IMPROVING THE TECHNICAL TRAINING PROCESS IN THE ARMED FORCES – RESEARCH REPORT

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Purpose: The military, like other public and business sector organisations, is subject to continuous personnel improvement, especially in the areas of technology and engineering. The aim of the article is to present the specifics of the technical training process in the army and the possibilities of its improvement based on the analysis of soldiers' needs.

Design/methodology/approach: The article presents the link between the process of technical training in the army and the implementation of strategic, operational and tactical objectives and then identifies areas for improvement from the perspective of the direct recipient, which is the user of military equipment.

Findings: Based on the barriers to the acquisition of technical knowledge identified in the study, an assessment of the methods and tools supporting technical training, and the expected methodology for conducting them, it was determined that the standard of technical training in the army should be enriched with a training closure stage that takes into account changes in the military unit caused by the purchase of new equipment.

Originality/value: The utilitarianism of the study stems from the possibility of its use by the military to determine the way in which military equipment suppliers train their personnel (users, service personnel). As a whole, the material can be an important contribution to the development of a standard of technical training requirements for suppliers of security and defence equipment.

Keywords: technical training, soldier development, training process, military.

Category of the paper: Research paper involving a survey study carried out using a questionnaire technique.

1. Introduction

The specific nature of the armed forces means that training activities are integrated with the command and control system and take into account the constant changes resulting from the challenges of contemporary security and the political conditions of the state. According to the definition, contained in the Doctrine of Training of the Armed Forces of the Republic of Poland DD/7(A), training activity is defined as the totality of planned didactic, training and educational activities carried out "in order to prepare professionally officers, non-commissioned officers and privates, as well as commands and troops to operate on the battlefield and maintain a high combat capability during peace and war" (Doctrine, 2010, p. 11).

At the political-military level, training activities are conditioned by the results of the strategic reviews of national security (SPBN) and defence (SOP) together with the published Strategy for the Development of the National Security System of the Republic of Poland. At the strategic-operational level, development needs, training plans and programmes, instructions and training methodologies are defined on the basis of the Programme for the Development of the Armed Forces and the Report on the State of National Defence and the Assessment of the Polish Armed Forces (Strategy, 2013). The planning of current training activities in the Ministry of National Defence consists in determining each year for "up to two years the objectives for the implementation of the Strategy and Programmes, and allocating material and financial resources for their implementation" (Leśniewski, 2021, p. 150). The strategic directions and operational plans set out in this way form the basis of a process approach to training management, taking into account the perspective (Lesniewski, 2021, pp. 18-30):

- individual – education and in-service training in non-commissioned officer and officer schools, as well as qualification, improvement and language courses,
- team – comprehensive preparation of squads, platoons, battalions, commands and staffs to perform tasks in the form of exercises and conduct combat and non-military operations on the territory of the country and abroad,
- organisational – the training of troops to prepare the whole of the armed forces to operate efficiently in times of war, crisis and peace.

In summary, training in the armed forces is organised at all levels and levels of command and in accordance with the training responsibilities for a given duty station. The forms, methods and content of training used to improve personnel are adapted to current tasks, future needs and the challenges of the future. They are subject to constant modification, depending on changing conditions and the experience gained by soldiers. What distinguishes training activities in the military is the process approach (Laguna et al., 2019; Dumas et al, 2018; von Rosing et al, 2015; Hammarberg et al., 2015; Kunasz, 2010) to training management, which consists of action steps, described in more detail in the Doctrine for the Training of the Polish Armed Forces

DD/7(A). The training process involves: training programming, training planning, training organisation, training programme implementation, training progress monitoring and evaluation.

Changes in the armed forces and their environment, increasing saturation with modern technology, progressive automation and robotisation of processes, appearance of representatives of successive generations in the armed forces make activities leading to changes in personnel training necessary. The need to improve organisations and processes has been and continues to be addressed in foreign and domestic studies (Jeston, Nelis, 2010; Harrington, 2006; Madison, 2005; Stadnicka, 2016; Brajer-Marczak, 2015). The ways of process improvement presented in the publications are more or less extensive. Process improvement and development can occur through radical changes or evolutionary transformations. Process improvement can be a consequence of improvements in quality, efficiency of equipment, procedures, employee behaviour and improved information flow (Nogalski et al., 2010; Womack, Jones, 2012; Byrne, 2013).

In the case of training in the military, the drivers of change may be the recipients of training themselves, whose motivation to serve is linked to the opportunity for development and training in the armed forces. Today, the role of the soldier is no longer associated with coercion, reluctance, passivity and stagnation. The shift from 'conscription' to 'voluntary service' reflects the paradigm that the military can maintain a motivated and satisfied workforce despite its inherent hierarchical and bureaucratic nature (Gocuł, 2012). To expect initiative, creativity and commitment is also to allow the quality of the training process to be influenced by the standards expected by its participants (Juchnowicz, 2012, pp. 94-95).

The aim of the paper is to present the specificity of the technical training process in the army, which is closely linked to the implementation of strategic, operational and tactical objectives, while leaving room for improvement from the perspective of the direct recipient. The utilitarianism of the study stems from the possibility of its use by the military to determine the way in which military equipment suppliers train their personnel (users, service personnel).

