DEFENCE EDUCATION ENHANCEMENT PROGRAMME (DEEP)

STRATEGY FOR DISTANCE LEARNING SUPPORT

"ALL IS FLUX. NOTHING STAYS STILL."

Heraclitus

The digital transformation of defence education has only just begun. With the publication of this strategy, we hope to make it easier for professional military education institutions to accelerate the adoption of brand-new teaching methods and social learning environments which leverage the tremendous potential of digital technologies. The role of technology in learning environments is not to replace human interaction. Rather, its role should be to enhance the role of humans in the learning process, whether they be instructors or students.

Technology is not the goal in itself. In fact, a digital transformation effort is likely to fail if an organisation doesn't integrate its operational and technology strategies from the start. This document is a response to that challenge, describing multiple options for modernizing delivery of professional military education for which technology remains only a tool and does not become the master. Online learning, hybrid curricula, micro-learning, metaverse-based social learning environments for geographically separated students…these are just a few forms of distance learning support which could be harnessed to improve pedagogy and learning outcomes.

Reaching the full potential that digital technologies offer will take some time, but students should expect cheaper, easier access to the highest-quality education and training, more accessibility for larger training audiences, information that is tailored to individual needs and delivered anytime and anywhere, and programme delivery that is more resilient to disruption (whether pandemic, political, or security-related). This strategy will help you to guide your own decisions as you design solutions that will work in your unique environment.

I thank everyone who generously contributed their time and effort during drafting process.

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INTRODUCTION

The Defence Education Enhancement Programme (DEEP) hosted a 16-18 November 2020 virtual workshop, followed by the co-hosting of a virtual conference with the War Studies University of Poland during 12-14 April 2021 to identify best practices and lessons learned by Allied and Partner professional military education (PME) institutions in transforming education from residential to non-residential distance learning (DL) during the 2020-2021 COVID-19 evolution. There were approximately 200 participants representing 34 countries and a number of multinational institutions and schools. Utilizing the November 2020 workshop findings, the conference conducted panels to review papers drafted in the period between the two events that elaborated on the findings developed by the first workshop. The April 2021 conference built on those papers to identify optimum approaches for the DEEP programme to inform a strategy for future advanced distributive learning (ADL) distance learning support to Partner nations.

It became very clear during the early period of the pandemic that our defence education institutions had to adapt and transform their resident education programmes into non-resident or hybrid approaches to learning. Even with the many advances that the world's medical community has made against COVID, we are still highly likely to continue to be impacted by the pandemic for the foreseeable future. That makes the really significant efforts put forth by the DEEP community in its support for defence education adaptation of distance and/or blended learning that much more important as we consider the way ahead. Used correctly, this document has the ability to create and sustain the most effective, cost efficient, and versatile student-centred learning that our nations will require.

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DEEP STRATEGY OBJECTIVE

Provide DEEP programme guidance for Partner schools/countries that request support to develop, improve, modernize, and/or professionalize distance learning programmes. This will include the identification of potential courses of action that DEEP programme providers can employ to support Partner requests for support. Employed by DEEP providers to assist Partner schools and countries to attain their desired goals for distance learning capacity and execution, each course of action based on identified best practices/lessons learned will contain:

A. End State: Objectives or desired outcomes

B. Ways: Course of action approaches. Methods and processes executed to attain the ends. They answer the question: how are you going to get to the end state?

C. Means: Resources required to execute the ways. It will also be important to ensure that any DEEP programme distance learning support will be definitively assessed using the modern assessment, monitoring, and evaluation methodologies associated with the SMART objective process (specific objective, measurable, achievable, relevant, time-related). Finally, DEEP programme support will require a sustainment component to allow follow-on monitoring for success, failure, or modification.

