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UNITY OF RESEARCH AND TEACHING – APPLICATION IN THE PROFESSIONAL MILITARY EDUCATION

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ABSTRACT

The guiding principle of the unity of research and teaching goes back to the German educational theorist Wilhelm von Humboldt. This means that on university level research and teaching has to be closely linked. This principle is implemented in the higher education in general and in special in the University of Applied Military Sciences in Austria. Based on this overarching principle four different methods are used in the research and learning process of the professional military education: research-led teaching, research-oriented teaching, research-tutored teaching and research-based teaching. Depending on the objective, the focus is either on the students or on the teachers. This article examines the different concepts of research-guided teaching and inquiry-based learning and explains and demonstrates their applicability to education in the field of military science.

KEYWORDS: education, learning, military science, research

1. Introduction

The principle of unity of research and teaching, which was already formulated by Wilhelm von Humboldt, states that teaching has to follow research in order to prevent that its content does not become obsolete and that teaching and learning relationships are linked to a striving for truth (Klingovsky, 2017). Thus, teaching must be directly oriented to the results of the teachers' research areas or to scientific discourse.

Further, in 1961 Carl Jaspers stated that only those lecturers who research on their own can essentially teach. Others just pass on what is fixed, didactically arranged (Jaspers & Rossmann, 1961). Following this tradition, the Austrian Universities Act of 2002 provides a legal basis for this principle. Section 2 (2) sets out the guiding principle of combining research and teaching. A similar formulation is found in the sector of the Universities of Applied Military Sciences as well. However, this connection or unity of research and teaching can be interpreted differently. On the one hand, by linking the performance of both tasks by one person and, on the other hand, by an institutional-organizational structure of the university (Schulz-Prießnitz, 1981). According to Hauser (2020) this means that not every lecturer at a university has to research individually, instead the institution as such has to maintain science and research.

Thus the accentuation of the unity of research and teaching in the post-Humboldtian age does not represent a nostalgic turn back, but rather the basis for a contemporary form of scientific education.

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2. Methodology

The fundamental question that needs to be answered is, *"How can students be encouraged and guided to learn through research?"*. The analytical framework used was a literature review to structure the different concepts. Subsequently, the concepts were compared with the real application in the master's program Military Leadership.

This article examines therefore the concepts of research-guided teaching and inquiry-based learning and explains their applicability to education in the field of military science. Finally, it will conclude addressing the need to apply these concepts in the professional military education.

3. Research-Guided Teaching and Inquiry-Based Learning

Research-guided teaching and inquiry-based learning are well known in higher education. However, in the sphere of influence of the Federal Ministry of Defense, these terms have gained increased importance in recent years, especially due to the implementation of University of Applied Military Sciences degree programs. Thus, with regard to research-guided teaching, the national accreditation regulation from 2021 states in §15(7) number 4 that the full-time teaching and research staff of the University of Applied Military Sciences institution has to be involved in applied research and development of their respective subject. Their inquiry-based learning is indirectly addressed by §15(5) number 5 with the promotion of an active participation of the students in the learning process.

Inquiry-based learning is close to research-guided teaching and in principle many synergies can be identified between these two concepts. While research-guided teaching is thought of by the teachers, inquiry-based learning, on the other hand, focuses on the students.

In 2005 Haley developed a double-sided model: while one side describes the involvement of students in ongoing research projects, the other side emphasizes on the teachers.

In line with Haley is the research of Kossek (2009), who works at the University of Vienna. She distinguishes four different methods of research-guided teaching or inquiry-based learning: **Research-led Teaching, Research-oriented Teaching, Research-tutored Teaching and Research-based Teaching** (Figure no. 1). The key difference is whether students are viewed more as passive recipients or active producers of new knowledge.