2. Specificity of technical training in the army

In the Polish armed forces, professional military service is performed by men and women, employed for an indefinite period of time (permanent service) or a fixed period (contract service). Their activity mainly comes down to defending the sovereignty and independence of the country and ensuring the security of its inhabitants. In carrying out their tasks, individually or as a group, they use equipment whose operation requires specialised knowledge and, in some cases, lengthy training. Military personnel also play an important role in the armed forces, carrying out a range of tasks for the defence of the country. In this situation, the training of soldiers and military personnel is an important activity, forming the basis for achieving and

maintaining operational capabilities. Attention to the appropriate level of competence of soldiers is evident in all areas of the armed forces' functioning, which is the result of a process of qualitative changes in them (Juchnowicz, 2012, p. 15).

A special type of training in the army is technical training, which is an integral part of the acquisition and deployment of military equipment. The document that forms the basis for planning technical training in the armed forces is the Armed Forces Development Programme 2017-2026. Among other things, this document details the scope of modernisation of the Polish Armed Forces, plans for the harmonious development of operational capabilities, the training system and the dislocation of military units, as well as the size and combat composition of the various components of the armed forces. This document was followed by another, prepared by the Chief of the General Staff of the Polish Army, which set out the directions for the development of the process of training of troops and commands. It included expectations of a variety of didactic forms, preparation to operate in a multi-domain environment, in contrast to the current achievements of operational art and the history of the art of war, and preparation to operate in a degraded environment, during active propaganda and during disruptions and information deficit.

Recently, responsibility for the delivery of this training has been assumed by the Armament Agency, and a regulation (Decision of the Ministry of Defence, 2021) has been created in relation to newly acquired military equipment, which, as part of the device feasibility study, introduced an analysis in terms of the training system. The conditions for the operation of the equipment include its use taking into account the maintenance capability – the technical competence of the user. The standardisation of technical training stems from an appropriate quality management system, which is monitored and periodically modified on the part of the training entity (most often the equipment and solution manufacturer). According to the quality management requirements, the following items should be included in the standard of training activities (Chmarowski, Melnarowicz, 2018, pp. 561-562):

- defining the competence requirements of the teaching staff carrying out the work, affecting the quality of the training - the effectiveness of the activities undertaken should be assessed, where the competence of the individuals depends on the relevant education, training, skills and experience,
- provision by the training body of all information concerning participation in the training, such as: the rules of eligibility for training, the amount of fees related to the training with a list of all elements for which these fees are paid and the methods of payment, accommodation, meals (if applicable) and equipment,
- the guarantee by the trainers of: curricula developed on the basis of the recommendations contained in the methodology and teaching staff with professional qualifications corresponding to the type of training provided,

- adequate internal supervision to improve the quality of the training provided,
- the premises, including the teaching equipment necessary for the proper implementation of the training tasks,
- conditions provided for the launch of a given type of activity, as far as they result from separate regulations.

Taking into account the above, both the analysis of training needs, the definition of objectives and the choice of the way in which training is to be implemented are defined by the military in a formal manner. When looking for areas for its modification, the authors of the study focused their attention on the needs of technical training participants for their further improvement. Thus, attention was focused on: barriers to the acquisition of technical knowledge, evaluation of methods and tools supporting technical training, evaluation of methodological attributes of technical training.

