

The Formation of the Foundation of Academic Writing

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ABSTRACT

The relevance of the problem under investigation is caused by the fact that in the context of the modernization of the education system one of the main tasks of higher education is the formation of the students' key competencies. The article aims to compare the model of higher education in Kazakhstan and abroad, reveal the differences and identify a number of problems that must be solved for the formation of key competencies of academic writing. The leading approaches to the study of this problem are the survey of products of students' activity, questioning, interview and the method of statistical processing of results. An analysis of the theoretical and methodological literature allowed to formulate the concept of academic literacy and to determine the level of readiness for the academic activities of students in pedagogical high school. Materials of this article may be useful for the students of pedagogical high school as the result of the interviews with the students of Kostanay State Pedagogical Institute has shown the need to introduce a special discipline in the educational process for the development of academic skills

KEYWORDS

Academic writing, academic literacy, scientific and research activity, scientific community, formation of academic writing skills

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Introduction

In the conditions of the deepening of integration processes into the world educational space the urgent need of a modern specialist becomes a language competence, the readiness for academic activity and scientific and research work and further professional activity related to information processing and integration into the global academic and professional paradigm. Kazakhstan's accession to the international educational process (Bologna Process) provides

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students, undergraduates and doctoral students the opportunity to participate in the educational and scientific process in European countries. However, at the same time this requires the presence of general language and scientific and research competencies, knowledge and observation of all claims made in the scientific community.

The scientific and research competences are formed and developed during training in HEI and directly in the process of writing academic texts in the form of course and diploma projects, essays, research reports, and further master's and doctoral theses. Thus, it is necessary to develop the skills that need to solve tasks, primarily in written communication.

During the advanced training course at universities in England and Japan, we had an opportunity to compare the models of higher education at universities of Kazakhstan and HEIs abroad, to figure out the differences and identify new tasks that require the solution for implementation of the national program. One of these aspects on which we focused our attention during the course, is professional communication and writing of scientific texts.

It is understandable that the further successful career of the young academic generation is directly connected with the academic literacy of the future specialist. Therefore, it is obvious that for the future specialist in any field the correct communication skills are of particular importance, and carry much more than the simple achieving of the goal in oral or written communication.

The purpose of this work is to reveal the level of academic writing skills of the students of pedagogical specialties and further to contribute the development of their academic literacy.

The analysis of foreign literature showed a small number of sources published after 2010. This is due to the fact that the problem with the issues of academic writing in the West is considered to be solved. In contrast to Western countries in the CIS countries, this problem is becoming increasingly important. This fact proves the existence of a huge number of works of interdisciplinary fields, devoted to the problem of academic writing, published from 2010 and published for the present moment.

“Academic Writing in the foreseeable future may take a significant place in the Russian university education in a number of disciplines, developing a meta-subject, interdisciplinary and, indeed, international comprehensive competence, and our universities will be able to produce academically competent professionals ready to meet the challenges of the information economy and the global political and socio-cultural changes taking place in the world” (Korotkina, 2013). E.M. Bazanova (2015) considers the letter centers established in the leading Russian universities, as laboratories of scientific communication, as they set themselves ambitious goals. One of these goals is to develop competencies among researchers in the field of scientific communication to enhance their publication activity and promotion of the international academic community. The article by S.V. Bogolepova (2016) described the difficulties that students encounter when mastering a foreign language written language in the course of English for academic purposes in the context of the specifics of the course. The article by S.V. Bogolepova (2016) described the difficulties that students encountered in the mastering by a foreign written language in the course of English for academic purposes in the context of the specifics of the course. It was



