

## **INVOLVING UNDERGRADUATE STUDENTS IN RESEARCH: LESSONS FROM THE U.S. UNIVERSITIES**

Leading universities, which occupies top positions in rankings, the US universities in particular, are seen as a model for the rest of the world to continue building and reshaping the learning environment, educational administration and research [4; 5]. Furthermore, one of the components of their mission is adapting educational structures and instruction to the social changes in such a way that the results of education will contribute to the improvement of the well-being of society [3].

Research conducted by university students appears to be a critical driver of these changes. Student research based on inter- or multidisciplinary approaches brings advantages to society by generating new knowledge and training advanced future specialists, which correlates with the triple mission of the US universities [1].

In Ukraine, a distinctive feature of the education and research systems is their separation: on the one hand, universities, which are engaged in training students and, in theory, involving them in research activity (undervalued and pointless in many cases), and research institutes, on the other hand, specialized in doing research. This goes against the internationally accepted practice, which combines both fields. For this reason, an examination of best foreign practices in student research at universities, considered as an integral part of the institutional mission, seems to be useful.

In the literature, “student research” is commonly seen as encouraging students to discuss the topic with close attention to the resources provided by scholars in the field. Students are expected to consider the topic as a research problem requiring the gathering of evidence, analysis (critical thinking) and the presentation of a proposed solution. At the same time, there is an understanding

by the faculty that this process can primarily involve the creation of existing knowledge, and not the generation of innovative ideas [2].

While graduate students often engage in research activity, undergraduate students usually have both no motivation and knowledge in doing it. It is believed that research that is more than descriptive in nature, requires a search for something beyond what is already known or understood. Usually, undergraduate students do not have experience in this process. They lack knowledge of research methodology – principles, forms and methods of research activities. W. Badke claims that to dismiss “student research” as not meeting the criteria of real research is to doom students never to learn how to become researchers. The importance of strengthening of teaching-research links in the undergraduate curriculum is beyond doubt as it brings particular value for students engaging in the research process and stimulate their sense of discovery [2].

There are some reasons for involving all undergraduate students in research experience. Research conducted by undergraduate students within the curriculum is proven to be a highly effective educational practice. Research-based learning promotes critical thinking and reflection, increases motivation and confidence, and can stimulate students to further postgraduate studies. It is important that the results of student research are publicly disseminated beyond the formal curriculum, which can be achieved through departmental and faculty conferences at universities, national and international conferences, and publication in student journals. In the American universities there is a common practice when students collaborate with faculty in research teams, even do independent research under their supervision within research grant’s timeline. Moreover, there are opportunities for students to co-author, make important connections, do research on highly developed equipment, in ultra-modern laboratories, thus, work on the front line in a field [6]. W. Badke states that examining the students’ experience of participation in conferences revealed a process of getting new qualities or skills. The graduates showed intellectual self-

sufficiency by revising their work to present to an interdisciplinary audience and discussing it with their peers. They became more knowledgeable of their own specific field of study. They also developed confidence in conveying their identity as researchers. The conferences were a threshold experience for the development of so-called “self-authorship”, which is the capacity to internally generate beliefs, identity, and social relationships. By developing self-authorship, students can better guide themselves through the possibilities of creating a graduate and career portfolio [2].

Another reason for students’ engagement in research is the opportunity to become a job creator and launch start-ups. Schulte [8] and Schmitz et al. [7] claim that all university endeavors and activities, including research, are determined by the purpose of commercialization. Thus, in the U.S. universities, very often the student-conducted research is subsidized by the government or through the direct investments of businesses [9]. This support mechanism help turn students’ ideas into innovative solutions that can be successful in national and global markets. Science-based startups use the intellectual assets as the basis for a successful entrepreneurial activity.

To sum up, undergraduate students can benefit from studying in the research environment, which can contribute to the formation of readiness of future specialists to the creative application of knowledge, development of skills and competences acquired at the university, provides mastering the methodology of scientific research, and gives the opportunity to gain experience in research work.

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