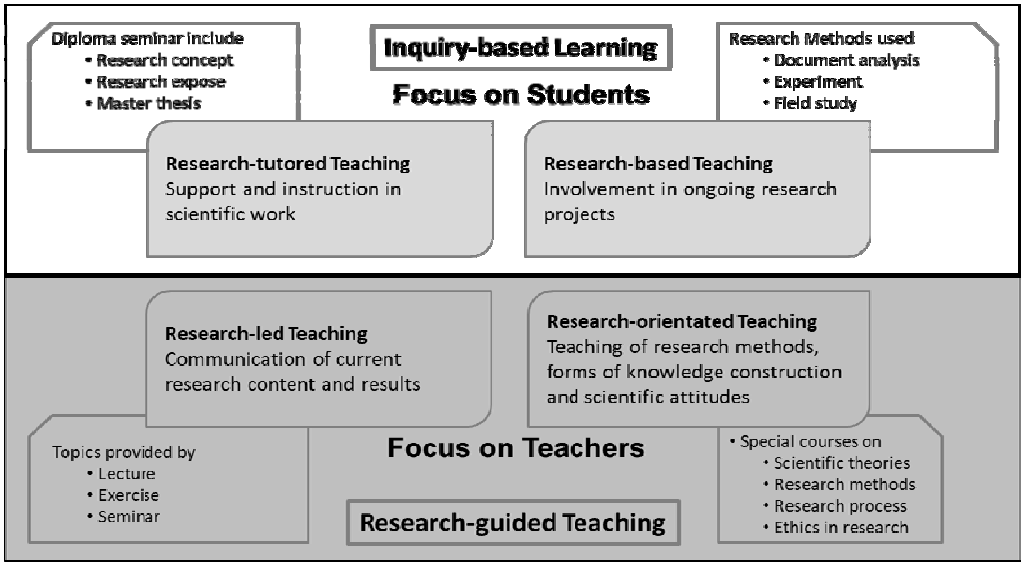


Figure no. 1: *Methods of research-guided teaching or inquiry-based learning*

These four different methods are subsequently subjected to further consideration in relation to military scientific professional military education.

3.1. Research-led Teaching

The first method, research-led teaching, is based on the concept of the unity of research and teaching. It focuses on the communication of research results and content that the teachers themselves have ideally been involved in developing or that are relevant to their research. Constant mutual interaction and mutual influence is therefore inevitable and is considered a prerequisite for success in the respective areas of research and teaching.

Hence, students can be engaged with current research results in the discipline in a variety of ways, including through lectures, academic staff-led seminars, laboratories and course work (Haley & Jenkins, 2009).

This is also enshrined in the Quality Management Manual Part I as the guiding principle for the maintenance of University of Applied Military Sciences degree programs. It is stated that the adult-oriented teaching is based on research & development and aims at adult-oriented learning (Federal Ministry of Defence, 2019). This has to be taken into consideration by the degree programs' staff of the Austrian Armed Forces. Therefore, it is useful and expedient that study programs personnel run research and development projects individually or are at least involved to a certain extent, whereby this can be done either in their own institution or through cooperation with other research and development institutions.

In order to fulfil this aim a ratio of 60 % to 40 % between teaching and research for the full-time teaching officers & researchers has to be maintained (Federal Ministry of Defence, 2020). In the sense of autonomy, which is granted to the head of the degree program, he or she can adjust the percentage distribution occasionally. This principle ensures that students can rely on teachers, who present updated content and that the taught knowledge depicts the current state of science in the respective subject area.

The four-semester master's programs' structure is as follows: while the first semester focuses on the political, strategic and military-strategic levels, the second semester deals with the operational level in detail. In the third semester, the tactical level is examined in greater depth, and in the fourth semester, the aspects of force planning and force generation are taught. Accompanying topics such as scientific work, operations research or knowledge and information management round off the curriculum.

Within this framework, the relevant topics in the different fields of military sciences are provided by lectures. These courses are clustered in thematically appropriate modules. However, it is also necessary to strengthen the theoretical knowledge. Therefore comprehensive exercises on the respective military levels (military-strategic, operation and tactical) are conducted. "Comprehensiveness" is characterized by including various other important aspects such as leadership, military ethics, staff processes or logistics into the exercises. Special seminars are additionally offered in order to improve the student's broad understanding of warfare, such as emergent technologies, historical analysis of operations or international law and its application.

3.2. Research-oriented Teaching

Research-oriented teaching focuses on teaching established research methods, forms of knowledge construction, and scholarly attitudes that lecturers ideally apply by themselves (Vauderwange, Javahiraly & Curticapean, 2019). In this way, students should be taught in the fundamental basics of individual research in order to develop a deeper understanding of science and to develop a positive research attitude.

Specific courses are part of the module *Interdisciplinary Military Science.* They focus on the theory of science and methodological research skills and the fundamental research process of military science as well. Consequently, students gain in-depth knowledge with regard to the research process and the used research methods. For future scientists or researchers it is necessary to develop the ability to reflect critically on research activities and results. Therefore, they will be systematically prepared for possible future activities in research or development.

In the first semester of the master's program, various courses are offered on the nature of science in general and military science in particular, the applied research process, and also on ethics in research. These courses will prepare the students for their individual research, which qualifies them to develop their master's thesis or to participate on further research projects.

3.3. Research-tutored Teaching

In research-tutored teaching, learners conduct self-directed and active research projects and the results of these research projects are processed in collaborative discussions (Stelter, 2019). This principle is applied in the University of Applied Military Sciences master's program through a structured diploma seminar, which lasts over two semesters. In the second and third semester, the students have to organize their scientific research process, create a research concept and present it to other students, who act as peers. Subsequently, the students have to prepare and present a research expose and conduct a scientific discourse with a commission. In the fourth semester, the students finalize their master's thesis on their key-findings. The benefit results from the fact that the students deliver regular progress reports and thus a control loop is available. Therefore the teachers can initiate necessary control measures to help or assist the students.

3.4. Research-based Teaching

The fourth method, research-based teaching, actively involves students in research projects by having them actively participate in the development of research results as partners of the researching teachers. In 1809, Wilhelm von Humboldt already stated in the *Königsberg and Lithuanian Curriculum* that the university teacher is no longer a teacher and the student is no longer a learner, but the latter does his own research, and the professor directs his research and supports him in it. Due to this cooperation students gain experience in collaborative scientific work with teaching researchers. This gives students the opportunity to strengthen their competencies with regard to research itself. The teachers, in turn, can benefit from the experience and knowledge of the students by working on sub-projects of research projects.

