Research-Based Learning for Developing Certain Skills of Future Military Officers

Dr. Gitana Dudzevičiūtė
General Jonas Žemaitis Military Academy of Lithuania

Today's world is incredibly dynamic and constantly evolving. Rapid technological advances, vast information resources, changing market conditions and intense competition are forcing the acquisition of new skills. The primary mission of General Jonas Žemaitis Military Academy of Lithuania is to train, educate and inspire competent, motivated and educated Lithuanian officers leaders to lead in today's and tomorrow's battle field. Therefore, special attention is paid to developing the skills of future military officers, using innovative learning methods, which encourage participation and engagement in the study process.

This publication focuses on the role of research-based learning in developing the certain skills of future military officers. To this end, the author draws on a comparative analysis of the scientific literature and on her personal experience of integrating research-based learning into assignments of Defence Economics course.

The author hopes that sharing her experience of using research-based learning in the study process will encourage other lecturers to evaluate the possibilities of applying this method in their taught subjects.

Keywords: *research-based learning, skills, military officers.*

1. Scientific insights: what is research-based learning?

Research is highlighted as a key aspect of improving the quality of teaching [1; 2]. Research involves the systematic and rigorous study of a field in order to establish facts and principles. Research relates with working in groups to investigate relevant real-world problems [3]. Research-based learning refers to the ability to intelligently use, apply and develop research findings as an integral part of the subject [4]. By embracing their roles as researchers, lecturers critically assess real-world issues within their domains of expertise, engaging as proactive contributors to the innovation process. They involve students in tackling the problems through discussions and task formulation. According to Schilow, the trainer in research-based learning at Humboldt University of Berlin [5], this method differs from other types of research-related training in that it requires students to be more involved and active in the creation of new knowledge. In a research-based approach, the lecturer becomes the student's advisor and motivator at various stages of the research process. In this approach, the focus shifts from the lecturer to the student, who becomes an active participant throughout the research process (Table 1). Students may not always be able to carry out original research, but they always gain new insights and skills. Research-based learning manifests in various forms depending on the subject matter, ranging from an introduction to research concepts and methodologies to student participation in research projects [6]. Additionally, lecturers can augment discussions by sharing the findings of their own research. According to Parra [7], the lecturer, as an educator, needs to learn to let go of the leadership role and learn to share the learning space with students, to make them participants in their learning through exploratory processes, allow them to develop analysis, reflection, and argumentation skills. Research-based learning relies on the constructivist philosophy, which highlights learning as comprehension, the enhancement of existing knowledge, social engagement, and learning from genuine experiences [8]. It is based

on a framework that focuses on students as active researchers and promotes lifelong learning. This approach prioritizes student-led research activities over traditional lecturer-centered content delivery [9].

Table 1. The role of the lecturer and students' outcomes in research-based learning

The role of the lecturer	Students' outcomes
Helps students to clarify problematic issues.	Student participation and engagement. Responsibility for identifying problematic issues.
Advising students on collecting and analysing information.	Master reading skills to understand and process information and ideas in a purposeful way. Learn research and note-taking skills.
Encourages students to think critically and creatively.	Comparing and evaluating information, logical thinking, out-of-the-box thinking and effective writing.
Helps students to apply theoretical knowledge to analyse real situations and draw conclusions.	Learn to summarize, use problem solving skills, perform tasks.
Helps students communicate results.	Learn to make presentation, communicate the results.

Source: based on [9]

Depending on the objective and the specifics of the subject, a variety of elements can be included in the process of research-based learning. According to Sinha [10], research is a continuous process consisting of a series of interrelated steps, such as posing a question, conducting background research, constructing hypotheses, testing hypotheses, analysing results, drawing conclusion, and reporting of results. At the University of Oldenburg [11], research-based learning includes components such as developing a research question, contextualising the literature, selecting a sound theoretical approach and research method, conducting the research, evaluating, and interpreting the research data, and presenting the results and reflecting critically on them. Summarising the elements of the research-based learning process, four main categories can

be identified, such as problem formulation, data and information gathering, data analysis and conclusions [12]. Irrespective of the subject of study, the above-mentioned building blocks are essential for research-based learning.

2. Main aspects of developing certain skills in today's context

To effectively meet the needs of the 21st century, individuals must possess essential skills such as adaptability, effective communication, problem-solving, self-growth and self-regulation, and systems thinking [13; 8]. Sinha [3] points to very similar skills that the workforce in today's challenging world should have. These skills cover critical and imaginative thinking, decision making, troubleshooting, interpersonal skills, communication, emotional and stress management, and self-awareness.