3. Needs of participants in technical training in the military – research findings

The study using a survey method, survey technique was conducted in November 2021. There were 497 participants. After a preliminary analysis, responses from 490 respondents were qualified for further analysis. They included soldiers (44.90% represented the professional private corps, 40.41% the non-commissioned officer corps, 12.86% the subalterns corps, 0.61% the general officer corps) and army employees – 1.22%. Representatives of generation X (3.27%), Y (53.67%), Z (42.04%) took part in the survey – the others (1.02%) did not specify their year of birth. Nearly half of the respondents (47.96%) had not worked for more than eight years. These respondents included professional privates (64.68%), non-commissioned officers (17.45%), subalterns (17.44%) and military personnel (0.43%). There was also a large group (41.02%) of people (non-commissioned officers 57.71%, professional privates 33.83%, subalterns 8.46%) with seniority between 9 and 16 years. The remainder (11.02%) had been in service for more than 16 years (75.93% non-commissioned officers 9.26% subalterns, 5.56% general officers, 9.26% military personnel) (Figure 1).
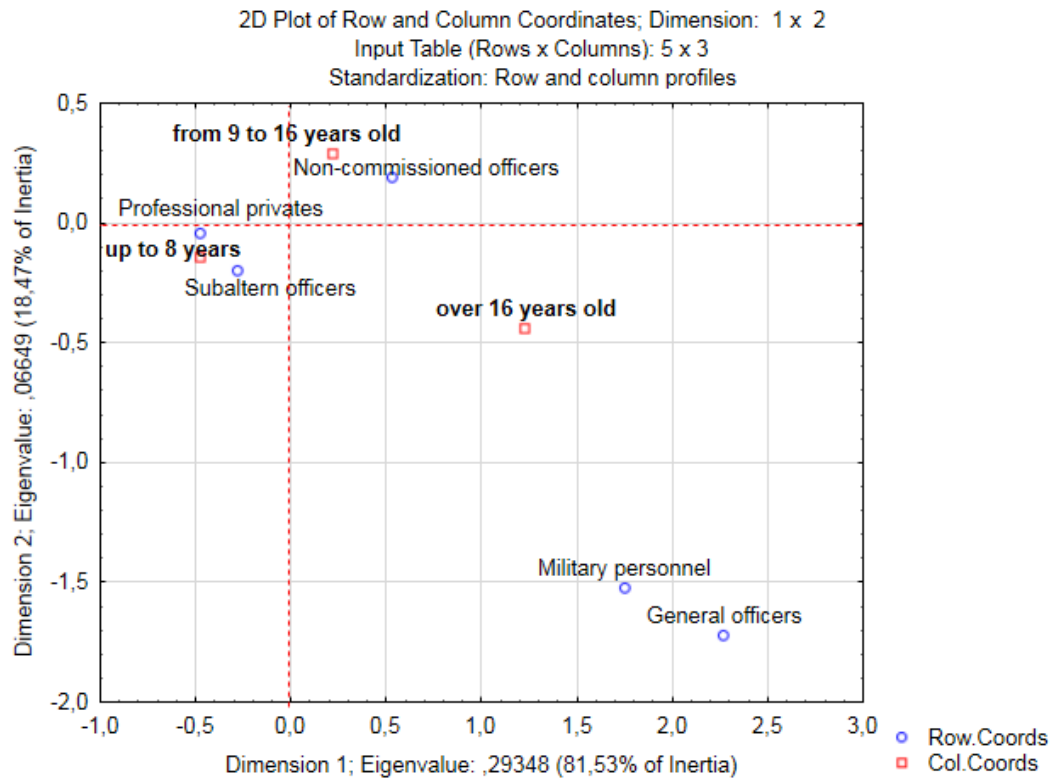
Figure 1. Seniority of soldiers and military personnel who took part in the survey. Source: Own study.

Respondents had a variety of educational backgrounds. Professional privates and non-commissioned officers most often secondary (59.55% and 48.99% respectively), subalterns and general officers higher, military personnel most often secondary and higher (33.33% each). In each group of respondents, taking into account their division into soldiers (also belonging to personnel corps) and army employees and the seniority they had, at least a quarter had a university degree.

The survey questionnaire consisted of 15 questions, closed, semi-open and open-ended. The closed and semi-open questions were scaled using a nominal and ordinal scale. A Google form was used to collect the data, while software programs were used to analyse the data: Excel, Statistica, R/RStudio. Statistical hypotheses were verified using the test of independence χ^2, assuming a standard significance level of $\alpha = 0.05$ (Wierzbinski, 2006, p. 185). Likert and tidyverse libraries were used in the preparation of Figures 2, 3, 5, as well as the solutions presented at https://www.r-graph-gallery.com/.

The responses of the respondents, which concerned barriers to the acquisition of technical knowledge, are presented in Figure 2.
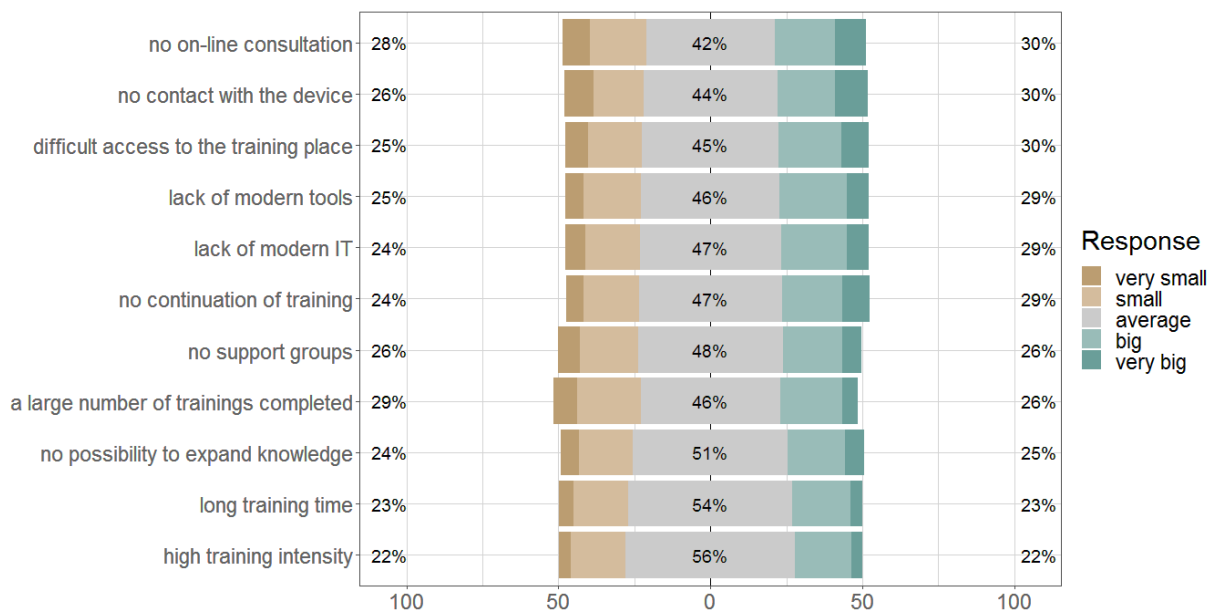
Figure 2. Barriers to the uptake of technical knowledge, as perceived by respondents. Source: Own study.