analyzed the methodological approaches during the learning of written foreign language, identified their strengths and weaknesses, the possibility of using tasks inherent in this approach, in the course of academic writing in order to overcome the difficulties. N.I. Kolesnikova (2015) examines the basic categorical features of scientific texts humanitarian and technical profile and gives a reasoned justification for the importance of the development of such information for the successful execution of the results of scientific activity. In her work "Creation of an academic text" E.R. Iarskaya-Smirnova (2013) addresses issues related to the organization of academic work, an overview of sources, design academic text. To begin with, it is important to relate to the basic concepts of our study. They are academic writing and academic literacy. The word "academic" in English is related to education and science. Academic writing is always a form of evaluation that asks you to determinate knowledge and show proficiency with certain disciplinary skills of thinking, interpreting and presenting (Irvin, 2010). N.V. Smirnova (2015) considers the problem of formation of academic literacy of students and teaching writing from the point of theory and practice. N.V. Smirnova (2015) examines the nature and structure of academic literacy and puts forward the idea that the basis for the formation of an academic literacy is the notion of academic discourse. Written speech is seen as a key component of academic literacy and writing training based on the training of translation of academic written discourse. In our case it is involvement to a large social group of people working or studying in a HEI and engaged in science, and that means that they are dealing with reading and producing academic and professional texts. Under the "Academic Writing" referring to Ye.S. Ostrovskaya and O.V. Vyshegorodtseva we understand "different types of writing activity, united by the fact that they take place in the academic as well as in the university life" (Ostrovskaya & Vyshegorodtseva, 2013).

According to B. Green's (1999) definition academic literacy includes three aspects:

- Operational literacy - the language (particularly writing) competence.
- Cultural literacy - understanding of the discourse and culture: the ability to communicate in the language of a particular group of people or an object (eg., the scientific language of economics or education, a poetic language, etc.).
- Critical literacy - understanding of how knowledge is created and how it can be transformed (eg., the ability to understand what is meant or thought according to the author of the written text - newspapers, scientific articles, etc.).

Thus, the academic literacy is understood as the ability to analyze, think critically in relation to the text information and correctly use different "languages" in the perceptual (reading and listening skills) and reproductive level (writing and speaking skills). The term "academic literacy" is widely used in the world educational space, first of all, to determine the level of readiness for academic activity, namely studying at a HEI, scientific and research work, as well as any professional activity related to the processing of information and the need to write professional or scientific papers.

Materials and Methods

The objectives

To identify the level of knowledge of students' academic writing skills of the pedagogical HEI in our work were distinguished the following objectives:

1. Analysis of the existing literature on the research topic.
2. Development of the training and methodical manual to shape the basics of academic writing.
3. Students' interviewing in order to determine the learner's need for special courses for formation of academic literacy.
4. The influence of specially organized conditions for the formation of academic writing skills.

Set of Methods

In our study we used the following methods: the theoretical analysis of the literature on the study, the survey of products of students' activity, questioning, interview (Gudjons, 2012) and the method of statistical processing of results (Armer, 2012).

Using an interconnected complex of theoretical and empirical methods allowed observing the validity of the results. For this purpose, we used this set of methods to conducting our research.

The general culture of the future specialist and his ability to communicate with representatives of different social, cultural and age groups does not imply that he is able to write a complex text document or an research essay and prepare a good presentation. Even the possession of terminology and common language (lexical and spelling) literacy cannot ensure the professional success in the future (Esselborn-Krumbiegel, 2010). The ability to analyze and bring the information into the system, to propose and substantiate the ideas and plans, to be able to present it in the form of a logically ordered text, where every word, every illustration, table or list, have a clear assignment and can represent a special kind of literacy, which is determined by the scientific community as an academic literacy.

As well as any other kind of literacy, which implies a mastery of methodological tools, the academic literacy is achieved through integrated development of the system of specific abilities and skills in the learning process, namely through education.

To achieve the level for academic activity, such as training at HEI, scientific and research work and professional activity related to the processing of the information, the student must be taught to write professional and scientific papers. The readiness of that is determined by the relevant criteria.

Academic Literacy Abroad

Criteria for academic literacy abroad are determined in accordance with its major aspects and vary depending on specific conditions. For example, a test for entering the university (TALL, South Africa; SAT-Scholastic Aptitude Test, the USA), TWE in the USA and IELTS, Academic Writing Module in the UK (The Official SAT Study Guide, 2005).