While teachers become leaders of a research group, students can combine their own professional interests with institutional research and differentiated perspectives can be incorporated into the research projects. In smaller (sub-)projects, which are suitable for students in terms of their scope and professional demands, students can work on specific aspects independently on the basis of their own questions and hypotheses (University of Applied Studies Potsdam, 2016).

Thus, students are involved in research projects of the full-time lecturers within the framework of the master's degree program Military Leadership. The average age of the master's programs' students in Military Leadership is about 35 years. This means that the students have approximately 10 years of structured professional experience, both in Austria and abroad. In addition, the students' diversity, due to the relevant military disciplines such as infantry, artillery or logistics aggregates different, highly specialized knowledge. Moreover, the institutional knowledge has to be used and exploited for research.

The focus on research is on the different disciplines of military science, such as tactics, operations or logistics. As aforementioned (research-led teaching), the full-time lecturers of the master programme Military Leadership are obliged to research and the students are encouraged to assist the lecturers. Therefore, they are actively involved in certain research projects. One example is the research project *Military Logistics 4.0*. Within the framework of the courses *Theory and Method of Military Logistics Management* and *Future of Warfare – Trends and New Technologies* three students conducted research and the findings were recorded and processed by the project manager. At the end, a publication was released. A further example is the research project *Urban Warfare*. Three students supported this project with their master thesis and contributed with their findings to a new doctrine, which will be utilized for education in the coming years.

4. Conclusion

Research-guided teaching and inquiry-based learning characterize the didactic concept in professional military education within the framework of University of Applied Military Sciences master programs. The relationship between teachers and students is special because both teachers and students engage in a partially structured learning and cognition processes. In the teaching and learning culture thus created, teachers and students cooperate actively and in partnership in teaching, learning and research processes. The benefit is visible for both groups of people, as the horizon is broadened through constructive and professional discussions.

Thus, not only technical knowledge and skills are acquired and deepened, but simultaneously a variety of important interdisciplinary competencies are promoted, which military leaders need for their future appointments. This acquisition of competencies happens through guided and self-directed learning processes. Research does not require the reproduction of abstract knowledge, conversely it requires the creation of interdisciplinary links. Those who can conduct research are therefore able to adapt quickly to new situations and deal with complex ones. Moreover, it is essential for military leaders in a volatile environment in the 21st century.

REFERENCES

Federal Ministry of Defence. (2019). *Qualitätsmanagementhandbuch Teil I als Erhalter von Fachhochschulstudiengängen*. Vienna: Self-published.

Federal Ministry of Defence. (2020). *Antrag auf Akkreditierung des FH-Masterstudienganges Militärische Führung.* Vienna: Self-published.

Hauser, W. (2020). *Kurzkommentar Fachhochschulgesetz*. Vienna: Verlag Österreich.

Healey, M. (2005). Linking research and teaching exploring disciplinary spaces and the role of inquiry-based learning. In Barnett, R. (Eds), *Reshaping the University: New Relationships between Research, Scholarship and Teaching* (pp. 30-42). Maidenhead: McGraw-Hill/Open University Press.

Healey, M., & Jenkins, A. (2009). *Developing Undergraduate Research and Inquiry*. York: Higher Education Academy, available at: https://www.heacademy.ac.uk/knowledge-hub/developing-undergraduate-research-and-inquiry.

Jaspers, K. & Rossmann, K. (1961). *Die Idee der Universität*. Berlin: Springer Verlag.

Klingovsky, U. (2017). Lehr- und Lernkulturen in der Hochschule. In Miller, T., & Ostertag, M. (Eds), *Hochschulbildung* (p. 28). Berlin: Walter de Gruyter.

Kossek, B. (2009). *Die forschungsgeleitete Lehre in der internationalen Diskussion.* Vienna: Published by University Vienna.

Meyer, K. (2011). *Bildung*. Berlin: Walter de Gruyter.

Schulz-Prießnitz, A. (1981). *Einheit von Forschung und Lehre*. Berlin: Dunkler&Humblot.

Stelter, A. (2019). Die Bedeutung von Forschungsmethoden für die Methodenausbildung von Nachwuchswissenschaftler*innen in der Erziehungswissenschaft und Bildungsforschung. *Erziehungswissenschaft, 30 (58), 9-24.*

University of Applied Studies Potsdam. (2016). *Vom Quadrat zum Format. Forschendes Lernen – Lehrende Forschung an der Fachhochschule Potsdam.* Berlin: enka-druck.

Von Humboldt, W. (1809). *Der Königsberger und Litauische Schulplan.*

Vauderwange, O., Javahiraly, N., & Curticapean, D. (2019). Concept and development of research-oriented education in the university context. *Fifteenth Conference on Education and Training in Optics and Photonics.* Quebec City.