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Streamlining the delivery of military education through the distance learning method

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Abstract

The purpose of the research is to analyse the current data and experience of the Slovenian Armed Forces' E-Learning Centre, and to examine the possibility of increasing the positive impacts of distance education by introducing it into the regular forms and programmes of education in the Slovenian Armed Forces. Based on the results of the data analysis and the experience of the E-Learning Centre and the estimated financial impacts, it can be confidently stated that the introduction of distance education has been financially beneficial for the Slovenian Armed Forces. The savings achieved so far have more than justified the development and construction of the SAF's own e-learning capabilities. The results of the US analysis also speak in favour of the use of the distance learning method in military education. The introduction of the distance learning method in the military education system shows the positive impacts of e-learning in its integration into the regular forms and programmes of education in the Slovenian Armed Forces. It increases the likelihood of the successful implementation of digital transformation of education programmes, and guides education providers to address key content challenges.

Keywords

distance learning, e-learning, education methods, streamlining, positive impacts, information technology

Introduction

Information technology and the media are an essential part of modern society. Therefore, modern information and communication technology (ICT) has an impact on modern education. With the advancement of ICT development, e-learning is emerging as a new paradigm of modern education. E-learning is a flexible learning model based on interactive access to knowledge such as learning resources via the web. Current trends show a rapid growth in online enrolment in higher education. Many universities and higher education institutions are expanding online education and considering offering online education courses and programmes. Online education programmes offer participants an extended, flexible forum to network and discuss whenever they want. E-learning can best be defined as the science of distance learning. Traditional universities are beginning to integrate distance learning into their course offerings. New universities, however, are being established that use of e-learning exclusively; they are essentially virtual universities (Plut, 2009). The world's first successful distance learning university was the Open University in the UK, founded in 1960, believing that communication technology could bring high-quality learning to people who were unable to attend educational institutions (Katz, 2008, pp. 60-64). In the late 1980s, distance education was taken up by Victoria University in New Zealand, the University of Hawaii, Ohio State University and Waseda University, which attempted to deliver lectures and courses internationally via telecommunications (Rajasingham, 2003).

The Slovenian Armed Forces (SAF) are not lagging in the field of education and state-of-the-art information systems. With the help of this project, the SAF was among the first in Slovenia to successfully introduce an e-learning system with the establishment of the E-Learning Centre. The beginnings were difficult and, like any innovation, the e-classroom took some time to establish itself. Today, the E-Learning Centre and its e-classroom is an indispensable capability of the SAF, as it is used by almost all members of the SAF and the Ministry of Defence. It facilitates the required regular or on-the-job training for members and saves the organization and the state a great deal of money. It is a fact that the number of users of the e-Learning Centre

is increasing year by year. The latest analysis of the number of users of the e-learning course shows 16,894 users, of which 9,629 are from the defence system and 7,265 from other public administration bodies. Therefore, 43% of all users are the so-called external users from various public administration bodies (Horvat, 2020, p. 47).

The Covid-19 pandemic significantly affected the lives of individuals and all societal processes, including education. Covid protocols forced educational institutions to use available technology and distance learning methods. All the above has, of course, also affected the entire SAF system of military education, which has prompted exploration of the ways in which the existing capacity of the E-Learning Centre could be better used to support the existing SAF educational programmes and processes.

E-learning

"E-learning has become an increasingly important part of education in the world and in Slovenia, as more and more educational institutions offering formal education programmes are utilizing it, and, above all, it is becoming established as a way of educating employees in companies, public administration and other organizations." (Radovan, 2012, p. 28)

Although e-learning represents a relatively small proportion of education delivery, it has been known for some time in most parts of the world. It has developed in parallel with the growth of modern technologies that have enabled new forms of education. It is unlikely to replace traditional education for some time, but it is increasingly gaining momentum as a form of education complementary to older versions. It does require learners with a little more self-discipline and motivation than displayed by those who are just starting on the long path of lifelong learning.

Networked technologies such as the internet and the World Wide Web have revolutionized educationand training, allowing people to access information globally and to communicate with others with few limits. They offer the potential to share high-quality learning resources, exchange information, and work in learning groups. The computer with WWW access has

become the primary tool for accessing online classrooms. As more people acquire their own computers with WWW access, or access to the necessary equipment in libraries, workplaces, educational institutions or public access points, this form of education is also becoming more accessible and more important (Allan, 2002, p. 2).

Terminology

When we want to discuss something with someone, or collaborate with them for work purposes, for example, we need to use common terminology. We must ensure that what we mean, say, and understand is the same for all participants. Just as new forms and methods of learning and teaching have emerged throughout history, so too have new terms. However, in all definitions, it is important to understand that education is a broader concept that includes learning and teaching. Most often, only learning is referred to in the literature, which often leads to the equation of learning andeducation, which is not true from a professional point of view. To help understand the topic and the content, here are some alternative characterizations of e-Learning.

E-learning covers a wide range of activities and processes, such as:

- Using interactive learning packages including text, graphics, sound, video and animations;
- Enhancing traditional programmes by providing access to additional resources and information;
- Enhancing programmes by providing additional support through the use of synchronous and asynchronous communication applications such as email, discussion groups, chat rooms and video conferencing;
- Providing an integrated programme where most learning takes place through online activities supported by communication tools (Allan, 2002, p. 3).

Online education means delivering lessons partly or entirely via the internet. Increasingly, e-education, or e-learning in the narrower sense, is being used to refer to this form of education. E-learning is just one form of distance

learning. The term can be used to describe any form of learning that does not involve a traditional classroom setting, where the students and the teacher are in the same place at the same time (Ko & Rosen, 2010, p. 3). In line with this definition, this article uses the term e-learning.

Stages in the development of e-learning

Throughout history, different forms of education have emerged to help people overcome various barriers and to bring them closer to, or enable them to have, further education. Of course, these new forms have always been linked to the technology available at the time. As noted by Radovan, e-learning is only the latest stage in the evolution of distance education, the origins of which date backas far as the 18th century. It is generally accepted that distance education has evolved alongside new teaching methods and developments in technology. Distance education has existed since at least the first half of the 19th century. Over time, distance education has been widely used in vocational, professional, and technical education (Radovan, 2012, p. 29).