As a rule, the issue of academic literacy becomes more relevant at entry to the university. It is a fact, that the ability to think, critically evaluate, summarize, compare, formulate properly and express the thoughts form the bases of successful training and, consequently, the further activity of the future



specialist. The competences of academic literacy are checked at entry to a university by testing, and afterwards it should be developed in the learning process, it means it forms a part of the specialized courses. For instance, in the requirements contained in the document “Academic literacy: a list of competencies expected of the students entering public colleges and universities in California”, is said: “All the elements of academic literacy - reading, writing, listening and speaking, critical thinking, the ability to use technology, and the ways of thinking that contribute the success of training (academic success) are required from applicants to any scientific field. These competences should be acquired in the subject areas of higher education. Hence, teaching these subjects is included into the responsibility of universities and colleges” (Academic Literacy, 2002). Academic literacy tests are passed not only by applicants, but also by first-year students in different countries. This system is used at universities in the UK, where, depending on the level of academic literacy, the student may be proposed mandatory attendance of relevant courses selectively or in full; in the case of a high level the student is exempted from attending these courses (Oshima & Hogue, 2006).

It seems to be interesting an example of South Africa, where in terms of testing the skills of logical, critical and analytical thinking, the brilliantly developed test (TALL) can be taken in both English and the native language. The test verified the skills such as:

- knowledge of the academic (general science) vocabulary;
- understanding of metaphors;
- understanding of the component parts of the text and the links between them;
- understanding of the different types of the language and text (scientific descriptions, instructions, tables, evidences, etc.);
- the ability to interpret graphic information and understand the charts;
- the ability to distinguish the main idea from the minor details, cause from effect, and fact from opinion;
- speed of simple calculations without a calculator;
- the ability to classify the questions and compare them;
- ability to draw conclusions based on the information and apply them to other situations;
- the ability to formulate the problem, carry out the proof and present factual information in support of it;
- the ability to evaluate the significance of the concept on a more general and higher level (Ease, 2014; Brown & Hood, 2002).

At the universities of the UK, the USA and Germany where a lot of foreign students are, the study without fail begins with an introductory (usually four-long week) course (Pre-Sessional) which is aimed at the enrolled in the university students’ mastering of academic skills on the basis of language centers (Morley, Doyle & Pople, 2007). The teachers of the courses on the development of the academic skills in the system of higher education are mainly

specially trained language experts for specific and academic purposes. In Germany the academic literacy is a part of the Federal Institute for adult education and in Sweden – in the program of the Institute of Education in Stockholm (Cummins, Brown & Sayers, 2007; Theuerkauf & Steinmetz, 2009).

Thus, the analysis of the current situation in this area has shown that the courses, which develop academic literacy, include academic writing and academic reading and presentation skills, discussion skills, so they help to form academic culture.

Results and Discussion

After analyzing the situation of the development of academic skills through the introduction of special subjects in the curriculum at Kazakhstan HEIs, we have established the fact that such a course was involved in the list of compulsory subjects only for the specialty “Foreign language: two foreign languages” entitled “Language for Academic Purposes” until 2012 (Note: currently it is an elective course, which is offered in the amount of 2 credits).

The Interview before the Course

In order to determine students’ need in these courses, we conducted interview with graduate students of Kostanay State Pedagogical Institute of natural-science and humanities. The experiment took place in natural conditions of Kostanay State Pedagogical Institute. Respondents were students of the Faculty of Foreign Languages, Faculty of natural sciences and mathematics, as well as the Faculty of History and Art. 50 students of both sexes took part in the survey in specialty “Foreign language: two foreign languages”, 50 students of a specialty “History”, 50 students – “Geography”, 50 students – “Bilology”, 25- “Physics, Mathematics”. The age qualification of the respondents was 22-23 years. Students were offered to answer the questionnaire, comprising three with Yes / No questions. On the proposed questions students abovementioned specialties must be answered within 10 minutes. The results were processed by mathematical calculation of positive and negative answers to questions. The counting results are shown in Table 1.

