The Place of Research and Creative Skills in the Training of Future Teachers

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Abstract
Among the priorities of the 21st-century education and school, and therefore, of teachers as well, is developing students' creative skills, teaching them to take advantage of diverse information and educational resources, to find quickly new and reliable information, which they need in order to manage their learning tasks and life problems. This "navigation" through information is one of the important research skills are needed by the young citizens of the technologized, dynamic world and must be purposefully formed and developed. This means that teachers themselves have to acquire and develop these skills, and the place where this should be accomplished is the university.
 The aim of this article is to present the experience of the Faculty of Pedagogy at the Sofia University "St. Kliment Ohridski" in developing students' research skills through assignments for self-dependent work. The paper provides an analysis of the students' opinions included in three studies: of the University Center for Quality Management, of a research team within an intra-university project, and a survey conducted by the author.
The conclusion is that, according to the students, basic university training is sufficient to develop their research and creative skills through various forms of individual and group work, in line with the skills necessary for 21st-century teachers.
Keywords: 21st-century teacher, teacher training, research skills, creative skills.

Развитие научно-исследовательских и творческих способностей в подготовке будущих педагогов

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Аннотация
Одним из приоритетов школы XXI века, а следовательно, и учителей является развитие творческих способностей учащихся, обучение школьников использованию разнообразных информационных и образовательных ресурсов, быстрому поиску новой и достоверной информации, которая необходима для решения учебных задач и жизненных проблем. Эта «навигация» в информации является одним из важных исследовательских навыков, которые нужны юным гражданам технологизированного и предельно динамичного мира. Эти навыки необходимо специально формировать и развивать. Это означает, что преподаватели сами должны уверенно овладеть такими умениями, причем уже в университете.
Цель данной статьи – представить опыт педагогического факультета Софийского университета им. святого Климента Охридского по формированию исследовательских навыков у студентов посредством заданий для самостоятельной работы. В статье анализируются результаты исследований университетского Центра менеджмента качества и исследова-

тельской группы в рамках внутриуниверситетского проекта, а также опроса, проведённого автором статьи.

По мнению студентов, университетская подготовка в достаточной степени развивает их исследовательские и творческие способности через различные формы индивидуальной и групповой работы, что соответствует необходимым навыкам преподавателя XXI века.

Ключевые слова: учитель XXI века, подготовка учителя, исследовательские навыки, творческие способности

Introduction

Today's education and school reflect, as a mirror, the problems, the values, and the challenges of the 21st century. They also define the context in which the teacher performs his/her professional roles: as a manager of the educational process (the one who plans, organizes, conducts, and controls the processes of students' education and training) and as a manager of the class (the role of a class instructor), as a diagnostician of students' needs and results, as an educator and a developer (of various literacies and skills), as a facilitator of learning, as a navigator and a mediator (with regard to information which is useful for students), etc. The context in which the teacher performs these roles is determined by several basic components:

• The ever-changing social environment at different levels (global, regional, national) and the impact of these changes on the specifics and nature of education and school.

• The changes in education, mainly driven by the scientific and technological progress, by the development of information and communication technologies.

• The national and local traditions, values, lifestyle, and culture, which are an important part of the knowledge of the 21st-century student – a citizen of the world, whose roots, however, are in his/her homeland and native memory.

Each of these roles involves the performance of certain activities. For the success in these the teacher needs specific competencies (expert, managerial, leadership, diagnostic, research, information, digital, etc.). All these constitute the basis on which the teacher can form in his/her students those literacies and skills defined by a number of reformers and researchers as "key competences" for life and activity in the 21st century, including:

• learning and innovation skills – an important place among them is held by the group of the "Four Cs" – creativity, critical thinking, collaboration (ability to work in cooperation), communication;

• skills related to searching and using information, different media, and technologies – these are, essentially, research skills;

• life and career skills – for coping with problems, adapting to change, teamwork (including in research projects), etc.