In the UK, Isaac Pitman taught shorthand by the classic postal correspondence method as early as 1840, and *Skerry's College* began teaching and preparing candidates for civil service examinations in the 1880s. Soon, specialized companies saw an opportunity to make money, and offered specialized distance learning courses. For example, the *Foulkes Lynch Correspondence Tuition Service*, which specialized in accountancy, began as early as 1884. The United States was not far behind, and soon began to benefit from the advantages of the post office and even newspapers. Thomas J. Foster of Pennsylvania began using his newspaper as a means of improving safety in the mines. Between 1870 and 1891, he published articles in the newspaper such as lessons on mining and related topics to increase safety. In Sweden, Hans Hermod, the founder of today's Hermods-NKI Skolan, offered correspondence courses in double-entry bookkeeping until 1898. The 20th century also saw an increase in distance vocational education on both sides of the Atlantic, thanks to the involvement of various professional associations (for example, the *American Association of Medical Record Librarians* in the US, and the C*ertified Accountants*

Educational Trust on behalf of the Chartered Association of Certified Accountants in the UK). There was also a marked increase in the number of private correspondence schools offering various vocational training courses, as well as publicly funded educational institutions at secondary and tertiary levels offering a wide range of vocational programmes, including professional training for teachers, and complementary courses for engineers, health professionals and, already, management studies. Distance learning also proved to be beneficial for mass teaching in areas where traditional teaching had trained too few staff. Distance learning retrained or further educated and trained a sufficient number of the professional staff needed at a given time to launch or accelerate the development of a particular industry, especially older staff and staff who had already received basic education. Two outstanding examples are the former German Democratic Republic and the People's Republic of China. Each used this method to kick-start and stimulate the post-war economy in their countries. There are even more examples of the use of distance learning to modernize national economies in the developing world to include Venezuela, Tanzania, Taiwan, and others.

Pedagogical and technical developments enabled educational radio in the 1940s, educational television (ETV) in the mid-1950s and 1960s, audio and videotapes for learning in the 1970s and early 1980s, and computer-assisted instruction (CAI) in the late 1970s and 1980s. Technological innovations also allowed for the gradual integration of new media and resources into traditional education programmes, which eventually blurred the distinction between distance and traditional education, as a growing number of education systems used distance learning as a supplementary pedagogical strategy (Rumble & Oliveira, 1992, pp. 3-5).

The success of several distance education institutions led to renewed professional debate and reflection on the appropriateness of this form of education. It became clear that students could study successfully at a distance and that high drop-out rates were not related to the inferior quality of the student experience in this form of education (Rumble & Oliveira, 1992, pp. 6-7).

Higher education is an important part of education systems around the world. The number of students enrolled in the tertiary sector worldwide has reached 170 million, a 160% growth since 1990 (Sharma, 2012). Statistics from the 2020 e-Learning Usability Survey report also clearly shows that distance education is growing at an unstoppable rate, namely that by 2020, 98% of universities will have moved classes online, and by 2021, 75% of schools are planning to operate online (Roberts, 2021). Moore and Kearsley have thus identified some macro factors that influence and interact with all the immediate parts of the distance education system. Their conceptual working model includes the following components: technology, learning, teaching, course design, management, policy and organisation. All these separate systems influence and interact with each other in a distance learning programme (Moore and Kearsley, 2005, p. 10). These elements – content/ knowledge, design, communication technologies, interaction, learning environment and governance – are essential subsystems in any distance education organisation (Moore and Kearsley, 2005, p. 18).

Radovan (2012, p. 29) summarized the evolution of distance education into four distinctivegenerations or technological models:

- The first generation is based on two-way written communication between teacher and learner, characterized by correspondence models;
- The second generation is characterized by multimedia as a tool for knowledge delivery;
- The third generation is characterized by distance learning systems such as audio- and videoconferencing;
- The fourth generation is characterized by flexible learning based on the use of modern information and communication technologies.

Schreiber (Berge, 2001, pp. 15-16) wrote about the stages of technological maturation in an organization. When thinking about distance education and training in relation to organizations, it isalso necessary to consider the stages that organizations typically go through, which are analogous tothe learning maturation processes of individuals. For example, a brief model describing

the maturation stages of an organization or capability regarding the delivery of distance education could be:

Stage 1: Separate or occasional distance learning events occur in an organization.

Stage 2: The organization's technological capabilities and infrastructure can support distance learning events. These events are managed by an interdisciplinary team that responds to staff and management needs and makes recommendations on the organization and management of distance learning among the staff.

Stage 3: The organization has established a distance learning policy, procedures are in place, and planning is underway. This means that there is a stable and predictable process for the identificationand selection of content and technology for distance learning delivery.

Stage 4: Distance training and learning is institutionalized in the organization, which is reflected in policy, communication and practice that are aligned and lead to the achievement of the organization's objectives. The business unit has established a distance learning identity and systematically evaluates distance learning events from an organizational perspective.

Advantages and disadvantages (pitfalls)

As with everything else, there are factors in distance learning and e-learning that can be identified as advantages or disadvantages. E-learning also has its supporters as well as those who oppose it or do not want to integrate it into traditional forms of education.

Most often, the opinions for and against e-Learning are based on the interpersonal interactions between teacher and learner, and the connections between learners. This also relates to the common space in which the education takes place and which allows for direct, synchronous interaction between the participants.

Time is another crucial factor. Traditional education specifies exactly when the content will be delivered, so it is clear when the training will start and when it will end. The same is true of student assessments – they take place at a specific time and place. With e-learning, these aspects are more flexible. The start and end times can be fixed, and the activities in between can be tailored to individuals and groups. Each individual has greater influence and control on the learning process.

Intricately linked to this is individual student motivation. If an individual is in the same room as a learning group with the same educational goal, their motivation is different from the individual in an asynchronous learning environment, which also requires greater learner responsibility. It is immediately clear that an individual's motivation must be evident and, in principle, greater than in a group environment.

We can conclude that e-learning is not equally suitable for all age groups. Like other forms and methods of education, e-learning needs to be used or implemented for appropriate content and target groups.

Distance education has shown some advantages, especially for educating dispersed populations who, for various reasons, have not been able to attend a traditional school or whose local educational institution does not teach the subject or field they wish to study. This flexibility made distance education particularly attractive for adults who could not attend traditional educational institutions because of family and work. At the same time, the first questions and reflections on distance education began to emerge.

The first question was related to the appropriateness and quality of such education, and the second was the question of the content suitable for distance learning. For a long time, many saw distance education as an inferior form of education, mainly because of the bad business practices of entrepreneurs who offered inadequately prepared courses with deficient lecturer support and little or no resources in return for up-front fees. Motivated by profit, students dropped out of such courses as soon as possible. Distance education, or correspondence education as it was often pejoratively called, thus gained an undeserved reputation and traditional educators tended to reject this methodology.

One prevailing belief suggested that quality education was only possible when the teacher was in control of the learners and he or she was the source of knowledge and learning. Ideas associated with independent learning and learner autonomy came much later. In this sense, distance learning emerged as a more effective approach in the 1990s. Cultural patterns that dictated the importance of face-to-face interpersonal communication and respect for the power and experience of elders remained barriers. Over time, however, it has become clear that almost anything can be studied at a distance. This realization has been helped by the increasing recognition by traditionalists that their (traditional) methods are often too inflexible, too limited in time and place, and too expensive to meet the demand for education, especially for those who have already completed their initial education. In addition to individuals, employers have also recognised the need for on-the-job training and the opportunities offered by various forms of distance learning (Rumble & Oliveira, 1992, pp. 4-7).