A statistically significant relationship ($p < 0.05$, weak strength of association) was found between the variable indicating membership of generations X, Y, Z and the opinions of respondents that concerned the possibility of continuing training. *Small* and *very small* ratings were indicated by: 12.50% of Generation X representatives, 21.29% of Generation Y and 28.64% of Generation Z. On the other hand, *big* and *very big* ratings were selected by 25.00% of Generation X, 33.46% of Generation Y and 24.27% of Generation Z respondents. A statistically significant relationship ($p < 0.05$), with a weak strength of association, was also found when the issue was analysed from the perspective of the seniority of the respondents, which correlates with the age of the respondents. It was found that as seniority increased, the percentage of responses from the lower range of the scale decreased (26.81% up to 8 years, 23.88% from 9 to 16 years, 11.11% above 16 years), while the percentage of choices from the upper range increased (21.70% up to 8 years, 35.82% from 9 to 16 years, 35.19% above 16 years). The variable *seniority*, also differentiated respondents' answers regarding the lack of online consultations with experts specialised in the subject matter of the training provided (statistically significant relationship, at $p<0.05$, with weak strength of association). *Small* and *very small* answers were indicated by: 31.49% of respondents with up to 8 years of experience, 24.38% with 9 to 16 years, 22.22% with more than 16 years. The answers *big* and *very big* were indicated by: 26.38% of respondents with up to 8 years' seniority, 36.32% with 9 to 16 years' seniority and 24.07% working more than 16 years.

Respondents were also asked to what extent specific methods and tools could help trainees in special (technical) training to acquire knowledge. The distribution of their responses, in this respect, is shown in Figure 3.
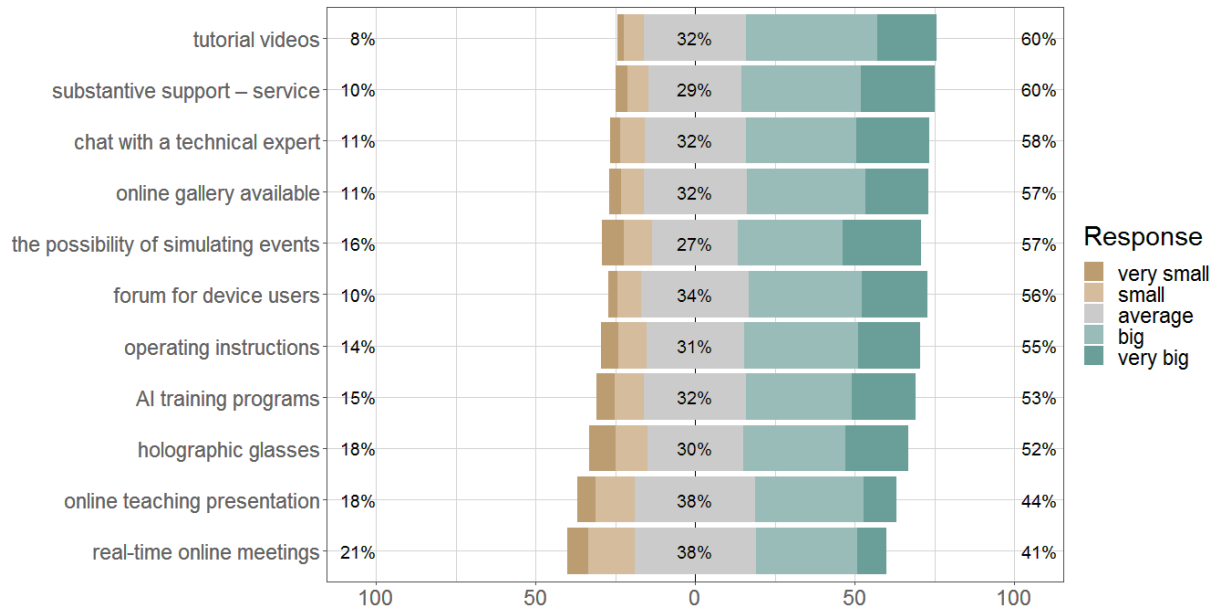
Figure 3. Evaluation of methods and tools supporting technical training. Source: Own study.

