of a research nature (Duray-Novakova, 1985). This fact determines the expediency of the research objectives and tasks in the process of learning, the implementation of which contributes to the formation of self-organization, self-control, activity, capacity for reflection as a component of the master's professional competence. It is this goal that the research approach in training is served for.

A theoretical factor of the research methods application in the magistracy is that an educational process, first of all, has to have a creative character; secondly, in a magistracy the more extensive and difficult material which demands a deeper analysis and generalization is studied; thirdly, the teachers of a magistracy are guided by big independence and creative activity of the students, by their ability to assess their actions; fourthly, the master's degree students must have research abilities, knowledge of the particular methods of scientific research; fifthly, there are increased requirements to the research culture of a modern specialist.

Zagvyazinsky highlights the main features of the research method: appropriate scientific methods of thinking, independence and activity of students (Zagvyazinsky, 2001). The feature of the qualitative research method is the gradual transition from imitation of a scientific research, which is also useful to the actual scientific or scientific - practical search.

Considering the features of the research method application in training, John Bransford and Ann Brown identify the following stages in formation of the research skills:

- 1st stage: knowledge stage, actualization of available knowledge;
- 2nd stage: learning with understanding – understanding of the task, understanding of the factual information and knowledge organized in the context of the research problem;
- 3rd stage: building of the conceptual diagram of solution of this problem. Conceptual diagrams

help learners to control their own studies (Bransford, Brown, & Cocking, 2000).

Barbara J. Klopfenstein reveals the particularities of the individual-oriented research training. She believes that regardless of the age of the scientists a key moment is "need to know", and this fact determines a learner' situation. The scientist emphasizes the following conditions of the efficient research training: firstly, a dialogue forms of teaching; secondly, realization of the reflexive approach. The development of the research skills is impossible without the activity of the learner himself, the analysis of his own experience and its use as a supporting base.

Despite numerous definitions of the research method, didacticisms agree that the essence of the research method lies in the fact that the result of the work is unknown; it will have to be produced by students (Kusnetsov, 2003).

Having studied the problem in theory and practice of higher school, we made a conclusion that readiness for research activity is not inculcated on its own and demands special means for its formation.

3. Results and discussion

The specificity of the educational master's programs connected with the strengthening of the master's research refers to the development of the ability to self-education and self-development, needs and skills of the independent creative mastery of knowledge in their practice. All this requires the use of the teaching-learning principles in the educational process, which will encourage learners to active thinking and practice in the process of mastering the information.

The didactic support for formation of such readiness is understood as the tools of teachers and students' activity, material and ideal objects, involved in the educational process as bearers of information (Canadian Centre for German and European Studies, 2005). We divided these means into three groups: informative (information resources, global and local networks, computer databases and encyclopedias, special literature, libraries etc.); methodological (programs of the research and pedagogical practices, methodological aid for preparation and defense of Master's thesis); and learning (research knowledge, research tasks, special course "Theoretic and methodological foundations of research activity", self-education programs, programs of psychological trainings).

One of the key didactic means to form graduates' readiness for research activity is conducting pedagogical and research practices and independent research work.

In the process of the research practice a master's student is improving his skills in realization of the research programs: he learns to select and reason the topic of his research work, work with bibliography, define an object, subject, aim and tasks of study, methodology and methods of study, analyze scientific concepts, process materials of study and summarize the results and present them in the form of reports, library-research papers, articles, presentations at meetings etc. (Orlov, 2010).

The research practice includes the following research tasks:

1) Formulate the problem and the topic of your study choosing among up-to-date problems of pedagogical science.
2) Formulate scientific tools on your topic: aim, object, subject, hypothesis, tasks of study.
3) Prepare bibliography of works on your problem of study (not less than 20 sources). Give grounds to the novelty of your topic. Find out key contradictions and formulate the problem.
4) Write down basic and peripheral notions (terms) on your topic. Build up the matrix and perform the following actions over your notions: provide a definition, its links with similar notions; and define its structure and attributes.
5) Using pedagogical vocabularies, you should identify 5-6 old notions which have a long history of development, and 3-4 notions which are relatively new in pedagogical science. Try to explain their appearance in the language of pedagogical science.
6) Make a program on the topic of your study.
7) Prepare presentation of the prospect of master's thesis.

After finishing the research practice graduates must submit a report to their scientific director. The observations and analysis of their reports on the research practice demonstrate that this practice facilitates the formation of the research skills, allows master's students to feel as researchers, and forms the ability for research activity.

The aim of the pedagogical practice is the development of a scientific-methodological contents of teaching activity, methods of scientific cognition of the pedagogical process, formation of the professional pedagogical concept in students' interaction in the pedagogical communication.

The developed program of the pedagogical practice in this study consists of three stages: preparatory, forming and resulting.

A preparatory stage is provided for initial conference where students get acquainted with the program of practice: aims and tasks of practice, contents of knowledge, requirement to the practice, and forms of the reports.

A forming (main) stage is characterized by the development of strategies which must refer to scientific activity. Master's degree students work with learning programs, get to know the principles of thematic planning on the base of State standard and working training programs, develop and perform lectures, seminars and laboratory studies independently (on their own). The obligatory requirements are as follows: performing classes with the use of information technologies, the development of didactical materials, in particular, multimedia presentations, testing programs, learning programs etc.