Bregar, Zagmajster & Radovan (2020, p. 21) saw the most significant advantages of e-learning from the perspective of the participants as greater flexibility in terms of place, time, pace, and content of education; greater interactivity and faster access to knowledge from different sources; the possibility of adapting learning approaches to individual needs; transparency of the conditions of education; and the development of new knowledge and skills. For educational organizations, the main advantages are the reduction of certain cost categories; the possibility of better quality services;the transparency, documentation, and consistency of the delivery of programmes; the possibility of more tangible assessment; the accessibility of quality learning resources; the introduction of modern pedagogical models and improvements in the teaching process; and the better possibility of marketing and internationalization of educational programmes.

The e-learning centre

Development of e-learning in Slovenia

"E-learning as a manner of education supported by information and communication technology (ICT) has been in use for less than two decades. The spread of e-learning has been uneven across educational fields and geographical areas, and varied according to implementation models" (Bregar, Zagmajster & Radovan, 2020, p. 25). Bregar et al. (2020, pp. 25-27) also noted that the growth of e-learning in Asia has been driven mainly by projects to increase literacy in rural areas. In the Middle East, for example, government incentives to introduce digital learning materials as a methodsuitable for all categories of learners are important. In Africa, the rise of mobile telephony and socialnetworks is an important factor for change in education, but poor infrastructure is also a barrier. "InEastern Europe, the most important factor in the growth of e-education is public investment and a large number of start-ups" (Bregar, Zagmajster & Radovan, 2020, p. 25).

Despite its prominent place in the European Union's development documents, the development of e-learning or technology-supported education, as it is called in the documents, "has been much slower, below expectations, and accompanied by a number of project failures in the European Union, despite political support, which has been confirmed by the funding of a number of projects. The European Commission's report *The Use of ICT to Support Innovation and Lifelong Learning for All* noted that ICT has not transformed educational processes in a more visible way, as was the case with other activities" (Bregar, Zagmajster & Radovan, 2020, p. 27).

In Slovenia, the beginnings of ICT integration in education date back to the 1990s. "In 1994, Slovenia joined the international *Phare Programme Multi-Country Cooperation in Distance*

Education, which, through a series of educational and promotional activities and pilot projects, had a significant impact on the development of distance learning and e-learning at all levels of education.The project ended in 2000" (Bregar, Zagmajster & Radovan, 2020, p. 29).

"Putting e-learning into practice is fraught with difficulties. The basic prerequisite for the introduction of e-learning, technological infrastructure, which was initially the main obstacle to theintroduction of e-learning, is now becoming a less important limiting factor. The main obstacles and the cause of many failed attempts lie in the professional staff untrained for this form of education, inadequate management, and in the superficial and insufficient knowledge of e-learning in general" (Bregar, Zagmajster & Radovan, 2020, p. 22).

E-learning in the SAF

In line with its mission, the Military Schools Centre is the provider of military education and training programmes. The mission of the Military Schools Centre includes, among other things, research and development in the field of military sciences and related disciplines; production of military literature; production of textbooks and study materials; development of teaching aids and learning infrastructure; programming and programme development; planning of the delivery of education andtraining; evaluation of education and training; e-learning; ,cooperation with educational and researchinstitutions; cooperation and exchange with other institutions; and library, information and publishing activities. With the creation of the E-Learning Centre as an organizational unit of the Military Schools Centre, whose task was to establish a virtual classroom, the Military Schools Centreis also responsible for the introduction, delivery, and development of e-learning throughout the defence system (Ščavničar, 2020, p. 5). The organization and placement of e-learning within the SAF is illustrated in Figure 1.

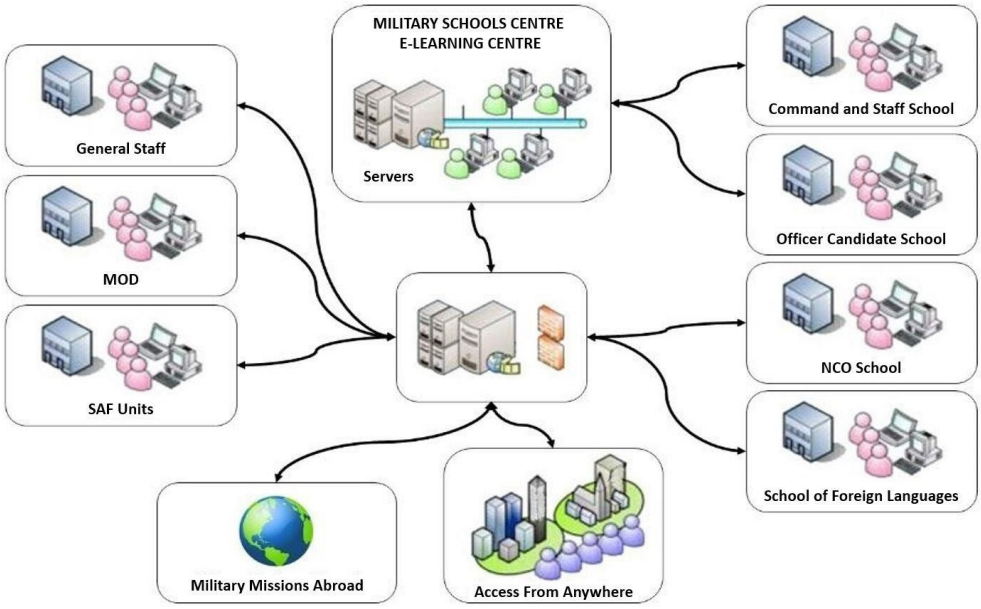

Figure 1: Organization of e-learning within the SAF
Source: Ščavničar, 2014, p. 2

The SAF introduced E-learning based on a targeted research project *E-learning and Training Systems of the Slovenian Armed Forces and Research and Possibilities of Introducing Distance Learning*. The Ministry of Defence of the Republic of Slovenia (MoD) and the Slovenian Research Agency funded the project. It was a challenging project, as it was one of the first of its kind in Slovenia. The SAF executed the programme in three phases. These phases included the preparation of a concept for the introduction and delivery of e-learning in the SAF and MoD, the preparation and delivery of training of personnel involved in the delivery of e-learning in the SAF and MoD, and the development and integration of the existing content into the SAF and MoD e-learning system. In the selection and development of the e-learning system, it was taken into accountthat the e-learning system is only a prerequisite or a tool for the delivery of distance education, thatit should meet the requirements and be easy to use, and that it should allow for the

introduction of new systems in such a way that the users should not feel the difference (Ščavničar, 2014, pp. 1-2).

The main objective was to establish a virtual classroom accessible 24 hours a day, 7 days a week, and to establish a systematic approach to the transformation of the programme of Military Educationand Training (MET). This would allow for the delivery of a large part of the military education content at a distance, ensuring the continuity of the MET process even in situations similar to those during the Covid-19 pandemic, when traditional forms of MET in classrooms, teachers' offices and training centres were disrupted or rendered impossible (Ščavničar, 2020, p. 5).