Further analyses established the existence of statistically significant relationships ($p < 0.05$), between the variable *group* and the variable *seniority*, and the respondents' opinions on the usefulness of specific methods and tools in technical training (Figure 4), (Table 1a and Table 1b).
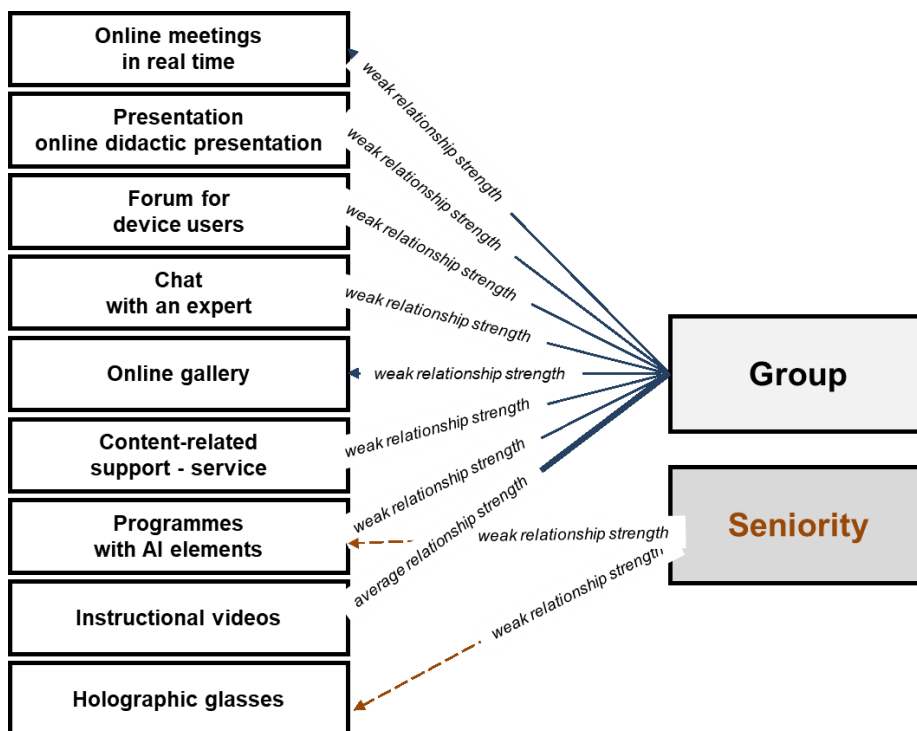

Figure 4. Relationship between the group variable and the seniority variable and the usefulness of the solutions used in technical training. Source: Own study.

Table 1a.

Distribution of choices, from the lower and upper range of the scale, made by survey participants (data in %)

RESPONDENTS (GROUP)									
private		NCO		subaltern		general officer		military employee	
small + very mall	big + very big	small + very small	big + very big	small + very small	big + very big	small + very small	big + very big	small + very small	big + very big
Real-time online meetings									
20.00	39.09	20.71	43.94	22.22	44.44	33.33	-	50.00	-
Online didactic presentation									
16.36	40.91	15.15	53.03	28.57	31.75	33.33	33.33	50.00	16.67
Forum for equipment users									
10.91	51.36	9.09	62.12	9.52	58.73	33.33	33.33	33.33	-
Chat with an expert									
11.36	50.45	9.60	65.66	9.52	63.49	33.33	33.33	33.33	-
ctd. private		NCO		subaltern		general officer		military employee	
small + very mall	big + very big	small + very small	big + very big	small + very small	big + very big	small + very small	big + very big	small + very small	big + very big
Online gallery									
11.36	53.18	9.09	62.63	9.52	57.14	33.33	33.33	50.00	16.67
Content-related support - service									
11.82	51.82	8.08	69.19	9.52	68.25	-	66.67	50.00	-
Programmes with AI elements									
15.45	46.36	14.65	59.60	12.70	60.32	-	33.33	50.00	16.67
Instructional videos									
9.09	54.09	6.06	68.18	9.52	58.73	33.33	33.33	33.33	-

Source: Own study.

Analysing the data in Table 1a, it can be seen that, among the soldiers who expressed their opinion on the usefulness of real-time online meetings, as their military rank (membership in the different personnel corps) increased, the percentage choosing *very small* and *small* ratings decreased, and the percentage choosing *big* and *very big* increased. The advantages of online didactic presentations, forums for equipment users, chat with an expert, online galleries, computer programmes with AI elements and instructional videos were mainly perceived by professional privates and NCOs. It can also be seen (Table 1b) that, as the seniority of the respondents increased, the percentage of indications of *very small* and *small* increased when the respondents expressed their opinion on the usefulness of computer programmes with AI elements and holographic glasses.

Table 1b.

Distribution of choices, from the lower and upper range of the scale, made by survey participants (data in %)

RESPONDENTS (SENIORITY)					
up to 8 years		from 9 to 16 years		over 16 years	
small + very small	big + very big	small + very small	big + very big	small + very small	big + very big
Programmes with AI elements					
10.21	55.74	18.91	50.25	22.22	51.85
Holographic glasses					
14.47	56.17	18.41	51.74	33.33	33.33

Source: Own study.