On the question “Did you have any difficulties in the writing of academic topics (essay, student's work, diploma paper)?” 136 students responded Yes, 14- No. Asked “Did you use special literature for writing academic topics and research works? 29 respondents answered Yes, 121- No. And the last question “Do you consider you need introduction of course "Basics of academic writing" in the studying process?” The following responses were received: 145 people responded Yes, No- 5.

Thus, the results of students’ interviewing of pedagogical specialties in our university have shown that such a course is necessary for the formation of academic literacy skills. The vast majority of students expressed their desire to undergo special training to develop skills of academic writing. In this regard, we have come to the conclusion that the development of the course “Basics of academic writing” is timely for our students and prospective masters planning to study at the universities of our country as well as outside the country.

Creating and Teaching a New Subject



According to the results of bachelor students' survey, we decided to work out the materials for creating and teaching the new subject. The developed elective course "Basics of academic writing" is our first experience of implementing in the system of Kazakhstani higher education the theory and practice of academic skills. In the developing process of the course "Basics of academic writing" we set out to help the students to develop precisely those skills that are needed to solve the problems associated primarily with the written communication, because this kind of competence determines the success of professional work in the future and will provide the ability to integrate the international scientific community.

Table 1. The results of the interview before the course

Amount of specialties	Amount of respondents	Questions					
		Did you have any difficulties in the writing of academic topics (essay, student's work, diploma paper)?		Did you use special literature for writing academic topics and research works?		Do you consider you need introduction of course "Basics of academic writing" in the studying process?	
		Yes	No	Yes	No	Yes	No
Foreign language: two foreign languages	50	45	5	10	40	48	2
History	15	13	2	5	10	15	0
Geography	30	26	4	5	10	29	0
Bilology	30	28	2	6	24	27	3
Physics, Mathematics	25	24	1	3	22	25	0
Total							
5	150	136	14	29	121	145	5

For this reason there was used a theoretical, educational and methodical literature of English-speaking and German-speaking sources. However, it should be noted that the aim of the course is not a "mechanical" transfer of the data on the Kazakh soil from foreign scientific and educational and methodical literature. Given this fact, we made efforts to adapt the foreign language materials to realities of our own educational environment.

In this way, the basis of the course formed the special knowledge and analytical experience accumulated by the authors of this manual. It includes:

- study of foreign experience in teaching courses on the development of academic skills on the base of the scientific and methodical literature;
- probation courses and professional contacts with the colleagues at the universities of the UK (Newcastle University), Germany (Berlin Technical University) and Japan (Tsukuba University);
- the active participation in the international and regional conferences and seminars, which raise issues of language for academic and professional purposes;

- analytical work with materials from the Internet (the analysis of ongoing scientific researches, databases of the advanced universities in the world, online discussion of the subject with colleagues);
- work with a large number of constantly updated textbooks and manuals on the formation of academic culture and developing of academic skills, appearing in the UK, USA, Germany, Japan, Russia and other countries in framework of the curriculum “Language for academic purposes”.

The main focus of the manual is made on the disclosure of the topics that are little highlighted in the domestic literature or on issues that are not discussed in our academic environment, but becoming relevant within obtaining an educational grant for study abroad. These include essay writing, drafting the scientific and research plan (Expose'), abstracts (Abstract, Conference Reports), ethics and originality of the research work (check for plagiarism, data falsification, forgery and data manipulation).

In our point of view, the particular importance has the appeal to matters relating to the publication of articles and other academic texts. Due to the fact that the issue of plagiarism scandal and discussions occurs in the scientific world we considered to familiarize students with ethical and legal standards and compliance with copyright. Next in addition, we offer to formulate in the future the basic rules for writing a good academic work, including regulations.