E-Learning Centre – the SAF capability and procedures

In cooperation with the SAF Force Command, a special programme has been developed to maintainand upgrade the training of members who were deployed on missions or working from home during the pandemic. An analysis of the delivery of e-courses in the form of independent education showedthat this form of training was both successful and useful in terms of content (Ščavničar, 2020, p. 5).

E-learning is now used in the defence system for the delivery of blended learning, for self-study (Slovenian and NATO courses[1]), and for the preparation of e-courses. Blended learning comprises both traditional learning and e-learning. Blended learning is tutor-led and is suitable for those who prefer face-to-face learning in a shared space, as well as those who prefer the flexibility of e-learning. This form of education is already being used successfully in some military schools (for instance in: Command and Staff School, Officer Candidate School, Non-Commissioned Officer School and School of Foreign Languages), facilitated by thecurrent IT infrastructure (Ščavničar, 2010, pp. 30-31).

1 North Atlantic Treaty Organisation

In addition to education and training of the SAF members, the E-Learning Centre also offers its services to the MoD staff and other public administration bodies. Currently, the Ministry of Finance, the Financial Administration of the Republic of Slovenia, and the Office for the Protection of Classified Information are also using the capability, which aims to provide public employees with the skills they need to perform their work requirements. We must be aware that public employees are obliged by state legislation to receive on-the-job training and to improve their knowledge. The e-learning method in this context undoubtedly means education at minimum cost and at a time that best suits the users – even in their free time (Ščavničar, 2020, p. 6). When looking at access to the different content in the E-Learning Centre e-classroom for both combined and self-paced learning, we found that users of both modes of learning complete more than 30% of the work in the e-classroom in their own time and have no problems in doing so. This means that they are engaged in education at their convenience, and at the same time, this percentage suggests that they are tackling tasks and their obligations during their working hours, which benefits the employer both in terms of productivity and it also benefits them financially (Horvat, 2020, p. 55).

In the light of the above, it can be stated that the project has been successfully implemented in the defence system and that it now enables MoD members and other public administration employees to acquire skills and competences, while at the same time allowing for greater responsiveness and flexibility in terms of location, timing, and content of training, which canbe tailored to the individual user. In this way, the basic objective has certainly been achieved or, as things stand today, exceeded.

During the COVID-19 pandemic, 34 courses of study were taught in the Officer Candidate School and Command and Staff School. The educational process was already supported by the use of online classrooms in the open-source Moodle system (SAF Centre for Electronic Education), through which teachers submit materials, weekly assignments, conduct quizzes, receive solutions to assignments and communicate with students. After the analysis of the use of distance learning, teachers and students of both schools positively evaluated the use of the system and stressed that the quality of

the educational process using new technologies is not inferior to traditional forms of education (Cebek, 2020, p. 1).

Individuals cannot self-enrol in the E-Learning Centre e-classroom. All participants are enrolled individually. However, a user has the possibility to enrol themselves in individual courses (after they have logged in to the e-classroom). Only the e-classroom administrators have the right to enrol users in the e-classroom. After their e-classroom enrolment, users have access only to those courses for which they have expressed a desire to take and/those that are available to all SAF or MoD users. One of the conditions for the enrolment of a user is the MoD ID number. Some courses have 'guest' access options. In this case, the user can freely access the course, but the system does not record their progress. Military students are only granted access to those subjects required by their syllabus and to those subjects that are available to all SAF or MoD employees. Users who are notpart of the SAF or MoD are also granted access, but a cooperation agreement must be signed. Once enrolled in the e-classroom, they are subject to the same rights, rules, and restrictions as SAF and MoD users – they have access only to specific subjects. The results of the work and use of e-learning in the SAF over the past three years confirms the good work and the value of the introduction of the E-Learning Centre e-classroom for the needs of the defence system, and more recently also more widely in the public administration (Ščavničar, 2020, p. 5-6).

The number of users of the E-Learning Centre e-classroom is increasing every year. At the end of2020, the e-classroom had 18,546 registered users, of which 12,873 were active users in 2020 – those who visited the e-classroom at least once in the current calendar year viewed specific content. In thepast five years, the number of users has practically tripled. Both the number of users and the numberof active users also clearly indicate the visibility and usefulness of the capability outside the SAF and MoD (Lepenik, 2020).

According to the analysis carried out in 2020, 78% of all users of the E-Learning Centre e-classroom were very satisfied. There were 4.5% dissatisfied users. Even fewer were very dissatisfied, namely 3.9%. If we add up all the users who were satisfied or very satisfied with the implementation of education via

the e-classroom, we get a very high percentage, namely 91.6%. We believe that these are data that justify the introduction of the e-classroom into the defence system (Horvat, 2020, p. 67).

Impact of Covid-19 on e-learning

The Covid-19 pandemic has affected all areas of our daily lives, including the course development and delivery of educational processes. No one was really prepared for this contingency, so different social (sub)systems reacted and adapted with different speeds and success rates. Educational institutions, not only in Slovenia, but also in Europe and globally, closed their doors and organized distance learning classes because of the drastic measures taken to contain the pandemic. The military education system suffered a similar fate, which is why the E-Learning Centre's capability was particularly important. For the E-Learning Centre, this was a challenge that no one could have imagined, but the capability proved to be sufficiently powerful and stable to function virtually flawlessly in the face of a sudden increase in the number of users and especially in the number of activities in the e-classroom.

We believe that the number of activities alone does not tell us much, but when we compare it by month or period, the picture is different. Figure 2 illustrates that E-Learning Centre activities increased significantly during the Covid-19 pandemic between 16 March 2020 and 11 May 2020. The educational process and other functional training courses (self-study) of the SAF and MoD members and staff of other public administration bodies in the form of e-courses during the Covid-19 pandemic ran smoothly (Ščavničar, 2020, p. 6).

DATE	NUMBER OF ACTIVITIES BY WEEK
02.02.-09.02.2020	39.540
09.02.-16.02.2020	31.086
16.02.-23.02.2020	32.219
23.02.-01.03.2020	27.223
01.03.-08.03.2020	30.361
08.03.-15.03.2020	23.434
15.03.-22.03.2020	**39.772**
22.03.-29.03.2020	**64.571**
29.03.-05.04.2020	**120.499**
05.04.-12.04.2020	**177.014**
12.04.-19.04.2020	**206.091**
19.04.-26.04.2020	**252.005**
26.04.-03.05.2020	**117.100**
03.05.-10.05.2020	**137.334**
10.05.-17.05.2020	**140.406**