The purpose of the research-based approach is twofold: not only to strengthen students' scientific abilities, but also to strengthen their overall professional abilities by teaching communication, presentation, and problem-solving skills. Students are given the opportunity to actively engage in authentic research projects, combining theoretical knowledge with the specific needs of their chosen career [14]. According to Seif [9], in a research-based learning approach, students actively seek out and use a wide range of sources, databases, and texts to delve into related questions. They collect, process, analyse and evaluate information and concepts while improving their reading skills and expanding their vocabulary. Moreover, in a research-based learning environment, students learn to think critically and accumulate knowledge that enriches the discipline [15]. The research-based approach has been shown to develop students' problem-solving, identification, representation, strategy selection, implementation, and evaluation skills [8]. During research-based learning, students acquire the ability to understand written material, construct interpretations, formulate and evaluate hypotheses, engage in critical and creative thinking, and solve contemporary problems and challenges. In

addition, they develop communication skills through writing and discussion [9]. This approach to learning enriches understanding, cognitive abilities, as well as psychomotor and technological information processing skills [16; 17].

Figure 1 summarizes the benefits of research-based learning and outlines the essential skills that students gain from the research process.

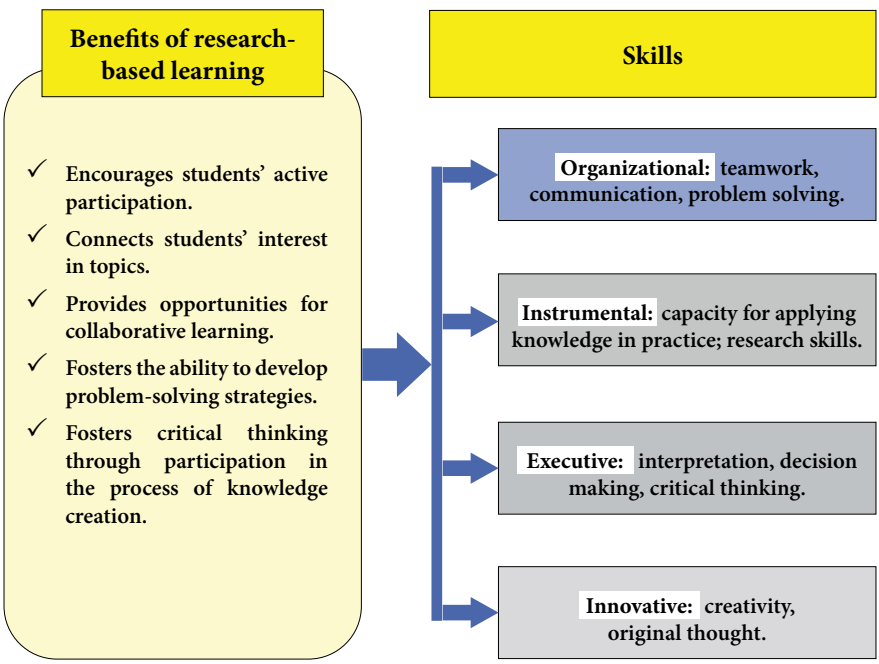

Figure 1. Benefits of research-based learning and essential skills
Source: based on University of Oldenburg [11] and Bae [18]

In the next section, the author shares her experience of applying the research-based learning to a specific subject.

3. Integrating research-based learning into a Defence Economics module: the case of the Lithuanian Military Academy

The Lithuanian Military Academy pays great attention to the development of critical thinking; therefore, the study programs apply methods that encourage future military officers to read, reflect, critically evaluate, discuss with colleagues, and write [19]. Lecturers relate their research to the subject being taught. Research-based learning can contribute to ensuring that Lithuania's future military officers are prepared and trained to the highest possible professional and academic standards.

In this section, the author examines group activities related to collaborative research-based learning, which is part of the Defence Economics course (3rd year cadets) at the Lithuanian Military Academy. Defence Economics is studied by Lithuanian and foreign cadets coming under the Erasmus+ programme from Austria, Belgium, the Czech Republic, Poland, Ukraine, and other countries. The Defence Economics module is characterised by the fact that most of the questions in the course description are supported by the lecturer's own research. This enriches the topics and provides opportunities for broader discussions that stimulate critical thinking and, in many cases, new ideas for further research. The course is organised in such a way that both the lecturer can present the results of her research and the cadets become active participants in the research process. In the first case, a lecturer-focused approach is used, where cadets are more like listeners and the research insights presented to the audience are related to the content and new knowledge of the course. By presenting the results of her personal research, the lecturer introduces the research findings and shows what it means to be a researcher (research-oriented approach). The second case refers to the cadet-focused approach, where cadets themselves are involved in the research process, gathering information, applying research methods, identifying problems, and providing solutions. In this case, the lecturer acts as a coach who guides the cadets in finding, selecting,