The ever-evolving new information and communication technologies daily expand the palette of knowledge (and information) sources and the opportunities to access them. Students do not need special permission and guidance to surf the Internet and to decide on their own which information is "true" and "important" and which is not, what to learn and what not. Thus, the modern educational process acquires the characteristics of an andragogical process (the process of training adult learners (of legal age) who are active participants in their own learning, able to make choices and make self-directed decisions, and to be partners of the teacher in a learner-centered process of training (Gyurova, 2011, 4.2)). And if learning is a process of thinking, discovering, questioning, critical reasoning, and reaching creative answers (Nottingham Andragogy Group, 1983, pp. 36-37), then students – like adult learners – can be creators (authors and makers) of their own knowledge, thinking, and feelings. The modern teacher has to accept the fact that he/she is just one of the sources of knowledge, though still a very important source. The new professional tasks required nowadays, also include the preparation of one's students

to navigate successfully in the sea of information, to put them in the role of researchers of educational resources and creators – thinking, seeking, and discovering creative solutions and answers to questions provoked by their encounter with different truths, views, and authors, through various sources of information, including electronic (virtual) ones. And this means that teachers themselves must be researchers and creators, must be able to seek, discover, select, and analyze information for educational purposes, and must be able to create educational resources by themselves, including electronic ones. This research and creative competence must be a part of the competences which the university forms and develops in future teachers.

Methodological grounds

The research question is whether the modern pedagogical training of Bulgarian students forms their skills for research work and creativity. We consider that this group of skills includes the skills to seek, select, analyze, and interpret information from various sources (printed, electronic, including different websites), from experience gained in group work and communication in learning and virtual environment. These are part of the skills needed to perform individual and group (or teamwork) creative tasks – to conduct an empirical research for the purposes of coursework and diploma theses, to develop and carry out scientific projects, to write essays and papers, to study cases, etc.

The aim is to examine the extent to which research and creative skills are among the important skills (competences) which university education forms in the students of Pedagogy and Non-formal Education at the Sofia University "St. Kl. Ohridski" (Sofia, Bulgaria). The study involved an analysis of the curricula and syllabi of students enrolled in these two specialties. The article recounts the conclusions of an empirical study (based on a content-analysis and a survey) conducted in 2015-2016 by a research team within an intra-university project on "Students' self-study skills" (Bozhilova et al., 2016). The author also discusses data from an independent survey carried out among Bachelor students, year I-IV (157 students of Pedagogy and 63 students of Non-formal Education) on the quality of their training during the first semester of the 2018-2019 academic year, conducted by the University Centre for Quality Management (2019). This information is further substantiated by the opinions of 31 students from the same specialties, gathered during two focus groups conducted by the author in January, 2019.

And since the Sofia University "St. Kl. Ohridski" is the oldest and leading university in Bulgaria, earning the right to be a model of pedagogical education in the country, it can be said that the conclusions of the present study can be considered to a significant extent valid for the training of students of pedagogy in other Bulgarian higher schools.

Results

The overview of the curricula and syllabi shows that, besides gaining knowledge, students of education manage to acquire a variety of skills (including research skills): for planning and organizing educational activities with children and adults, for working on projects, for teamwork, for writing scientific papers, for analyzing case studies, for presenting, for arguing and defending positions, etc. The main instrument in this process of skills development is individual work, carried out through different methods.

The content analysis of the curricula conducted by a research team led by Bozhilova in 2015-2016 shows that students from the Faculty of Pedagogy are assigned 19 varieties of creative tasks, performed individually or in working groups/teams related to the following categories: writing tasks (preparing a report, most often with a presentation of the results), tasks involving searching resources and selecting information (often involving use of libraries), and tasks for presenting and defending a thesis/an idea by participating in a

discussion (Bozhilova et al., 2016, p. 4). Most often, these are tasks which involve work according to a preset model, with detailed instructions from the teacher, followed by tasks for presentation, description and analysis of phenomena or processes. Next, there come the tasks for discovering regularities and causal relations, for ranking, summarizing, and comparing. The least frequent are the entirely individual creative tasks where students themselves formulate the research problem, plan the execution, choose the means, and accomplish the task (*ibid*, p. 46).