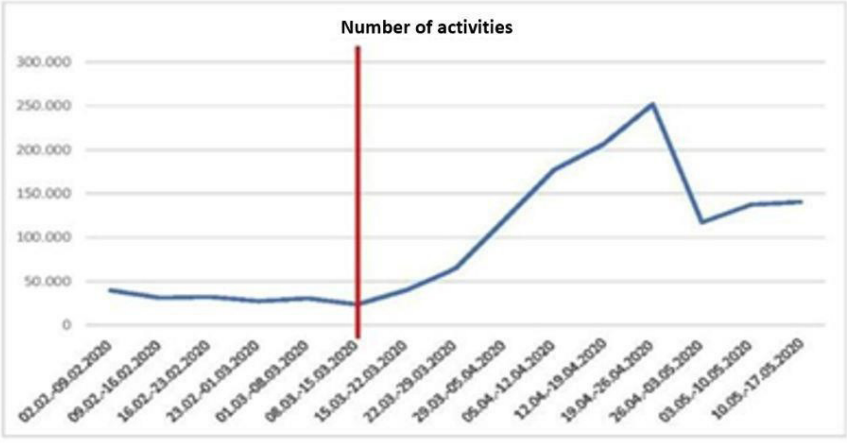

Figure 2: Number of activities in the E-Learning Centre e-classroom before and during the Covid-19 epidemic

Source: Ščavničar, 2020

Activity status before and after the Covid-19 pandemic outbreak: the average number of activities before the Covid-19 pandemic outbreak (before 15 March 2020) was 30,644 per week, or an averageof 122,575 activities per month. The average number of weekly activities after the Covid-19 pandemic outbreak was 139,421.33 (Ščavničar, 2020).

The weekly number of activities began to increase exponentially after the outbreak of the Covid-19pandemic. After 1 May 2020, the number of activities approached that of the third week after the Covid-19 pandemic outbreak. The total number of activities in the E-Learning Centre e-classroom for the duration of the pandemic between 15 March 2020 and 17 May 2020 was 1,254,792. The analysis suggests that the E-Learning Centre's performance, both for the defence system as a wholeand more broadly within the public administration, has fully met the users' expectations and requirements. Not only did the number of users of the E-Learning Centre online classroom increase during the pandemic, but the number of activities also increased and grew exponentially. Activities increased more than fivefold (Ščavničar, 2020, p. 6).

The pandemic was an exceptional opportunity to show and demonstrate theadvantages and disadvantages of e-learning and distance learning. The National Education Institute played a vital role during the pandemic and, among other things, coordinated a campaign to support vulnerable groups, distributing computers and other communication equipment contributed by various donors to all students in the country who did not have access to a computer.A total of 148 online teacher training courses were also organized and delivered, and these were attended by more than 11,600 teachers. During this period, the technical capabilities of the national distance education platforms were also upgraded due to a sharp increase in concurrent visits due to school closures, and the content of syllabus materials at all levels of education was updated to better achieve educational objectives (Rupnik et al., 2020, p. 10).

An analysis by the National Education Institute shows, among other things, that distance learning is more challenging for teachers. While it is more demanding and more stressful, teachers believe that distance learning allows them to be just as creative as classroom teaching, if not more so. An analysis of the results of the data on the experience of distance learning shows that the majority of teachers believe that they can be as creative as in classroom teaching (49.8%), while a third (34.1%) believes that distance learning allows them to be more creative than classroom teaching (Rupnik et al., 2020, p. 15). Regarding the achievement of learning objectives, it is

interesting to note that, although not all learning objectives were achieved, older students achieved a significantly higher percentage of objectives (these are students of the last triad of elementary education and students). The analysis showed that teachers spent much more time on consolidation than on assessment. As a result of consolidation, the grades were better, because the feedback the students received helped them to improve and upgrade their product, which resulted in better grades (Rupnik et al., 2020, p. 39).

Teachers saw the reasons for this in the fact that some of the objectives simply cannot be achieved remotely, but also in the lack of preparedness for distance learning. For example, it is not possible to reach out socially or interact socially; despite the technological communication support that allows us to see and hear each other, we remain at distance. Therefore, by reducing the level of human interaction, the level of emotional engagement of learners (either learner-to-learner or learner-to-teacher) is reduced when moving from a traditional to an online learning environment (Krajnc, 2022, pp. 10-11). Similarly, an analysis of the first wave of the COVID-19 epidemic showed that teachers at all levels of education agreed that socio-emotional goals could not be achieved through distance education. The analysis also suggests that teachers did not systematically promote social-emotional learning during the first wave of the Covid-19 epidemic. This raises the question of to what extent and how teachers promote social-emotional learning in normal situations and how it is (or can be) promoted in distance education (Rupnik et al., 2020, p. 75). Another example of a goal that cannot be achieved at a distance is practical knowledge. The fact is that certain parts of the study content of different programmes cannot be delivered qualitatively at a distance, especially those parts related to the acquisition of practical expertise (Možina, 2021, pp. 103-104).

There has also been a decrease in the proportion of students working in groups, with an increase in individual work with a focus on creative thinking, exploratory learning, analysis and interpretation (Rupnik et al., 2020, p. 13).

Distance learning can be highly successful, especially with slightly older students, as confirmed by theencouraging statement of an unnamed teacher who said that there is no drop in knowledge because students have taken

responsibility for their own knowledge (Rupnik et al., 2020, p. 30). This statement can be confirmed by the fact that the largest number of all users of the E-Learning Centre e-classroom is aged 41 to 50, or 36.6%, and a significant number are aged 51 to 60, or 33.8%. The third age group is the 31 to 40 age group, with 19% users. 7.1% of respondents are aged between 20 and 30 years, while the smallest group is made up of respondents aged over 61 years, 2.8%, which is understandable as this is the working population (Horvat, 2020, p. 62).

Positive impacts of e-learning for the SAF

In this section, the positive effects of e-learning are emphasized. The two most significant are the financial benefits and the time savings that contributed to better time management and system usage. In the United States of America (USA), the field of e-learning is well-developed; it was introduced into the American armed forces at an early time, where it is now used extensively and its benefits are clear. The SAF, both within the Alliance and in other venues, is inspired by and guided by the American approach. This includes the training of SAF personnel. The US Armed Forces, especially the US Army, e-learning experience has informed the SAF's approach to e-Learning. They have taken a very systematic approach to introducing e-learning into their military education system. First and foremost, of course, are the direct financial savings due to technology-enabled training methods, followed by time savings, thus increasing the availability of personnel in the units, the possibility to (re)deploy personnel more quickly according to current needs, and to train a large number of members at the same time more quickly and easily.

Research in the United States' Armed Forces

The research, discussed below, was conducted at the request of the US Army by the non-profit and impartial research institution RAND (Santa Monica, California, USA). It focuses on research in the areas of public services, such as defence, health, and education, among others. One of the research and

development centres funded by the federal government is theArroyo Centre, which conducts research for the US Army (RAND Corporation, 2020).

The research project, entitled *Personnel Policy Implications of Army Distance Learning*, was conducted at the turn of the millennium, when the US Army was in the process of implementing the *Army Distance Learning Program* (TADLP). The programme began with the overallobjective of improving the effectiveness of military education and training. Distance learning allowed soldiers to be trained where they are stationed, making it easier for the armed forces to deliver training while reducing the time spent on traditional training at military school sites. These changes are significant and can have a variety of impacts on how the armed forces train and develop their leaders.