In the process of the pedagogical practice master's degree students attend laboratories of the chair on scientific disciplines and classes of other students. In the practice course they perform individual consultancies with the teacher, make notes in the pedagogical practice work book, and make up questionnaires and creative products.

A resulting stage is devoted to the final conference where a summary of the obtained results is given. The results of the pedagogical practice of master's degree students are shown in the reporting documents. These documents are: pedagogical practice work book, methodological materials (results of micro-research works), plans and notes of lectures, seminars and laboratory studies, scenarios and reports on the project etc.), diagnostic materials on self-assessment in the conditions of the pedagogical activity (lecture attendance analysis).

The confirmation of the scientific truth of theoretical assumptions requires the organization of special measures for their practical use and inspection. This problem can be most effectively achieved in the course of the experiment.

The goal of the implemented experimental study in the framework of our research was to test the effectiveness of the didactic support of the formation process of students' readiness for research.

The experiment was conducted during the graduates' study of disciplines "Organization and planning of pedagogical research", elective course "Theoretical and methodological basics of research", as well as teaching and research internship and thesis design, and during the extracurricular research.

The experimental work was carried out in three stages: ascertaining, forming and final.

The first stage - ascertaining - allowed determining the level of students' readiness for research activities, which enrolled in the first year of the master's program. In the experiment, the importance of the ascertaining step is taken into account, since the accuracy of the experimental results largely depend on the input data.

The second stage - forming - was conducted in the natural conditions of the educational process of master's degree. At this stage the didactic support of the formation process of readiness for graduate research that we have developed was implemented in practice. In the forming experiment there were involved two groups: control (CG) and experimental (EG).

The experiment had been conducting in each group for over two years as follows:

The first group (CG) studied with the use of the individual fragments of the developed didactic support for the formation process of students' readiness for RA.

The second group (EG) was trained with the didactic support for the formation process of students' readiness to RA.

After the forming phase of the experiment was finished, the reference section to determine the level of readiness for research was made.

At the third stage of the experimental work we summarized, systematized and described the results of the experiment.

To determine the level of masters' readiness to RA, we have developed three indicators: I1 – a motivational-value attitude toward research activities; I2 - a set of research knowledge and skills; I3 - personal qualities.

In the process of the diagnostics of the levels of master students' readiness to RA the following empirical pedagogical research methods were used: questionnaire and testing to determine the level of formation of self-assessment components of preparedness for research activities; testing graduates to determine the level of formation of the professionally significant personal qualities of the teacher-researcher; survey of graduates in order to determine the degree of awareness of research activities; interviews with graduates in order to identify the motivation for RA; observation of the graduates in the course of the research in order to identify the missing actions and operations necessary for the formation of preparedness for research activities; analysis of educational master programs to determine a list of special courses to be developed and the introduction in the educational process of the higher educational institution.

The results of the experiment are represented in Table 2.

Table 2: Comparative data of development level of graduates' preparedness for RA (ascertaining and final stages)

Group	A number of people in the group	Levels											
		Algorithmic				Interpretative				Research			
		Number		%		Number		%		Number		%	
CG	36	20	5	55.5 %	13.8 %	16	24	44.5%	66.7 %	0	7	0%	19.5 %
EG	36	19	0	52.7%	0%	17	20	47.3%	55.5 %	0	16	0%	44.5 %

As it is seen from the results shown in Table 2, at the ascertaining stage of the experiment in the CG, 20 people have an algorithmic level of readiness to RA, which is 55.5% of the total number of students (36 graduates). In the EG this number is 19 (52.7%). 16 graduates (44.5%) have an interpretative level in the CG, 17 (47.3%) – in the EG. In both groups, there is no research level.

After the forming stage of the experiment was carried out, there was an increase of the interpretive level of readiness for RA in the CG - from 44.5% to 66.7%, and in the EG - from 47.3 to 55.5%. However,

comparing the results on the research level, we came to the conclusion that in the experimental group, there is a steady upward trend in the number of graduates with research level of preparedness for RA from 0% to 44.5%, and in the CG this level is only 19.5%. The determination of the difference in the results of the EG and CG leads to the conclusion that the suggested didactic support for the formation process of graduates' readiness for RA is efficient and it improves quality of the professional training in the master course.

4. Conclusion

The study emphasized an important role of the independent research work on writing a master's thesis as far as independent writing of the research paper by master's degree students allows to rely on his own professional and creative experience, obtained in the process of bachelor's training and auditorium classes devoted to studying an education program of the master's training. That is why the task of teachers of the master's studies course is to help master's degree students to organize their research activity in the most efficient way. However, practice testifies that the majority of the master's degree students, commencing their work on a master's thesis, suffer difficulties related to the methodology of writing a master's thesis, the use of scientific cognition methods, logical laws and rules (Dvoretsky et al., 2006).

The analysis of scientific literature has shown that the effective training in the research activities is subject to the following conditions:

- Acknowledgement of the fact that self-training brings valuable experience in training;
- Use of a variety of assessment methods and promotion of self-assessment techniques;
- Consideration of the physical and social context of the active learning methods;
- Acknowledgement of success and contribution to the development of the students' research skills.

The didactic support for the formation of the master's degree students' readiness for the research activity improves their professional training, inculcation of the professionally significant abilities, research skills and knowledge.

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