In almost all disciplines, students develop individual projects, make presentations, solve cases, participate in discussions and debates, etc. In particular, students of pedagogy are most frequently assigned the following tasks for individual work: using a library, writing reports and making presentations, preparing to participate in discussions, followed by portfolio development, project development, writing essays and academic papers.

Similar tasks are assigned to the students of non-formal education. Here, in second place, "field-work" is also required – involving attendance, on-site monitoring (for example, educational companies or centres) and practical activities (*ibid*, pp. 33-34, 37-37).

As a whole, the students of the Faculty of Education (from all the specialties) are most often assigned the task of developing a portfolio in the discipline, followed by developing a study project, preparing and delivering a presentation (including multimedia) (*ibid*, pp. 50-51).

More and more teachers are introducing elements of distance (virtual) training in their courses – uploading lectures and materials to educational platforms, guiding students to use electronic resources, conducting "virtual" discussions, using electronic tests for on-going evaluation. These contribute to developing important skills enable students to work in a virtual learning environment.

The report from the University Centre for Quality Management (2019) reflecting students' opinions and ratings of the quality of their training during the first semester of the 2018-2019 academic year shows that they approve of the use of training methods which require from them creativity and research work and rate them as follows (where 6.00 is the highest rating):

Table 1: Average students' ratings of the usefulness of creative training methods

Methods of training and assessment	Students of Pedagogy (%)	Students of Non-formal education (%)
Case solving	5.06	5.47
Individual projects	5.33	5.34
Presentations	5.23	5.18
Discussions and debates	5.33	5.08
Game (simulation) methods	5.29	5.00
Group work	5.24	4.73
Elements of e-learning	4.74	4.50

The data are presented according to the results reported in University Centre for Quality Management (2019) Table 13 (for the pedagogy specialty, p. 23) and Table 24 (for the Non-formal education specialty, p. 60)

According to the same report, the students of Pedagogy consider as "absolutely useful in training" the methods of "discussions and debates" and "individual projects",

followed by "game methods" and "presentations" (Paper ..., 2019, p. 73). Students of non-formal education place first in terms of usefulness the method of "case solving", followed by "individual projects" and "presentations".

According to the curricula and syllabi, individual assignments and coursework are part of the forms for assessing learning achievements. Students prefer them as a means of assessment. (Table 2).

Table 2. Average students' ratings of the used creative methods of assessment

Methods of assessment	Students of Pedagogy (%)	Students of Non-formal education (%)
Individual work	5,09	5,03
Coursework	4,98	4,82

The data are presented according to the results reported in University Centre for Quality Management (2019) in Table 15 (for the Pedagogy specialty, p.23) and Table 26 (for the Non-formal education specialty, p.63)

Individual work is ranked first of the students' preferences. The final oral examination is placed second by the students of Pedagogy, and the test as a form of assessment is placed fourth (*ibid*, p.25). The students of Non-formal education place coursework second (after individual work), followed by the test, and the final oral examination is in the last (sixth) place (*ibid*, p.63). These preferences indicate that students have good skills in writing different creative texts.

Students of Pedagogy consider individual work to be the method that most adequately assesses their knowledge acquired during the training process (*ibid*, p. 73).

Besides individual work (in addition to the studied undergraduate courses of "Fundamentals of pedagogical research" and "Empirical studies in non-formal education"), direct participation of students in research projects, together with lecturers, also leads to the development of their research skills. The new rules of research funding give priority to projects involving students and/or PhD students. The accreditation of the different specialties also takes into account students' research work. This is the reason for the increasing participation of students in research projects over recent years. According to the report from the survey of students' opinions, more than one third of the students of pedagogy and nearly two thirds of the students of non-formal education were included in research work – some of them in more than one form (*ibid*, 2019, pp. 27 and 66).