One of the objectives of the study was to find out how distance learning can overcome the problemsof staff shortages and frequent redeployment, which also requires staff retraining. Since armed forces today are constantly in the process of transformation and building new capabilities, it is impossible to provide sufficient qualified personnel in time. All professional armed forces face an influx of fresh recruits, and there is a need to continually retrain available personnel and redeploy them as needed. The result led to units without personnel who cannot be redeployed without adequate training, and, on the other hand, a proportion of personnel who are not sufficiently or adequately trained for the job they are doing. The analysis has shown that the use of distance learning methods can reduce the cost of retraining by 30%. Shortening the course from ten to seven weeks also brought significant savings in training costs.

Another benefit was the improvement in cross-training and consolidation. Both processes seek to create a more versatile soldier who can operate with a wider range of skills. The findings about the impacts are like those of retraining. Training (or part of training) can be delivered at the soldier's unit location, thus reducing training costs. Short refresher courses are available at any time when a member encounters a knowledge gap. Such content can also significantly reduce the duration of traditional courses, with trainees at the same location.

What is most interesting, however, are the findings of the research on the possibilities that distance learning can provide for more effective delivery of leadership development training or career education (specifically the *Captains' Career Course*, which is comparable to the SAF OfficersStaff Course). E-learning allows interested members to complete certain parts of the training at their home unit before attending traditional training (in a lecture room, teacher's office, or training ground) that is inevitable due to the nature of the profession. In addition, e-learning can improve self-study and speed up the institutional process of education and training (Winkler, Leonard & Shanley, 2001, pp. xi-xiii).

The analysis above assumed that the benefits of distance learning can be fully exploited in many military education and training programmes without compromising the quality of training. This means that careful choices need to be made as to which parts of a given programme can be delivered by distance learning. The benefits of traditional learning should also be maintained where appropriate. Decisions on the conversion of content to distance learning should also consider some of the intangible but still important benefits of traditional learning, such as the opportunity to network and connect with professionals in an academic environment (Leonard et al.,2001, p. 6). The *Captains' Career Course* study analysed four variations of course conversion which are related to the possibility of referring candidates to courses and which are not applicable to the SAF situation. This study focuses only on the version that is most like our system of education, namely that the student is present in the school or institution providing one of the forms of training throughout the entire period of the course. This version is called PCS (*Permanent Change of Station*), with a reduction in the time at the institution due to the use of distance learning for one quarter of the duration of the programme (total number of hours). Although this version has the smallest increase in available days, it has other advantages. This is the simplest adaptation of traditional education by reducing the time that attendees must spend in an educational institution. In the US case, this version also proved to be the best in terms of reducing the adverse impacts on the family, while at the same time significantly improving the stability of the units by making officers (commanders) available to their unit for longer

periods (Leonard et al., 2001, pp. 28-32). A comparison between the variables in terms of the increase in the number of days officers were available at their unit barracks (bases) is shown in Figure 3.

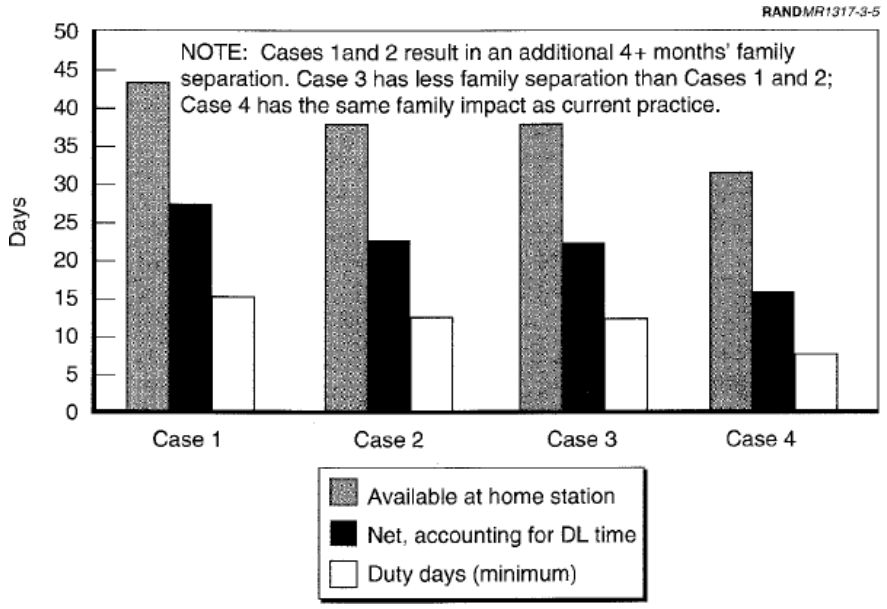

Figure 3: Increase in days available.
Source: Adapted from Leonard et al., 2001, p. 32

The study also analysed the dependence of the increase in days available on the increase in the proportion of programme delivery by distance learning. As expected, there is a linear relationship between the number of days an officer is available (across all three criteria) and the size of the distance learning share. The higher the proportion of distance learning, the higher the availability of the officer in the unit, as illustrated in Figure 4. This assessment supports the conclusion that the higher the proportion of content delivered by distance learning, the better. This is of course not always the case; there is a limit to how far we can go with converting content into e-learning. This limitation comes from deciding how much of the content, which includes tactics, leadership, planning, and decisions support processes and a range

of other potentially complex content, can be converted and delivered as distance learning or e-learning. The analysis indicated the potential benefits of further content conversions to e-learning if they can be supported in terms of training effectiveness. Since the use of e-learning reduces training time, it is important to carefully select which content and how much of the curriculum can be effectively taught using e-learning or distance learning (Leonard et al., 2001,pp. 32-34).