The Results of the Interview after the Course

After the publication of the manual that included specified aims, we taught this elective course for students, who were interested in getting such academic skills. To conclude the study of using academic skills in the learning process, we arranged the next students' survey with the goal to figure out the results of forming the academic writing skills and getting experience. After conducting the named course we asked the students, who participated in the courses for “Basics of academic writing”. The number of the students visited the course was 150. Respondents were the same group of students. Students were also invited to answer the following questions for 10 minutes: 1. Did you have any difficulties in the writing of academic topics (essay, student' work, diploma paper) after studying the course “Basics of academic writing”? 2. Did you use special literature for writing academic topics and research works after studying the course “Basics of academic writing”? 3. Do you consider you covered your experience in writing a research essay after studying the course “Basics of academic writing”?

The results of the second survey of the students' differ significantly from the former one (Table 2).

The question ‘Did you have any difficulties in the writing of academic topics (essay, student' work, diploma paper)’ after studying the course “Basics of academic writing”? 40 students answered Yes, 110-No. The next question ‘Did you use special literature for writing academic topics and research works after studying the course “Basics of academic writing”?’ 123 respondents gave the answer with Yes and 22-No. The last question ‘Do you consider you covered your experience in writing a research essay after studying the course “Basics of academic writing”?’ were received answers such as: Yes answered 22 students, No-123.

As a result, we could figure out that such a course is definitely important to have skills in academic writing and academic literacy. The number of students having difficulties within writing an academic essay became less than it had been before such an experience. At the same time the number of students, who could use or refer to special literature rose obviously according to the survey. Nevertheless, more respondents consider that visiting the course as “Basics of academic writing” is not enough to be able to understand scientific articles and to present own research work using academic writing skills. Thus, it is only the first step in the way to train and to teach students and other learners academic skills of reading and writing.

Table 2. The results of the interview after the course

Number of specialties	Number of respondents	Questions					
		Did you have any difficulties in the writing of academic topics (essay, student' work, diploma paper) after studying the course “Basics of academic writing”?		Did you use special literature for writing academic topics and research works after studying the course “Basics of academic writing”?		Do you consider you covered your experience in writing a research essay after studying the course “Basics of academic writing”?	
		Yes	No	Yes	No	Yes	No
5	150						
Foreign language: two foreign languages	50	10	40	45	5	25	25
History	15	5	10	12	3	6	9
Geography	30	7	23	25	5	6	24
Bilology	30	9	21	26	4	5	25
Physics, Mathematics	25	9	16	15	10	5	20
		Total					
5	150	40	110	123	22	22	123

Conclusion

Thus, academic writing affects all areas of modern life: writing coursework or essay, abstract of the report at an international conference, publication of scientific articles in prestigious international journal, etc. Skills and academic writing skills is the foundation of successful existence in the academic environment. In practice, this covers all subjects of the academic process, from freshmen to distinguished professors to present their ideas in writing. Any of these issues are solved with the help of Academic Writing.

In this article, we have examined a sample of academic writing centers in the US, at universities in the UK and Germany, where students enrolled in the University can acquire academic skills on the basis of language centers (language centers). Centers for academic writing have their own staff and have a contributing individual support. (Murphy & Stay, 2010; Nasibullina &

Bezrukov, 2016). However, based on our realities, it is too early to talk about the creation of special centers for the formation of basic skills related to the logic of the text, argumentation, analysis and the formulation of its own evaluations and formatting grammatical text.

At the same time, the interviews conducted among students clearly showed that today it is already necessary to take concrete measures for the development of academic literacy in its written form.

Recommendations

The course proposed by authors will introduce students the main features of different genres of academic writing: essays, annotations, abstracts, review; analyze essays and scientific articles from the point of authors view of style and composition, of the research strategy, to acquire the skills of the bibliographic description of publications and electronic resources; to create their own summaries and abstracts to scientific articles, as well as review essays; prepare a public presentation and discussion of their own research work.

