

Innovative teaching methods used by the employees of the University of Wrocław – case study from the perspective of Faculty of Physics and Astronomy

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Abstract The article presents a study mapping the teaching methods used by employees at the University of Wrocław. Conducted via a questionnaire from the ARQUS initiative—a European university consortium—the research analyzed the responses of the Faculty of Physics and Astronomy compared to other departments. This analysis highlighted similarities and differences in teaching declarations, resulting in a database of good practices involving active teaching methods and identifying university employees who use these methods in their work.

Introduction

Innovative teaching methods employed by educators in higher education, particularly within the natural sciences [1], play a pivotal role in shaping the organization of modern teaching and learning processes. As a result, considerable efforts are directed towards fostering collaboration among universities and facilitating the mobility of students, doctoral candidates, researchers, and faculty members. This endeavor stands as a notable challenge acknowledged by ARQUS – the European University Alliance, comprising the esteemed institutions of Granada, Graz, Leipzig, Lyon 1, Maynooth, Minho, Padua, Vilnius, and Wrocław. These nine long-standing, comprehensive research universities boast extensive experience in collaborative initiatives and share a collective identity as internationally-oriented institutions deeply rooted in their regional communities, often located in medium-sized cities.

As part of ARQUS activities, the universities work together, among others, to improve the quality of education, foster innovation and increase research potential. One of the activities undertaken for this purpose was a research aimed at mapping teaching methods used by the employees of the University of Wrocław which has been carried out as part of the project “Integrated Development Programme of the University of Wrocław 2018-2022”.

The aim of this study was to collect participants' insights regarding the scope and methodologies employed in active teaching, specifically focusing on gathering information about the techniques and approaches utilized in working with students during academic year 2022-2023. The findings provide an illustrative overview and enable us to delineate specific facets of employing teaching and learning methodologies, contributing to the holistic development of the University of Wrocław as a higher education institution.

Literature research and theoretical background

There are a number of articles in the recent literature that refer to importance of both mapping innovative teaching methods and tools and describing learning spaces as parts of actions aimed to improve results of teaching and learning outcomes [3-5].

The author of this paper aims to elucidate, based on recent findings, the similarities and disparities in declarations made by employees of the Faculty of Physics and Astronomy in contrast to other research and teaching staff at the University of Wrocław. Variances in findings stemming from the inherent nature of scientific disciplines and preferred work methodologies may underlie

challenges in recruiting candidates for physics and astronomy studies. This hypothesis will be examined within the scope of this research.

Methodology

The case study analysis is made base of the date obtained from the survey questionnaire which contained 28 questions grouped into nine sections. The scope and form of the questionnaire were prepared in the course of the activities of Work Package 5 on Teaching Innovation. The survey questions were translated from English and made available in Polish in the form of an electronic questionnaire in the MS Forms environment.

A total of 644 employees of the University of Wrocław took part in the study, with 38 individuals representing the Faculty of Physics and Astronomy. This paper aims to delineate the unique characteristics of teaching within the physics and astronomy programs at our alma mater, while also endeavoring to contextualize these specifics within a broader, potentially international perspective facilitated by the ARQUS approach. This is achieved through a comparative analysis of responses within the context of discipline-specific characteristics.

Conclusions

The survey to assess the extent of active teaching method utilization was conducted for the first time on such a large scale among University of Wrocław employees. The level of employee participation in the study is deemed satisfactory, and the variation across units may stem from the inherent nature of their roles (research and organizational), differences in survey formats (anonymous/named), and technical challenges encountered during the survey administration.

The results of the study illustrate selected aspects of using teaching and learning methods in the perspective adopted by the authors of the questionnaire and reflect the objectives of the activities of the ARQUS Consortium. Among others the findings allowed:

- outlining the context and level of the involvement of academic employees in the acquisition of knowledge and experience of methods and tools for the formation of competencies (knowledge, skills and attitudes) and the extent to which they have been operationalised;
- assessing the practical implementation of the aforementioned methods in tertiary-level teaching, and elucidating the various elements and facets entailed in their execution;
- identifying the contribution of methods and techniques involving information and communication technology (ICT) to academic teaching.

References

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