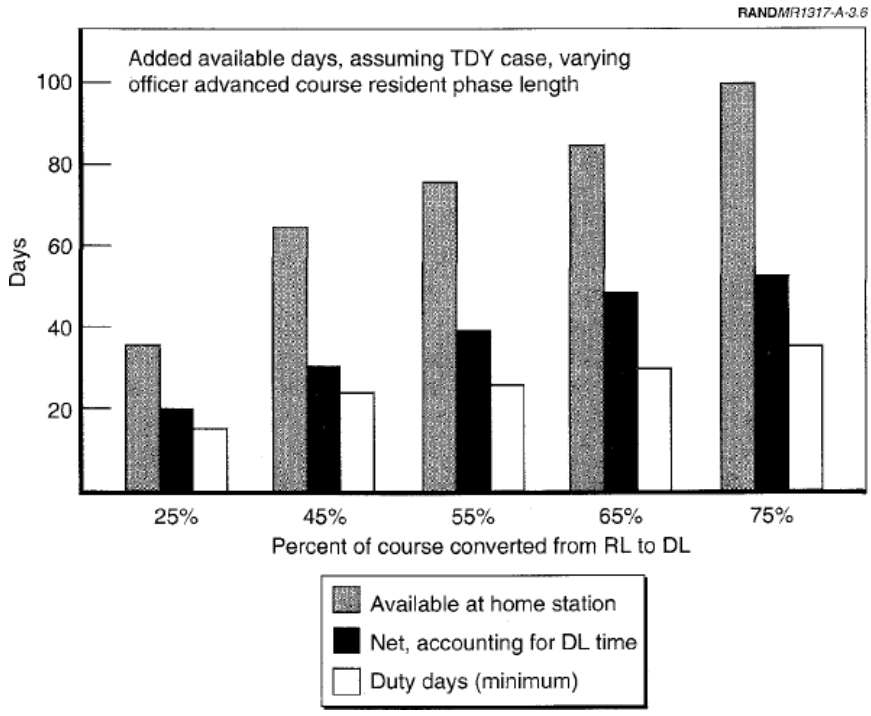

Figure 4: The link between availability and distance learning
Source: Adapted from Leonard et al., 2001, p. 33

The summary of the research provides findings that are partially applicable to the SAF and Slovenian military education and training system. The first such finding is that the conversion of parts of the curricula into e-learning and distance learning formats increases the availability of soldiers in their

units and, in the case of officers, the leadership stability of these units. In most of the cases under consideration, the availability to their families is also increased, which is important from the perspective of the members' morale and welfare. The second finding points to the maintenance of the current patterns for officers' career courses, with a corresponding shortening of certain phases of the programme where this is made possible by the conversion to e-learning with distance learning. The summary concludes with the observation that e-learning has enormous potential to harness technology in ways that are beneficial to the armed forces. The research demonstrated that distance learning can reduce absence from units and separation from families for training by shifting some education and training requirements to unit locations. This is generally feasible at comparable or lower costs than traditional education. Other areas where e-learning can help include tailoring to the needs of the individual learner or the unit and providing introductory or refresher courses for additional skills. However, e-learning is not the solution to all the training challenges. Care should certainly be taken in the choice of content, as a large part of the training required by the armed forces (in general) is not suitable for this form of training (Leonard et al., 2001, pp. 57-60).

Another important aspect is the officers' career course, which was highlighted as an example of a good practice in the training of armoured unit officers, both from the active forces and from the reserve. In the case of permanent structure, the impacts of converting 25% of the curriculum into e-learning or distance learning were analysed. This also considered the fact that 44% of the curriculum is already delivered by asynchronous distance learning in reserve officer training. In other words, 44% of the content is available or delivered without direct interaction with the lecturer or instructor. The authors concluded that 25% of the content is feasible or not a problem, even assuming that all the instructor-led training must be completed at the institution in the traditional way. In mentioning this course, it is also important to highlight how it shows the potential of how comparable education and training can be organized and delivered, and that in 1999 it received an award for excellence from the *U.S. Distance Learning Association* (Leonard et al., 2001, pp. 19-22).

E-learning and distance learning benefits are not limited to prospective cost savings and increased time or availability at unit locations. The main advantage of e-learning is the ability to efficiently deliver training in a way that can be tailored to the individual learner's needs in terms of time, content, focus, and speed of study. This feature can be useful in almost any educational setting, but it is even more valuable in today's environment of rapid technological growth, frequent deployments, and other distractions for military members regarding their assigned tasks, and broader leader knowledge and skills requirements. A common belief stressed in the educational literature is that continuous education is more valuable than education at discrete intervals. Distance learning allows the member to focus on areas where they need improvement or additional skills at the right time and the right place. These general benefits of e-learning and distance learning are available in almost any platform – self-motivated and committed members can use distance learning capabilities to improve their performance, add to their general education, and broaden their professional perspectives. For military education and training, one of the greatest potential contributions is the possibility of providing "training on demand". Distance learning can also be used as just-in-time skills training. This is particularly useful when members are performing jobs for which they are not formally trained and in preparing officers for service in selected functional areas.

E-learning also makes refresher training more readily accessible, which has important implications for a military that is increasingly dependent on skills that can quickly become obsolete due to technological advances (Leonard et al., 2001, pp. 51-52).

Financial impacts of e-learning in the saf

The financial impacts of e-learning in the SAF are expressed in terms of savings and therefore may not be as tangible at first sight as, for example, the earnings of a company marketing e-learning. These savings are reflected in the time spent by staff on training as part of their official duties, and travel and course costs that the SAF would potentially have to pay to an external training provider.

In accordance with the data of the E-Learning Centre, on average users complete more than a third of their e-learning (between 34 and 39%) in their free time (Figure 5). A careful analysis and calculation would yield many hours spent by users in the defence system (and public administration) in their free time for various forms of training in the context of their official duties.

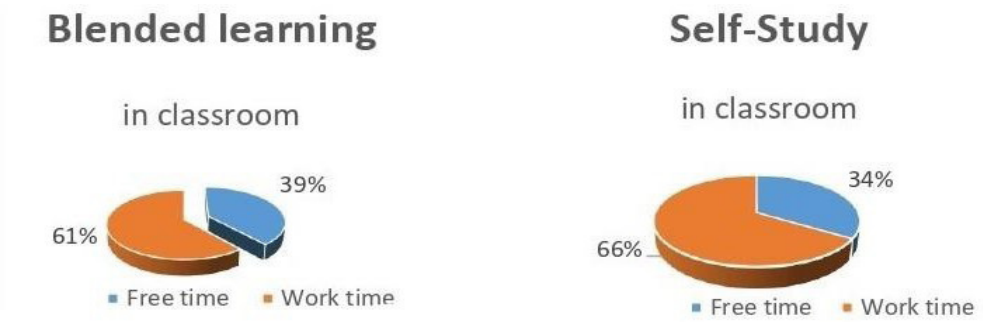

Figure 5: User time in blended and independent learning
Source: Ščavničar, 2020

Multiplying the calculated hours by the average hourly rate of a public administration employee would allow us to calculate the cost savings for the training budget. Additionally, travel costs saved when studying from home can be added. We also need to add to this the cost in value of each e- course to get an estimate of the positive financial impacts of the SAF's use and delivery of e-learning. For illustrative purposes, Table 1 shows average prices for some of the courses in the wide range of e-courses offered by different providers in the Slovenian e-learning market.

Table 1: Prices of some e-courses on the market (in Slovenia)
Source: Adapted from Omisli.si, 2021.