Table 3: Participation of students in research work

Forms of research work	Students of Pedagogy (%)	Students of Non-formal education %)
Research projects of the Sofia University	18,5	12,5
Research projects of other institutions	3,7	10,0
Scientific conferences (seminars)	18,5	52,5
Publications in the specialty field	2,5	7,5
No previous involvement	66,7	22,5
Total	109,9	105,0

The data are presented according to the results reported in (*ibid*, 2019) in Table 17 (for the Pedagogy specialty) and Table 26 (for the Non-formal education specialty)

Table 3 shows that the students participated mainly in scientific forums (conferences and seminars) and in intra-university research projects. Undoubtedly, the inclusion of students in research teams is also based on the assessment of their present skills and qualities. The report shows that almost all excellent students (from the respondents) participated in research projects. Students with lower grades have been involved mainly in scientific forums.

Students' research and creative skills evolve over the years of study. As already mentioned, students gain experience from performing individual and group creative tasks (projects) and from being involved in research work together with lecturers. All this contributes to developing in future specialists in pedagogy and non-formal education those skills which are part of the key competencies of the 21st-century teacher. Also, these graduates are preparing for pedagogical work with children. Therefore, it is important to consider how they evaluate the benefits of research and creativity; to what extent individual work helps them develop such skills, what helps them, and what prevents them from successfully performing research and/or creative tasks, and what other skills from this group should be developed in order to manage even better.

In order to verify students' opinions on these issues, two focus groups were held (on 24 and 30 January 2019):

- the first– involving 25 students of Pedagogy, 2nd year, full-time;
- the second– involving 6 students of Non-formal education, 5th year, part-time.

The difference in the number of students was determined by the difference in the number of students in the courses. During the focus groups, the following questions were discussed:

1. Why are students' research skills important?

2. What conditions should be present so that students can successfully accomplish a research or creative task?

3. What are the problems faced by students in performing such tasks, and what hampers them?

4. What research skills and qualities should students develop to better cope with performing research and creative tasks?

The responses show that students from both focus groups estimate realistically the presence or absence of their own research skills, mainly on the basis of their experience in university. There are also some differences regarding the ratings, which are undoubtedly related to the larger experience of the 5th-year students of non-formal education.

The discussions in the two groups on the first question *(Why are students' research skills important?)* showed that students generally have a positive attitude towards this group of skills and the need to develop and improve them. The students of pedagogy consider them useful in the following regards:

– *They find them necessary and important transferable skills in connection with their studies at the university* – in particular, these skills help students to master the material better, to deepen and strengthen the knowledge in a particular field, obtained from the lectures and the seminars on the subjects. Research work motivates them to learn new things and develops their desire to seek and find the necessary information faster; the presence of such skills helps them to achieve better effectiveness of their empirical or theoretical research and, consequently, of the results thereof. These skills bring them closer to the studied sciences, and students feel "useful and significant to the scientific sphere" to which their specialty belongs;

– *They associate them with future benefits for their work (as specialists in other fields as well)*, requiring the search for and use of information – in particular, they believe that these skills help them: to access information and knowledge that one day can be utilized

in practice; to deal with projects and tasks of a different nature – "these skills can be "transferred" to a number of other tasks";

    – *They evaluate them as an important part of their personal development* – for "training" one's brain, memory, thinking, and analyzing "the learning reality"; for developing and stimulating the skills for reasoning, analyzing and synthesizing information; for the formation of useful skills for self-control, self-education, self-evaluation, teamwork, and of qualities such as independence, creativity, discipline and initiative.

    The students of non-formal education also highlight the benefit of research skills as *transferable skills for their university training*: for analyzing "the learning reality"; for fulfilling the learning tasks; for evaluating information with regard to its "potential" in terms of educational work, and in particular, for achieving effectiveness of their empirical or theoretical research (creative task) and, accordingly, effectiveness of the final result. Next, the students in this specialty place second the benefit of research skills in relation to improving brain activity, memory, and thinking.

    The answers to the second question *(What conditions should be present so that students can successfully accomplish a research or creative task?)* are presented in Table 4. The opinions are ranked according to the priority attributed by the students to each condition.