and evaluating information and identifying problems, giving them the opportunity to draw their own conclusions and present them. Depending on the number of cadets in the class, the group project is usually carried out by a group of 3 cadets, which is usually made up of representatives from different countries. A group project focuses on the defence – economic development nexus in the selected European NATO countries. The research performance consists of several steps: 1) using NATO and Eurostat databases, the cadets collect information on the economic indicators (defence expenditure and economic development indicators) of the selected countries; 2) using quantitative research methods, the cadets identify the relationships between the indicators under consideration, and then economically interpret and justify these relationships; 3) using theoretical insights, the cadets quantify the impact of defence expenditure on other economic factors; 4) highlighting the similarities and differences between the countries under consideration; and 5) the obtained results are compared with the results of similar investigations conducted by other scientists; 6) 1–2 problems are identified and possible solutions are proposed and visualized involving governments, societies, business, and other stakeholders. The figure below shows the sequence of steps in the research to achieve the objective (the lecturer uses her personal experience).

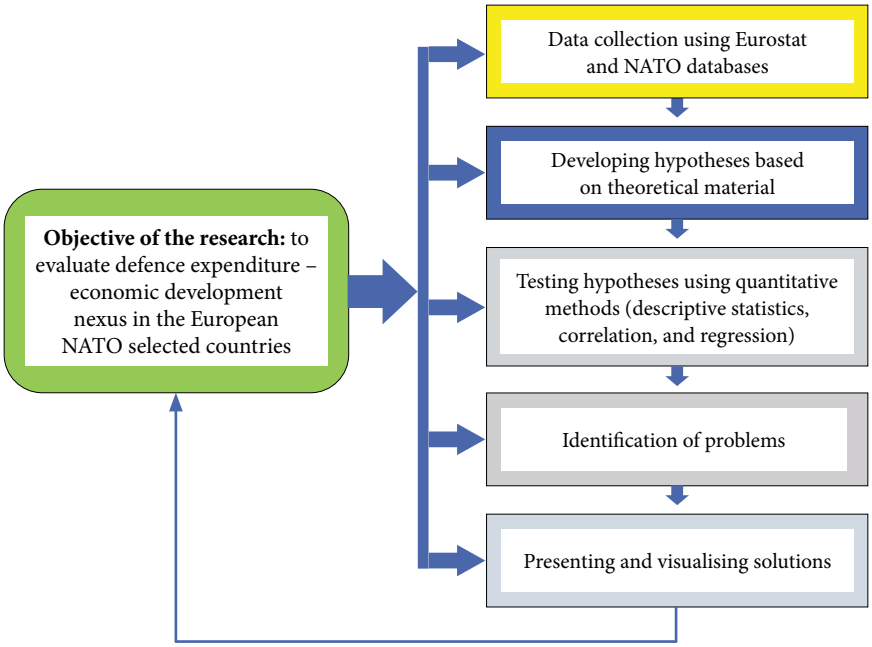

Figure 2. The application of the research process in Defence Economics course
Source: based on lecturer's personal experience

In summary, this publication revealed the main benefits of applying the research-based learning in the study process, such as future military officers' active participation', interest in topics, opportunities for collaborative learning, the ability to develop problem-solving strategies, creating new knowledge. These mentioned benefits of the research-based learning promote the development of certain skills, such as organizational (collaboration, problem solving, communication), instrumental (capacity for applying knowledge in practice, research skills), executive (interpretation, decision-making, critical thinking), and innovative (creativity, original thought).

Bibliography

1. Menter, I., Flores, M. A. Connecting Research and Professionalism in Teacher Education. *European Journal of Teacher Education*, 2021, vol. 44, no. 1, pp. 115–127. https://doi. org/10.1080/02619768.2020.1856811

2. Caspersen, J., Smeby, J-Ch. Research-Based Teacher Education in Norway – a Longitudinal Perspective. *International Journal of Education Research*, 2023, vol. 119. https://www.sciencedirect.com/science/article/pii/S0883035523000411?via%3Dihub

3. Sinha, G. R. *Research-Based Learning for Developing Competence*, 2023. doi: 10.13140/RG.2.2.17249.48489

4. Evans, C., Waring, M., Christodoulou, A. Building Teachers' Research Literacy: Integrating Practice and Research. *Research Papers in Education*, 2017, vol. 32, no. 4, pp. 403–423. https://doi.org/10.1080/02671522.2017.1322357

5. Humboldt University of Berlin. 2021. https://www.circle-u.eu/about/projects/innoved4ts/field-mission-7.html

6. Elken, M., Wollscheid, S. *The Relationship Between Research and Education: Typologies and Indicators.* A Literature Review. Oslo: Nordic Institute for Studies in Innovation, Research and Education, 2016.