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BACKGROUND

A. Allied/Partner School DL Status and DEEP DL Support before COVID

1) Before the pandemic, most PME institutions adhered to resident programmes that followed well-proven routines in developing and implementing curricula. ADL, e-learning or distance/ online teaching existed to a greater or lesser degree but were often met with scepticism among PME faculty and the chain of command.
2) Most PME institutions focused on adapting the content and methodology necessary to keep their curricula updated and relevant. The general pattern of curriculum development, implementation, and review formed a consistent and permanent cycle. The learning environment remained essentially unchanged regarding its predominantly residential character. This is a character manifested and understood by its physical nature such as classroom space, teaching materials, library access, information technology, and general learner support including but not limited to social, morale, and welfare considerations; see **Annex I**.
3) The emphasis on the use of e-learning was employed for asynchronous education before the COVID-19 period, as demonstrated by the COVID-19 Online Learning Survey in Annex I.
4) Most virtual teaching platforms employed were asynchronous: Learning Management Systems – ILIAS and Moodle (both open-source).
5) DEEP DL support capacity before COVID – by individual area of support:
   a) Institutional Support
      - On-demand country-specific workshops on potential adaptation of a distance learning system – sharing the best practices based on the Ukraine PME ADL system solutions (**Annex J, Annex K**).
   b) Curriculum Development
      - On-demand country specific workshops on development for specific distance learning curricula.
   c) Faculty Development
      - On-demand country-specific workshops on the use of distance learning ADL tools by faculty members.
   d) ADL Technology Support
      - NATO DEEP ADL Portal based on ILIAS, as a system solution for all partner countries.
      - On-demand workshops to address the employment of distance learning ADL technology – in accordance with Partner institution demands.
   e) English Language Training (ELT)
      - NATO DEEP ADL Portal based ELT courses (ELTEC) available for registered users

B. Allied and Partner School DL Status, and DEEP DL Support During COVID

1) The changes brought about by Covid-19 unleashed new dynamics among PME faculties. Curriculum developers and classroom instructors had to determine what and how to teach in a distance learning environment. This included identification of needed ADL technology to support the new effort. Teachers with more experience helped those who lacked necessary IT skills; in many schools, motivation and goodwill spilled over from the change agents to the sceptics.
2) Some schools established new internal bodies – steering committees and working groups – to oversee the curriculum transformation from resident to virtual/hybrid modalities. Other schools relied on small teams of empowered experts who oversaw curriculum development in a comprehensive manner. These experts were the primary points of contact for faculty that, overall, carried an increasing responsibility for transitioning their teaching to the virtual realm.
3) For academic faculty with a high degree of freedom of research and teaching or experience in developing their classes and lessons, the changes were made more easily. Instructors in more regulated or training-oriented programmes faced additional challenges regarding individual curricula or individual school education decision-making - as they may have lacked the agency or knowledge, or freedom to adapt on the fly.
4) The most common problems PME institutions faced during the transformation from residential to non-residential distance learning were:
    a) Legal aspects of a distance learning ADL system.
    b) Limited faculty experience in extensive utilization of distance learning.
    c) Lack of a dedicated distance learning ADL administrative staff.
    d) Absence of ADL platform/software system solutions.
    e) Need for appropriate distance learning ADL system hardware.
5) Prior to the pandemic, in some cases, distance learning was primarily seen only as a hypothetical possibility. Important technological and organizational issues were frequently not addressed for distance learning. To resolve this issue, it has been necessary to address:
    a) Means (Resources): To ensure the remote learning can take place, the instructor must use different types of equipment and software. This could include equipment for a remote workplace at home (Telework).
    b) Skills: To work successfully in a distance learning format, the instructor must have additional skills and knowledge. In the end, the instructor's professional profile can be divided into between distance learning and resident learning.
    c) Formatting Materials: Training materials prepared for in-person teaching could require significant redesign for use in a distance learning environment.
    d) Communication: A lot of time is spent on unscheduled communication which also needs to be formalized and limited. Along with the enthusiasm for mastering several professional competencies in the context of "quarantine training," instructors quickly tired of constant communication online and a significant number of tasks that they received for evaluation.
    e) Technology Tools: Schools/Instructors were free to select the distance learning technology tools. This also required the student to master a new "set of distance learning tools and technologies." It is logical to have a basic (mandatory) standardised learning environment like LMS for all courses and a recommended list of additional tools.
    f) Distance Learning Policies: School distance learning polices will have to be developed at both the national and individual school levels.
6) As per the **Annex I** survey, a little more than 50% of survey responders indicated multiple problems with distance learning-associated technology. In addition, about 2/3 of the **Annex I** survey respondents stated that there was little to no training or support for faculty to begin teaching in a distance learning mode.

7) Nevertheless, according to the NATO COVID-19 Online Learning Survey (**Annex I**), synchronous distance learning increased 202% and asynchronous learning expanded 59% during the COVID period.

