

Svetlana Grinenko, Elena Makarova, John-Erik Andreassen

## Trends and Features of Student Research Integration in Educational Program

### Abstract

This study examines trends and features of student research integration in educational program during international cooperation between Østfold University College in Norway and Southern Federal University in Russia. According to research and education approach the international project is aimed to use four education models, which linked student research and education for developing joint shared education within specific subjects like “innovation management” and “high-involvement innovation”. The student research is aimed at high-involvement innovation of employees in investigating companies in IT and construction regional industries in Norway and Russia.

Keywords: student research, integration, active learning, innovation management, high-involvement innovation

### Introduction

In modern world the combination of education and research practices is one of the most controversial issues of pedagogical methodology. While decisive influence of science on all spheres of human life is a recognized fact, in the field of education everything is not as easy as in the invention of so-called high- technologies for example. Education, though experiencing the powerful influence of the world science and the paradigm of modern thinking, develops not only under the influence of scientific and pedagogical theories. It is influenced by the historical path and the nation, ethnic and cultural traditions, educational policy of the government at federal and regional levels, mentality of the society and teachers-innovators.

However, the strategic line of world civilization development is the transformation of science into the main driving force of social and economical progress. Innovative society development, which is characterized by the generation, dissemination and use of knowledge, requires the development of adequate mechanisms for the integration of research and education.

### Theoretical framework

In modern economics a major emphasis in business education has been to make the experience more authentic for students, and to instill skills that are transferable to real world applications (Cinebell & Cinebell, 2008). One target that is often stressed during higher education design and improvement is to show the importance and relevance of interdisciplinary areas working together in business operations. Applying the theories, approaches, concepts, and techniques from university business program to a specific enterprise is a challenge for the student.

Integrating the theoretical material with real practice and holding students accountable for making such research is something that has been beyond the reach of business educators until recently.

There are many dimensions of integrating research and education, but four key components can be broadly applied in higher education system:

*Research in Education* is focused on ways to optimize opportunities for students to actively engage science by direct experience, working on practical cases and field settings, interviewing with questions, collecting evidence, making interpretations, and developing “scientific habits of the mind” (NRC, 2007).

*Research and Education*: developing mechanisms to translate new scientific discoveries into effective instructional practice, including delivery of real-time (or near real-time) data, tools and interfaces to effectively use scientific databases, brokering collaborations between research and educational programs, and coordinating priorities between the research and educational missions (Mogk, 2000).

*Research on Education*: using the recent advances from the cognitive and learning sciences on “How People Learn” (e.g. Leontiev, 1975; Bransford et al., 2000) to optimize emerging instructional technologies (e.g. visualizations, modeling programs, virtual learning environments). This area of study also encompasses student learning motivations (Edelson, 2001; Gordeeva, 2013), diversity issues and learning barriers (Zimnya, 1997; Vigotsky, 1983), and a complex of assessment instruments that are available to demonstrate learning outcomes.

*Education in Research*: instructional practices necessarily impact the research enterprise. The quality of educational experiences is a major contributing factor to the recruitment and retention of students as young scientists (e.g. Seymour & Hewitt, 1994).

Ron Griffith (Griffith, 2004, p. 722) proposed four models of the links between education and research:

*Research-led* education in the sense that the curriculum is structured around subject content, and the content selected is directly based on the special research interests of teaching staff; education is based on a traditional information transmission model; the emphasis is laid on understanding research findings rather than research processes; little attempt is made to capture the two-way benefits of the research and teaching relationship.

*Research-orientated* education in the sense that the curriculum places emphasis as much on understanding the processes by which knowledge is produced in the field as on learning the codified knowledge that has been achieved; careful attention is given to the education of inquiry skills and on acquiring a research ethos; the research experiences of teaching staff are brought to bear in a more diffuse way.

*Research-based* education in the sense that the curriculum is largely designed around inquiry-based activities, rather than on the acquisition of subject content; the experiences of staff in the processes of inquiry are highly integrated into the student's learning activities; the division of roles between teachers and student is minimized; the scope for two-way interactions between research and teaching is deliberately exploited.