Distance learning	Distance learning price
Online distance programming course	20-30 €/h
Online English course	€100-2000
Online German course	€100-2000
Online private lessons in mathematics	10-20 €/h
Online private lessons in physics	10-15 €/h
Online private lessons in English/German	15-30 €/h
Online guitar lessons	10-25 €/h
Online course in graphic design	€270-500
Online course in photography	10-15 €/h
Online course in accounting	€130-900
Online course in Excel	20-40 €/h
Online course in computing	€100-400
Online course in speed-reading	€9-100
Online course in rhetoric	€200-600
Online massage course	€40-100
Online cooking course	€10-50

The estimated saving in travel costs is calculated only for those users who have taken any of the self-study courses in the current year. In calculating the travel cost savings, we considered the costof one return bus journey from the place of work to Ljubljana (in Ljubljana, a return journey on public urban transport), based on data from the E-Learning Centre database. To calculate the value of e-courses, we used an estimate of the average price based on the publicly offered e-courses online (Omisli.si, 2021). Added to these costs could be the so-called "dead hours" incurred during transportfrom the place of work to the place of delivery of education and back. A simulation of the value of the courses, the travel costs saved, and the overall positive budgetary impact is shown in Table 2.

Table 2: Simulation of financial impacts of the E-Learning Centre
Source: Ščavničar, 2020.

Year	Number of courses	Value of the course	Travel costs	Total
2010	118	€11,800	€844.58	€12,644.58
2011	374	€37,400	€2,676.90	€40,076.90
2012	2788	€278,800	€19,955.07	€298,755.07
2013	7207	€720,700	€51,584.00	€772,284.00
2014	5710	€571,000	€40,869.24	€611,869.24
2015	12094	€1,209,400	€86,562.63	€1,295,962.63
2016	14053	€1,405,300	€100,584.15	€1,505,884.15
2017	19562	€1,956,200	€140,014.74	€2,096.214.74
2018	23203	€2,320,300	€166,075.14	€2,486,375.14
2019	24557	€2,455,700	€175,766.38	€2,631,466.38
2020	48440	€4,844,000	€346,708.61	€5,190,708.61
Average price		€100	€7.16	€107.16

The overall simulation of the positive fiscal impact over the last ten years of the E-Learning Centre e-classroom clearly shows that the savings are increasing every year. This is why we can say with a high degree of certainty that the financial investment in the introduction of e-learningin the SAF has already been repaid many times over. Unfortunately, we have not been able to obtain the cost of its introduction for a more precise calculation.

Time as a positive impact of e-learning in the saf

Time is one of the most principal factors influencing people's lives and activities. We are active throughout our lives to achieve goals we set for ourselves or that others set for us. As a rule, we needto achieve a goal within a certain timeframe in order to benefit from it – in the short or even the long term. The faster we achieve these goals, the more successful we are. If we achieve a goal faster than others or faster than expected, we are happier and usually have more time for the activities we love and that make us happy – our free time, which has its own value. A similar story exists within the business community. Time is money is a long-established adage that is becoming more relevant every day in a global, information-rich world interconnected through the internet.

Even when something happens on the other side of the world, the moment the information hasreached us we react. To put it a little tongue-in-cheek, there is no timeto sleep. This is why it is even more important to manage our time wisely and prudently. It is therefore a question of time management. While we cannot control time, we can manage ourselves and the way we use the time we have available.

Conclusion

Humans have evolved owing to their unique ability to learn and to change thingsin their favour. Technology provides new opportunities and conditions for change. We may or maynot take advantage of these opportunities. Without the development and use of innovative technologies, there is no progress. Today, thanks to the incredible development of information technology,

change is rapid and profound. Keeping up with change is difficult but necessary. To change for the better, we need to compare ourselves only with those who are more productive and more efficient than we are.

Based on historical experience, distance learning has successfully complemented traditional education and benefited individuals, businesses, educational institutions, and societies (countries) as a whole. Distance learning has evolved over time, depending on the possibilities and technologies then available. Like all novel approaches to learning, distance learning has always had (and still has) its opponents. Nevertheless, it has evolved and improved with the development of new technologies, and its positive effects on individuals, educational institutions, businesses and societies have steadily consolidated its place in modern education.

The Slovenian experience also shows that building an organic e-learning capability was the justifiably correct decision. It is up to us to make the best use of this capability and to keep pace with the development of effective military education. The need for trained personnel is also increasing due to constant transformation and development, and we need to train personnel as quickly as possible. We must make use of all the available skills and capabilities at our disposal.

Based on the results of the analysis of the data and E-Learning Centre experience and the estimated financial impacts, the introduction of distance education is financially beneficial for the SAF. The savings achieved so far have more than justified the development and establishment of an in-house e-learning capability.

The results of the US analysis, which are also validated by the results of a survey of SAF officers, favour of the use of distance learning in military education. The streamlining of time resulting from the use of distance learning is important not only from the point of view of the units sending officers for training, but also from the perspective of the training institution (Military Schools Centre). They all benefit from increased availability of personnel, which for units means the presence of commanders or leaders, and for the Military Schools Centre the increased availability of lecturers, who are usually involved in several courses running in parallel. This means

easier and better coordination of schedules and additional time for updating and supplementing the teaching content and for further training of lecturers.

Today, we are facing major challenges in human resources, and streamlining is particularly relevant in this context. Changes in the environment dictate modifications within the organization, new responsibilities mean new challenges and usually require new skills, and we need effective knowledge management. Experience from abroad (the US Army study) as well as domesticexperience (the Covid-19 study) teaches us that change needs to be implemented rationally and to an appropriate degree. It is also important to consider the fact that technology alone will not have the desired effect unless we develop the personnel using the technology.

The SAF possesses the technology in the form of its E-Learning Centre capability, so it makes sense to invest more effort in training staff to use the existing capability. It is important to realise that future generations of students will be more technologically advanced than their lecturers, and that our collective future and national security rely on education in all its modalities.

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Optimizacija provedbe vojne izobrazbe metodom učenja na daljinu

Sažetak

Svrha je istraživanja analizirati trenutne podatke i iskustvo Središta za e-učenje Slovenske vojske te ispitati mogućnost povećanja pozitivnih učinaka izobrazbe na daljinu njegovim uvođenjem u redovite oblike i programe izobrazbe u Slovenskoj vojsci. Na temelju rezultata analize podataka i iskustva Središta za e-učenje te procijenjenih financijskih učinaka, može se pouzdano tvrditi da je uvođenje izobrazbe na daljinu bilo financijski korisno za Slovensku vojsku. Dosadašnje uštede više su nego opravdale razvoj i izgradnju vlastitih sposobnosti e-učenja Slovenske vojske. U prilog primjeni metode učenja na daljinu u vojnoj izobrazbi govore i rezultati američke analize. Uvođenje metode učenja na daljinu u sustav vojne izobrazbe pokazuje pozitivne učinke e-učenja u njegovoj integraciji u redovite oblike i programe izobrazbe u Slovenskoj vojsci. Njime se povećava vjerojatnost uspješne provedbe digitalne transformacije programa izobrazbe i usmjerava se obrazovne institucije na rješavanje problematike ključnih sadržaja izobrazbe.

Ključne riječi

učenje na daljinu, e-učenje, metode izobrazbe, optimizacija, pozitivni učinci, informacijska tehnologija