Educating of academic culture forms the right attitude towards the own academic writing, research work of other scientists and in general teaches us to perform this kind of the work, and to comply with both formal and ethical standards in their writing in the future. Thereby, the necessity of development of the course for all university specialties students is substantiated by the lack of the specific subject for preparing students for the scientific and research work and academic writing, the necessity to get acquainted with the modern trends of academic writing and to provide the access to foreign regulatory materials within writing academic texts.

We believe that the developed course will help to acquire the necessary academic abilities and skills and provide the base for good scientific practice.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

Academic Literacy (2002). *A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. California: ICAS, 82 p.



- Armer, T. (2012). *Cambridge English for Scientists*. Cambridge: Cambridge University press, 128 p.
- Bazanova, E. M. (2015). Laboratory of scientific communication: Russian experience. *Higher Education in Russia*, 7(3), 135-143.
- Bogolepova, S. W. (2016). Education Academic Writing in English: Approaches and products. *Higher Education in Russia*, 1, 87-94.
- Brown, K. & Hood, S. (2002). *Academic Encounters: Life in Society Student's book: Reading, Study Skills, and Writing*. Cambridge: CUPm 152 p.
- Cummins, J., Brown, K. & Sayers, D. (2007). *Literacy, Technology and Diversity*. Boston: Allyn & Bacon, 263 p.
- Ease (2014). *Essential Academic Skills in English*. Direct access: <http://www.ease.ac.uk>
- Esselborn-Krumbiegel, H. (2010). *Richtig wissenschaftlich schreiben: Wissenschaftssprache in Regeln und Übungen*. Paderborn: Schöningh, 168 p.
- Green, B. (1999). The new literacy challenge. *Literacy Learning: Secondary Thoughts*, 7(1), 36-46.
- Gudjons, H. (2012). *Pädagogisches Grundwissen: Überblick - Kompendium – Studienbuch*. Bad Heilbrunn: Julius Klinkhardt, 399 p.
- Iarskaya-Smirnova, E. R. (2013). *Creation of the academic text*. Moscow: LLC Variant, 187 p.
- Irvin, L. (2010). *What is "academic" writing?* In Ch. Lowe & P. Zemliansky (Eds.). *Readings on Writing*. Direct access: <http://wac.colostate.edu/books/writingspaces1/irvin-what-is-academic-writing.pdf>
- Kolesnikova, N. I. (2016). What is important to know a post-graduate student about the scientific text? *Higher Education in Russia*, 7, 55-62.
- Korotkina, I. B. (2013) Academic writing: new developments, new perspectives. *Higher Education in Russia*, 7, 142-150.
- Morley, J., Doyle P. & Pople I. (2007). *University Writing Course*. Berkshire: Express Publishers.
- Murphy C. & Stay B. L. (2010). *The Writing Center Director' Resource Book*. New York: Routledge, 424 p.
- Nasibullina, F. & Bezrukov, A. (2015). The Academic Writing in a historical and linguistic context (on the example of German). *Higher Education in Russia*, 8-9, 148-153.
- Oshima, A. & Hogue, A. (2006). *Introduction to Academic Writing*. The Longman Academic Writing Series. Essex: Longman, 221 p.
- Ostrovskaya, Ye. S. & Vyshegorodtseva, O. V. (2013). Academic Writing: the concept and practice of the academic writing in English. *Higher Education in Russia*, 7, 104-113.
- Smirnova, N. V. (2015). Academic literacy and writing in high school: From theory to practice. *Higher Education in Russia*, 6, 58-64.
- The Official SAT Study Guide (2005). *The College Board*. Milpitas, CA: Beagle Books.
- Theuerkauf, J. & Steinmetz, M. (2008). *Assis Thesis. Qualitative Anforderungen an wissenschaftliche Arbeiten an der TU Berlin*. In Tu-Berlin, Direct access: https://www.career.tu-berlin.de/fileadmin/ref2/career-service/AssisThesis_Studierendenversion.pdf