The next question asked respondents to what extent training should be characterised by certain attributes. The distribution of respondents' ratings is shown in Figure 5.
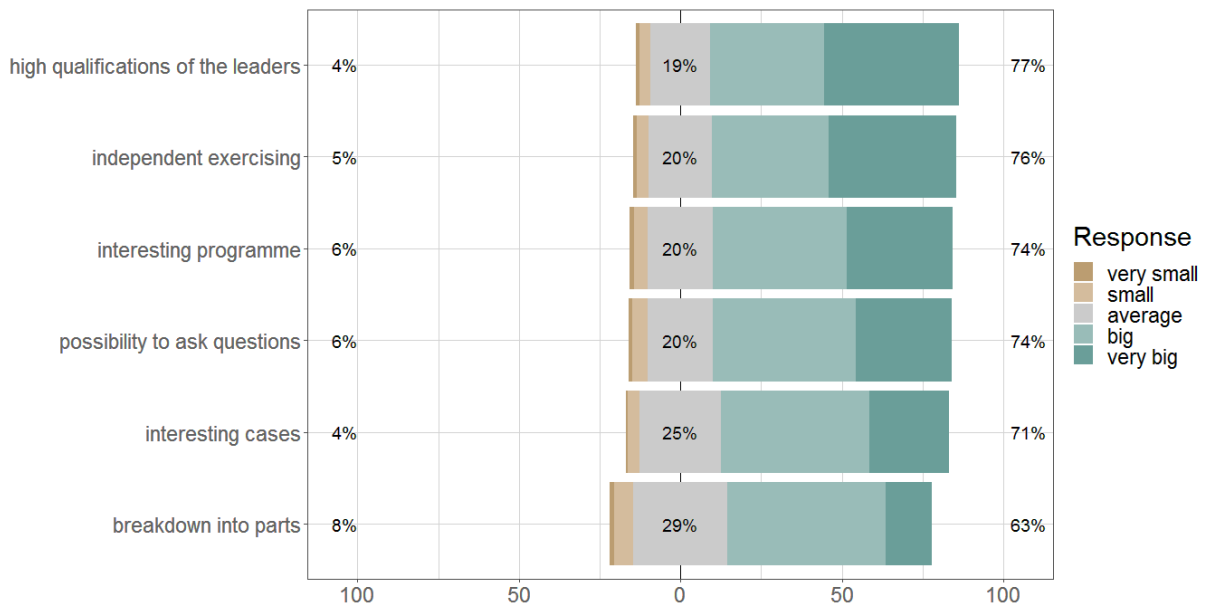

Figure 5. Survey participants' opinions on the attributes of technical training. Source: Own study.

During the analyses, statistically significant correlations were found ($p < 0.05$), between the variable *group* and the variable *education*, and the respondents' opinions on specific attributes of technical training (Figure 6, Table 2a and Table 2b).
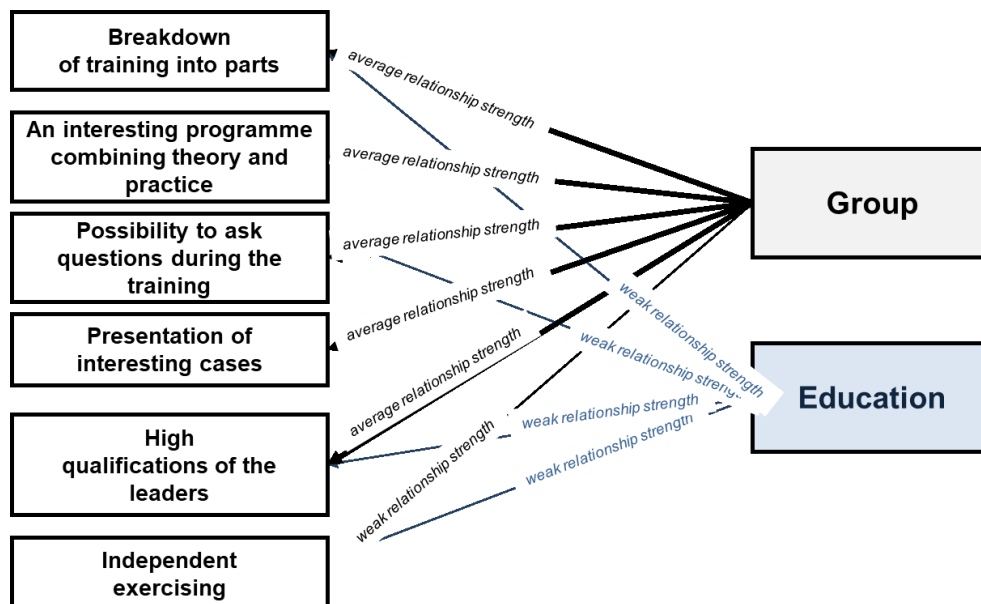

Figure 6. Associations between the variable group and the variable education, and opinions on technical training attributes. Source: Own study.

Table 2a.

Distribution of choices, from the lower and upper range of the scale, made by survey participants (data in %)

RESPONDENTS (GROUP)									
private		NCO		subaltern		general officer		military employee	
small + very small	big + very big	small + very small	big + very big	small + very small	big + very big	small + very small	big + very big	small + very small	big + very big
Dividing the training into parts									
7.73	55.45	5.05	71.72	11.11	66.67	-	100	50.00	33.33
An interesting programme combining theory and practice									
5.91	64.55	3.54	82.83	6.35	85.71	-	100	50.00	16.67
Possibility to ask questions during the training									
6.36	66.36	4.55	80.81	4.76	80.95	-	100	50.00	33.33
Presentation of interesting cases									
5.45	63.64	2.53	77.78	1.59	76.19	-	100	50.00	16.67
Highly qualified trainers									
5.45	66.36	3.54	84.85	1.59	90.48	-	100	33.33	50.00
Self-directed exercises									
5.45	66.82	4.04	82.83	3.17	85.71	-	100	16.67	33.33

Source: Own study.