Table 4: Conditions for conducting an effective (productive) student research (for performing a creative task)

Students of Pedagogy (%)	Students of Non-formal education (%)
• *Good material base,* including enough literature and reliable sources, and enough time for the research or the creative task • *Good preliminary preparation* – setting clear objectives for the research (the creative task), which implies good awareness of what and how should be done, and what results are expected to be achieved; good planning and structuring of the task; developing an adequate set of instruments; good preliminary organization for the task execution (providing the necessary resources, time and materials, well-prepared instruments for the realization of the empirical research or the creative task); ensuring a cooperative target group / respondents • *Consistency of actions* – following the plan, providing a critical analysis of the information and the results; final editing of the text.	• *Competence on the subject matter* of the learning task, including existing achievements of different authors in the sphere of the research (on the topic of the creative task). • *Presence of students' skills for conducting a research*: for setting goals; for developing and following a plan (an algorithm); for providing information; for using adequate instruments; for making a critical analysis of the results from the research (the creative task); for final editing of the analytical text. *Skills for work with information: collecting and using information;* for managing the process of searching for information; for taking notes from various sources; for analyzing, interpreting, and evaluating information; for presenting the results (in oral and written form).

    Some of the students from both focus-groups noted that if the subject is not predetermined by the lecturer, the result depends first on the choice of a significant problem, and only then the necessary information should be collected and processed. This is also important for the motivation to work on a research (or creative) task, which is often determined by the availability of the *necessary* research skills in students, in particular:

- for managing the process of searching for, collecting, and using information
- for taking notes from different sources
- for analyzing, interpreting, and evaluating information;
- for presenting information in the required format**.**

The students of Pedagogy comment on specific obstacles (difficulties) in performing research and creative tasks:

1. *Problems with information* – from the lack and scarcity of reliable literary sources, to the risk of encountering sources with false content, containing old/incorrect data or misleading information.

2. *Problems with respondents when conducting an empirical research* – from the difficulty of finding respondents to the willingness and attitudes of the people whose participation is crucial for the realization of the research (the creative task) to cooperate with the students, including filling out the questionnaires correctly and in time.

3. *Problems with the students' competence perform the research or the creative task (lack of research and other skills)* – how to conduct the empirical study (or fulfill the creative task) and how to process the data obtained; how to choose criteria and analyze results accordingly; how to adhere to the main theme of the research (the creative task); how to solve cases related to problems from a field which is unfamiliar to the student ("lack of critical thinking"); how to interpret more complex texts (of materials that are "hard to comprehend"); how to organize time, etc.

4. *Discrepancy between theory and* practice – between facts and authors' theses and search results.

5. *Problems with communication between students in team tasks (projects) or tasks for group work* – a lack of motivation in the team of students to carry out the research (to fulfill the creative task) or a lack of motivation in some individual members; misunderstanding or tension between the members of the group/team.

6. Problems related to incorrect information from the teacher assigning the task – giving students incomplete, inaccurate, or unclear information about the task and the way it should be performed; exhibiting subjectivity when assessing the results; setting short deadlines for the execution.

Similar problems and difficulties are also identified by students of non-formal education. However, they are more critical with regard to their own skills, especially to their skills for: interpreting more complex and difficult texts; solving cases from a field with which they are unfamiliar (problems with skills for critical thinking and defending one's own theses through the research). Students note that sometimes their personal observations differ from the theses of the authors of theories. They are definitely hampered by the lack of research skills (for collecting, evaluating, and using information; for evaluating the results), by the uncertainties about the task (mostly about the purpose and the variables), and also by incomplete feedback, etc.

In this spirit are also the comments of the students with regard to *what would facilitate them* in their research work. Students of pedagogy highlight the following "facilitations":

- precise and clear guidelines for work (for better understanding of the task);
- advance specification of good and "secure" (i.e., available) sources of information in the libraries;
- development and improvement of their research skills;
- sufficient time to complete the task;
- a better motivated team;
- good ("accurate") conditions for work: responsive respondents, documents granting access to the institutions studied and to representatives of the target group of the study who have the characteristics needed for the purposes of the research, including social and cultural characteristics;
- opportunity to request and to receive help – first of all, by the teacher, but also by other specialists or experts – "authorities" in the specific area of the research (the creative task);

• availability of technical means – to search for information on the Internet and to present the results.