*Research-informed* teaching in the sense that it draws consciously on systematic inquiry into the teaching and learning process itself.

According to *Research and Education* approach our international project is aimed to use all four education models for developing joint shared education within specific subjects like “innovation management” and “high-involvement innovation”; integrating research as part of the education offered to students in Norway and

Russia; introducing and developing project based student learning using local businesses as cases in both countries; preparing for common student research in the mentioned fields between the institutions involved and cooperating for dissemination of common work.

### **Program description**

This program, joint courses and research project provide Norwegian and Russian students with a systematic understanding of innovative management and a critical awareness of current problems together with new insights. “Cooperation management education” program is run as an international initiative between Østfold University College in Norway and Southern Federal University in Russia with the help of Norwegian Centre for International Cooperation in Education (SIU).

The trends are to evolve and strengthen the academic cooperation by means of the development of courses, improvement of the quality of education through a mutual exchange of knowledge of the involved universities. To reach these objectives an outline of topics and activities is discussed below.

The student benefits from international cooperation are numerous and the future carriers in enterprises and organizations could depend on how well they are managed in this context, because project managers need to be prepared for the challenges involved with working in international settings with people from other cultures. Good effective project management requires appropriately balanced combinations of explicit and tacit knowledge, professional practical experience and professional behavior. This perspective stimulates program that is designed to engender a partnership between student, university and industry.

The program focuses on providing our students with integrate research in domestic and international environment, including communication, team building and motivation in international projects, as well as innovative management and high-involvement innovation approach. Working together with students from other university provides an opportunity to exchange knowledge during the study period. The international view is strengthened by studies at two different universities in two different countries.

### **Target audience**

The overall objective to increase academic cooperation is through improvement of education in “innovation management” and “high-involvement innovation”. Both institutions involved offer courses in these subjects. For Østfold University College these two courses are offered to students in the bachelor program “Business and Management”. For Southern Federal University these two courses are offered to bachelor students and master students.

The quota students that follow the International Business program must write a Bachelor thesis. One available option is to offer these students to write their thesis related to employees involvement in innovation, where they can take part as a student group in the gatherings with Norwegian and Russian students. Through their attendance they get access to information about the subject for their thesis, e.g. doing a comparative analysis of the Norwegian and Russian student group, or as an

alternative to attend as a mixed group. Thus the participation of these quota students could contribute to achieving the goals of this project cooperation.

## Educational methods

The program offers a mixture of conventional lectures and seminars held by guest lecturers from Østfold University College in Norway and Southern Federal University in Russia, supported by online resources and a variety of external sources of information from local industries. It benefits greatly from the use of practical oriented approach. Teamwork, research project, and student presentations, are important parts of the *Student Research* program.

*Student research* is one of the most important steps to improve the quality of higher education training, an effective tool to develop creative research abilities and promote the interest of the future experts in their profession, supporting and encouraging the gifted youth for future independent scientific research.

The concept of “*Student Research*” involves two elements:

- 1) teaching students the elements of research work, fostering the skills of this work;
- 2) proper scientific research conducted by students under the guidance of professors and teachers.

The student research goals are the transition from the assimilation of ready knowledge to master the methods of acquiring new knowledge, skills of self-analysis of the various phenomena using scientific methods.

Student research activities are focused on:

- Extension of the students’ knowledge in the field of theoretical foundations of disciplines and develop practical skills of independent research activities;
- Conducting scientific research to solve urgent problems arising in science and practice;
- Developing skills reasoned presentation of the results of their own research and development abilities reasoned protection of the results obtained;
- Development of a system knowledge methodology of various objects, principles and methods of research;
- The training and selection of young candidates for further attract of them in scientific and high education organization work.

The process of any scientific work consists of a series-implemented steps: preliminary stage; research stage; presentation of results stage.

At the *preliminary stage* the problem is defined, research topic is formulated, its relevance and importance for the modern theory and practice, aims, tasks, object and subject of study, reveals contradictions that require permits, selection and study of literature etc.

1. Problem defining, subject and object of research.
2. Statement of research problems.
3. Identify contradictions.
4. Selection and study of literature.