7. Parra, J. C. V. *How to Trigger Research-Based Learning in the Classroom?* 2021. https://observatory.tec.mx/edu-bits-2/research-based-learning/

8. Susiani, T. S., Suhartono, Hidayah, R. Research-Based Learning (RBL): How to Improve Problem Solving Skills? *Advances in Social Science, Education and Humanities Research*, 3rd International Conference on Current Issues in Education (ICCIE), 2018, vol. 326.

9. Seif, E. *Research-Based Learning: a Lifelong Learning Necessity,* 2021. https://www.solutiontree.com/blog /research-based-learning-a-lifelong-learning-necessity/

10. Sinha, G. R. *Research-Based Skills Towards Academic Excellence (Practical Ways to Learn Writing Research Contributions).*

International Colloquium on ACM Distinguished Speaker Programme, 2018. https://www.researchgate.net/publication/326571178_Research_based_Skills_towards_Academic_Exce-llence_Practical_ways_to_learn_writing_Research_contributions

11. University of Oldenburg. 2024. https://uol.de/en/lehre/hochschuldidaktik/forschendes-lernen

12. Eldaghar, K. Applying Learning Methods with Architecture Students to Improve Indoor Quality for Health and Wellbeing in Buildings Case Study: Enhancing Lighting Efficiency of Public Spaces. *Bau Journal: Health & Well-Being*, special edition: 1st International Conference on Urban Health & Wellbeing, 2018. https://digitalcommons.bau.edu.lb/hwbjournal/vol1/iss3/62/

13. National Research Council (NRC). *Assessing 21st century skills: Summary of a Workshop.* J. A. Koenig, Rapporteur. Committee on the Assessment of 21st Century Skills. Board on Testing and Assessment, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press, 2012.

14. Mayolo-Deloisa, K., Ramos-de-la-Peña, A. M., Aguilar, O. Research-Based Learning as a Strategy for the Integration of Theory and Practice and the Development of Disciplinary Competencies in Engineering. *International Journal of Interactive Design and Manufacturing* 13, 2019, pp. 1331–1340. https://doi.org/10.1007/s12008-019-00585-4

15. Helgøy, K. V., Bonsaksen, T., Røykenes, K. Research-Based Education in Undergraduate Occupational Therapy and Physiotherapy Education Programmes. A Scoping Review. *BMC Medical Education*, 2022, vol. 22:358. https://bmcmededuc.biomedcentral.com/articles/10.1186/s12909-022-03354-2.

16. Sota, C., Karl, P. The Effectiveness of Research-Based Learning Among Master Degree Student for Health Promotion and Preventable Disease. *Procedia-Social and Behavioral Sciences* 237, 2017, p. 1359–1365.

17. Ridlo, Z. R., Indrawati, Afafa, L., Bahri, S., Kamila, I. S., Rusdianto. The Effectiveness of Research-Based Learning Model of Teaching Integrated with Computer Simulation

in Astronomy Course in Improving Student Computational Thinking Skills. *Journal of Physics: Conference Series* 1839, 2021. doi:10.1088/1742-6596/1839/1/012027.

18. Bae, S. J. *Forging Wargamers.* A Framework for Professional Military Education. Quantico, Virginia: Marine Corps University Press, 2022.

19. *Generolo Jono Žemaičio Lietuvos karo akademijos strategija 2030* [Strategy of General Jonas Žemaitis Lithuanian Military Academy 2030]. 2024. https://www.lka.lt/akademijos-strategija/

20. Thiem, J., Preetz, R., Haberstroh, S. How Research-Based Learning Affects Students' Self-Rated Research Competences: Evidence from a Longitudinal Study Across Disciplines. *Studies in Higher Education*, 2023, 48:7, p. 1039–1051. doi: 10.1080 /03075079.2023.2181326.

21. Wessels, I., Rueß, J., Gess, Ch., Deicke, W., Ziegler, M. Is Research-Based Learning Effective? Evidence from a Pre-post Analysis in the Social Sciences. *Studies in Higher Education* (12): 2595–2609, 2021. https://doi.org/10.1080/03075079.2020.1739014