The students of non-formal education consider that key to success in their research work are the following "facilitations":

• the opportunity to receive help and support from a recognized authority (specialist) and from the teacher; to be aided in overcoming difficulties and finding alternatives;

• the opportunity to develop and improve their research skills – including searching, collecting, and using information is relevant to the task;

• availability of the necessary information, conditions, and appropriate respondents to conduct the research;

• the creative nature of the task.

In this context, students from both focus groups also share opinions on *what research skills and qualities they need to develop* in order to better cope with the performance of research and creative tasks:

• organizational and technological skills – related to specifying the task and the technology of its execution, including planning and time management;

• specific research skills – related to discovering, collecting, and selecting, analyzing, reading, and processing information; developing the set of instruments for the research; skills for conducting the research;

• presentation skills – for presenting the results;

• intellectual skills – for critical and analytical thinking, for analyzing and summarizing, for using reference resources;

• mathematical and technical skills – for processing statistical data;

• social skills – for communicating with others; for cooperative (team) work; for dealing with tension and stress – for achieving greater self-control, for solving problems and overcoming difficulties in performing the research or the creative task.

The students of pedagogy point out that necessary qualities for research and creative work include: purposefulness; patience; initiative; fairness (lack of prejudices and stereotypes); objectivity; flexibility; self-control. Students of non-formal education emphasize the development of critical and analytical thinking as well as qualities such as objectivity and flexibility.

These views coincide with the skills and qualities mentioned by the students surveyed in the other two studies, the results of which are reported in the paper of the University Centre for Quality Management (*ibid*, 2019) and in the book by Bozhilova (2016) which gives the results from the study.

Discussion and inferences

Despite the critical attitude towards their own skills for performing research and creative tasks, students in the Faculty of Pedagogy recognize the benefit of these tasks and skills for their successful training and personal development. The opinions students express lead to the conclusion that there is a need for *special efforts on the part of teachers who assign research and creative tasks,* in terms of ensuring the conditions for the successful fulfillment of these tasks. In particular, teachers have to:

– provide more detailed (if possible, written) information on the task and a list of reliable and accessible sources of information;

– provide preliminary training for students how to perform the research or the creative task (including work on developing specific skills);

– set realistic deadlines for the task, taking into account the fact that students might have other commitments (and tasks) during the same period;

– improve students' information literacy;

– develop and improve their communicative and social skills through more group work during the sessions and assigning teamwork as an out-of-class activity, while clearly distinguishing the responsibilities of each team member for the overall result;

– introduce students to approaches and strategies for negotiating and persuading others so that they can ensure the respondents needed for their research;

– provide the opportunity for further informing and counseling students during their work on the research (or creative) task.

Conclusion

The study has shown that, without specifically laying down in the curricula and syllabi of the offered undergraduate specialties the goal of "forming skills for the 21st century", the Faculty of Pedagogy at the Sofia University "St. Kliment Ohridski" in practice manages to develop in students the skills from the group of "the 4 Cs" through self-dependent work (realized through research and creative tasks). Students involved in the studies indicate that self-dependent tasks require creativity and an innovative approach as well as purposeful development of learning skills. They take into consideration their weaknesses sufficiently with regard to some of these skills, and they claim willingness to develop them. This is an important step on the path of students' own self-development and self-improvement. The university could help them by offering specialized courses on learning skills, which could include research and creative skills.

References

Bozhilova, V., Yanakieva S., Radenkova, Ts., & Marinova, M. (2016). *Students' self-study skills*. Sofia: Avangard Prima.

Gyurova, V. (2011). *Andragogy in 6 questions*. Gabrovo: Express.

Gyurova, V., & Bozhilova, V. (2016). *Study skills' development*. Sofia: Sofia University St. Kliment Ohridski University Press.

Nottingham Andragogy Group (1983). *Toward a developmental theory of andragogy*. Nottingham, University of Nottingham.

University Centre for Quality Management (2019). *Data analyses of the students' opinions and assessments about the quality of education in the professional area 1.2. Pedagogy, Bachelor degree.* Sofia University "St. Kliment Ohridski". Laboratory of Analysis and Research.