On the *research stage* it is made a choice of research methods and tools needed to achieve this goal. Running the study itself, which, in addition to the theoretical part, must include the practical implementation of the task and the pilot confirming

the accuracy, efficiency and practical significance of the results, an assessment of the results, formulate findings, developed solutions to a given problem, identifies the most promising directions of development of the object that define the scientific novelty and practical value of the work.

1. Analysis and synthesis of materials.
2. Conclusions and proposals formulations.
3. Experimental verification of the results.
4. Summing up the results of the experiment.

*Presentation of scientific research results stage.* They should be presented in a certain way: justification of the research issues relevance, choice of the subject, hypotheses, objectives and methods of research, description of the research process, analysis of the results, conclusions.

1. Refinement of the structure of the work.
2. Making a preliminary version of the text.
3. Check and scientific editing of the text.

### **Data collection**

The study investigated the challenges which international research students experience in their academic studies. By understanding the challenges which these students encounter, it was anticipated that the findings could lead to the development of a practical knowledge for international students who conduct research.

The research focuses on employees' involvement in innovation processes in companies within two industries IT and Construction in the regions of Østfold and Taganrog. The student research will provide data collection about the researched businesses' involvement of employees in innovation, and capability to innovate in selected industries.

### **Cultural background**

Cultural background is other academic factor that affected international research students, particularly in terms of attitudes and expectations about teaching and learning styles of Norwegian and Russian enterprises.

### **Language barrier**

A major concern for international students who study abroad is the language barrier. Language plays an important role in the academic life for international students. Both spoken and written English challenges those international students who are from non-English speaking countries, especially those with limited practice of the English language. To solve this problem we are planning to use both English and Russian language during lectures and seminars.

Beyond any language barrier, time management is another aspect which is felt to impact upon academic success. All participants in the study emphasized the importance of time management to achieve on-time completion and quality of the research.

## **Risk factors**

The possible risk factors that may hinder the implementation of the project can be divided in three groups:

*Quality* – on two levels: improving the quality of the education, and quality of research. On both levels this might be mitigated through close cooperation in the planning between the academic staff from both universities, and that the involved staff is trained for the tasks.

*Time* – that the project is not conducted within the planned schedule is generally a problem for most projects. However, the project was well planned on the main activity level and with a close follow-up of the progress on these activities through regular reporting, and this reduces the risk factors that may impede the implementation.

Conducting research with firms in industries cause a risk that the activities are delayed, but this can be mitigated through close contact with the firms as well as a close student's follow-up for collecting data.

*Resources* – availability and recruitment of students and staff. Since the project is integrated in the present education, the risk for availability and recruitment of students and staff is reduced.

The risk factors on the three levels mentioned above are small, because there is established close cooperation between the universities.

## **Conclusion**

The student research integration in educational program result is a report of employees' involvement in innovation in two industries both in Russia and in Norway and comparative analysis of companies in these two industries. These findings are disseminated as students research reports, conference contributions, and articles publication by students and teachers. This is strengthened the academic cooperation of the involved universities through an increase in staff and student mobility, an expected quality enhancement of the education, and strengthened research cooperation between the participating universities.

The universities have access to knowledge about high-involvement innovation approach that can nurture further research within other industries and businesses that impact regional development. Businesses researched can be benchmarked against the industry target for high-involvement innovation. Getting access to the results from research may enable managers in the researched regional businesses to improve performance and competitiveness of their businesses.

The results from the project strengthen the joint research between the partner institutions that impact the development of regional businesses and society. Added value is expected to occur from graduated when employed in different companies/official services. An improved scientific competence in the regions is expected to strengthen both business and social services.

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Associate Professor, PhD in Economics (Doctor of Science), Svetlana Grinenko, Southern Federal University, Rostov-on-Don, Russia, svgrinenko@sfedu.ru

Associate Professor, PhD in Pedagogy (Candidate of Science), Elena Makarova, Southern Federal University, Rostov-on-Don, Russia, elmakarova@sfedu.ru

Associate Professor, Dr, John-Erik Andreassen, Østfold University College, Halden, Norway, john.e.andreassen@hiof.no