The opinions of the soldiers taking part in the survey, which concerned the attributes of the technical training, were differentiated by their membership of different personnel corps. As their military rank increased, the percentage of choices at the upper end of the scale (*big* and *very big*) increased.

Table 2b.

Distribution of choices, from the lower and upper range of the scale, made by survey participants (data in %)

RESPONDENTS (EDUCATION)									
lower secondary school		vocational		medium		post-secondary		higher	
small + very small	big + very big	small + very small	big + very big	small + very small	big + very big	small + very small	big + very big	small + very small	big + very big
Dividing the training into parts									
33.33	-	-	90.00	7.76	62.07	8.51	55.32	7.07	66.67
Possibility to ask questions during the training									
33.33	33.33	-	70.00	6.47	71.98	4.26	70.21	5.56	77.78
Highly qualified trainers									
33.33	33.33	10.00	80.00	6.47	72.84	-	72.34	2.53	83.33
Self-directed exercises									
33.33	33.33	10.00	70.00	6.90	74.14	2.13	70.21	2.02	79.29

Source: Own study.

4. Summary

Access to defence armaments and technological products is a prerequisite for the smooth functioning of modern armed forces. It is therefore clear that technical training in the military is a key activity of competence development in the armed forces, as it forms the basis for achieving and maintaining operational capabilities in ensuring national security. Awareness of the role of technical training is evident at three levels of management: strategic, operational and tactical. Planning, organisation and evaluation take into account the achievement of the objectives set for the armed forces, the formal guidelines for their development and the expected standards of operations in this regard. As already mentioned, the implementation of technical training in relation to newly acquired military equipment is regulated in a very general way by Decision No. 116/MON of the Minister of Defence of 1 September 2021 on the acquisition of military equipment. This is definitely an important step in the policy of standardisation of the technical training process, but insufficient. This decision indicates the need to define the training of personnel (users, service personnel), but does not specify principles and standards for defining these needs.

Following best business practices, technical training, in addition to achieving the objectives set from the strategic and operational level and budget and time guidelines, should take into account the needs of the trainees (equipment maintenance) and the changes in the military unit caused by the purchase of new equipment (Training Partners, 2008, p. 9). Thus, the process in question should be enriched by a training closure phase, which will include support in the implementation and planning of the next steps for improving the work with the equipment (Table 3).

Table 3.

Opportunities to improve the technical training process in the army

Stages of the training project	Overcoming barriers to the acquisition of technical knowledge	Methods and tools	Training attributes
Planning (accurate needs analysis, creation of a budget and timetable, selection of trainers and training venues, development of training programmes)	• Appropriate duration of training • Appropriate intensity of training • Training location allowing for quick access • Optimum number of planned training sessions that cover different types of equipment • Participation in training by those who have ongoing contact with the device to which the training relates	• Training programmes with elements of artificial intelligence • Operating instructions with augmented reality elements	• An interesting programme – combining theory and practice • Divided into parts/modules led by experts • High qualifications of the training/module leader

Cont. table 3.

Implementation (delivery of training and accompanying activities)	• Use of modern tools related to IT hardware and software in the training process • Use of modern didactic solutions in the process	• Real-time online meeting with a shared e-tablet or text editor • Online didactic presentation • Instructional videos • Possibility to simulate operating events on a model • of the device using VR/AR technology	• Possibility to ask questions during the training • Presentation of interesting cases concerning the subject of training • Possibility to perform practical exercises independently and repeatedly
Closing (support in the implementation and planning of the next steps to improve technical competence)	• Updating and extending knowledge of the training subject • Continuation of type-specific training • Online consultation with experts in the training subject area • Formalised support groups in the training area (e.g. discussion groups and expert networks)	• Support offered by the manufacturer's service • Forum for equipment users • Chat with a technical expert • Online gallery of interesting cases	

Source: own elaboration based on survey.

The possibilities for improving the technical training process are summarised in Table 3. They can be applied depending on budget considerations, logistical possibilities and the specifics of the particular device to which the training relates.28,64% It is also worth noting that in the process of product negotiation (delivery of a specific training course) with a supplier, the costs associated with the full implementation of the process, including its closure, should be taken into account.

References

1. Andrzejczak, R.T. (2018). *Kierunki rozwoju SZ.* Warsaw: Biuro Bezpieczeństwa Narodowego.

2. Biała księga Bezpieczeństwa Narodowego Rzeczypospolitej Polskiej (2013). Warsaw: Biuro Bezpieczeństwa Narodowego.

3. Brajer-Marczak, R. (2015). *Doskonalenie zarządzania jakością procesów i produktów w organizacjach*. Wrocław: UE.

4. Byrne, A. (2013). *Jak zrewolucjonizować firmę dzięki Lean Management.* Wrocław: Lean Enterprise Institute Polska.

5. Chmarowski, A., Melnarowicz, W. (2018). Szkolenie personelu technicznego taktycznych systemów transmisji danych. *Journal of KONBiN, 48,* DOI 10.2478/jok-2018-0071.

6. Decyzja Nr 116/MON Ministra Obrony Narodowej z dnia 1 września 2021 roku w sprawie pozyskiwania sprzętu wojskowego (Decision No. 116/MON of the Minister of Defence of 1 September 2021 on the acquisition of military equipment).

7. Decyzja nr 218/MON Ministra Obrony Narodowej z dnia 6 czerwca 2014 r. w sprawie planowania i rozliczania działalności w resorcie obrony narodowej, Dziennik Urzędowy Ministerstwa Obrony Narodowej, Departament Strategii i Polityki Obronnej, Warsaw, 9 czerwca 2014 r., poz. 179, s. 1-2 (Decision No. 218/MON of the Minister of Defence of 6 June 2014 on planning and accounting for activities in the national defence ministry, Official Journal of the Ministry of Defence, Department of Defence Strategy and Policy, Warsaw, 9 June 2014, item 179, pp. 1-2).

8. Doktryna szkolenia Sił Zbrojnych Rzeczypospolitej Polskiej (Doctrine for the training of the Armed Forces of the Republic of Poland) DD/7(A) (2010). Warsaw: Ministerstwo Obrony Narodowej Sztab Generalny Wojska Polskiego.

9. Dumas, M., La Rosa, M., Mendling, J., Reijers, H.A. (2018). *Fundamentals of business process management.* Berlin-Heidelberg: Springer-Verlag.

10. Gocuł, M. (2012) Siły zbrojne w procesie przeobrażeń systemowych. In: H. Spustek, M. Bodziany, M. Smolarek, A. Gołębiowski (eds.), *Obywatel w mundurze. Aksjologiczny wymiar funkcjonowania nowoczesnych sił zbrojnych.* Wrocław: Wyższa Szkoła Oficerska Wojsk Lądowych.

11. Hammarberg, M., Sundén, J. (2015). *Kanban. Zobacz, jak skutecznie zarządzać pracą.* Gliwice: Helion.

12. Hamrol, A. (2015). *Strategie i praktyki sprawnego działania. Lean, Six Sigma i inne.* Warsaw: PWN.

13. Harrington, H.J. (2006). *Process Management Excellence*. Chico: Paton Press LLC.

14. Jeston J., Nelis, J. (2010). *Business process management: practical guidelines to successful Implementations*. Amsterdam: Elsevier Inc.

15. Juchnowicz, M. (2012). *Zaangażowanie pracowników. Sposoby oceny i motywowania.* Warsaw: PWE.

16. Kunasz, M. (2010). *Zarządzanie procesami.* Economicus.

17. Laguna, M., Marklund, J. (2019). *Business process modeling, simulation and design.* CRC Press Taylor & Francis Group.

18. Leśniewski, Z. (2021). Kierunki rozwoju Sił Zbrojnych i ich implikacje szkoleniowe. In: A. Karpińska, W. Wróblewska, P. Remża (eds.). *Edukacja zorientowana na ucznia i studenta* (pp. 145-166). Białystok: Wydawnictwo Uniwersytetu w Białymstoku.

19. Liberacki, M. (2018). Proces kształcenia członków formacji mundurowych w kontekście bezpieczeństwa państwa. *Zeszyty Naukowe SGSP, Nr 65, TOM 1.*Warsaw.

20. Madison, D. (2005). *Process Mapping, Process Improvement and Process Management. A practical guide to enhancing work and information flow*. California: Paton Press.

21. Nogalski, B., Czerska, J., Klimek, A. (2010). Wykorzystanie metod teorii masowej obsługi i lean management w usprawnianiu procesów w zarządzaniu organizacją publiczną. *Współczesne Zarządzanie*, *no. 1,* pp. 58-68.

22. Piotrkowski, K. (2012). *System zarządzania ludźmi w Siłach Zbrojnych RP*. Warsaw: WAT.

23. Stadnicka, D. (2016). W*ybrane metody i narzędzia doskonalenia procesów w praktyce*. Rzeszów: PRz.

24. Strategia bezpieczeństwa narodowego Rzeczypospolitej Polskiej (2014). Warsaw: MON.

25. Strategia rozwoju systemu bezpieczeństwa narodowego Rzeczypospolitej Polskiej 2022, przyjęta uchwałą Rady Ministrów z dnia 9 kwietnia 2013 (Strategy for the Development of the National Security System of the Republic of Poland 2022, adopted by the Resolution of the Council of Ministers of 9 April 2013).

26. Training Partners (2008). *Zarządzanie projektem szkoleniowym*. Gliwice: Onepress.

27. Trochowska, K. (2016). *Kompetencje międzykulturowe dla bezpieczeństwa i obronności – teoria i praktyka*. Warsaw: AON.

28. von Rosing, M., Scheer, A.W., von Scheel, H. (2015). *The complete business process handbook: body of knowledge from process modeling to BPM*. Elsevier.

29. Wierzbiński, J. (2006). *Statystyka opisowa*. Warsaw: WZUW.

30. Womack, J.P., Jones, D.T. (2012). *Lean thinking – szczupłe myślenie.* Wrocław: ProdPublishing.