8) Multiple platform portals have been employed for synchronous instruction: MS Teams, Google Meets, Google Hangouts, Zoom, Webex, Gotowebinar, GotoConference, GoToMeeting, ClickMeeting, Jitsi, Adobe Connect, BigBlueButton. For asynchronous instruction, the Learning Management System (LMS) ILIAS and Moodle continued as the platform portals of choice.

9) DEEP DL Support During COVID by Individual Area of Support:

   a) Institutional Support (see Annex L for a generic model that could be utilized by school for transformation from resident to non-resident learning)

      - On-demand country-specific workshops on potential adaptation of a distance learning system.

   b) Curriculum Development

      - On-demand country-specific workshops on development for specific distance learning curricula.

   c) Faculty Development

      - Postgraduate studies – E-teacher and e-instructor within the new COVID-19 learning environment.[1]
      - Beginning with academic year 2021/2022 - e-Instructor Certification Programme (five months in length, two classes have graduated).[2]
      - Running Effective Virtual Meetings – over a year of continuous BigBlueButton training support within the NATO DEEP community.[3]
      - Micro-Learning Design with H5P – e-course focused on an open-source authoring tool – H5P (more at: https://www.youtube.com/watch?v=5VnGOkWIDfM&t=1s).[4]
      - Multimedia Tools for e-Teacher and e-Instructor – developing engaging podcasts and videocasts (more at: https://www.youtube.com/watch?v=w4TuUo_9Qpc).[5]
      - Translation of the "Modernizing Learning" book into Ukrainian and other e-learning products by the NATO DEEP eAcademy.
      - Conversion from ILIAS SCORM Editor to Articulate Rise: 10 Principles of Cybersecurity (currently available in English and Ukrainian)
      - Conversion from ILIAS SCORM Editor to Articulate Rise: Introduction to Cultural Awareness
      - The initial process has begun to transform the Counterterrorism Reference Curriculum into a reference curriculum for a distance learning course. That will likely be followed by a similar transformation for the Cyber Security Reference Curriculum. Both reference curricula to be available in multiple languages.
      - Many country-specific workshops.

1 The studies were conducted within the framework of the cooperation between NATO's Defence Education Enhancement Programme and the European Security and Defence College of the European Union. Ten subjects were conducted by lecturers from the NATO Defence College in Rome (Italy), NATO School Oberammergau (Germany), UWM Olsztyn, European Security and Defence College of the European Union, and the eAcademy of NATO's Defence Education Enhancement Programme. Three participants received a special "Jean d'Andurain Prize" - for the best student to commemorate the founder of NATO's Defence Education Enhancement Programme (https://www.nato.int/cps/en/natohq/news_185832.htm?selectedLocale=en, accessed 2021-07-28).

2 NATO DEEP eAcademy will continue to support instructors with a new "e-Instructor Certification Programme" that will prepare civil and military faculty in professional military education institutions to become fully operational in e-learning environments and will provide knowledge on how to design, plan and implement remote classes and courses. (https://www.nato.int/cps/en/natohq/news_185832.htm?selectedLocale=en, accessed 2021-07-28).

3 From May 2020 to June 2021 - 80 sessions were conducted by two NATO DEEP eAcademy teams, 240 participants.

4 From February 2021 to July 2021 - 12 sessions were conducted by NATO DEEP eAcademy team, 80 participants.

5 From April 2021 to July 2021 – 8 sessions were conducted by the NATO DEEP eAcademy team for 64 participants (see: 1. Gawliczek P., Guzewicz W., Iskandarov Kh., Defence Education Enhancement Programme as a Vehicle to Strengthen and Stimulate Cooperation Between NATO and Partners: Case Studies - South Caucasus and Ukraine ADL Perspectives, Publishing House UWM, Olsztyn, 2020; and 2. Gawliczek P., Innovative ICT Solutions and/within/for Changing Security Environments: Case Study - NATO DEEP ADL Portal and Social Media, Social Developments, and Security, 2019, 9 (4) p.111-119).

d) ADL Technology Support
   - NATO DEEP ADL Portal – based on ILIAS (5.4.12. version to be updated to 7.2 version),
   - NATO DEEP Video Conferencing Portal – BigBlueButton (2.2 version to be updated to 2.3 version)
   - NATO DEEP eAcademy Moodle – a platform established for training purposes, with H5P development capabilities.
   - Hosting the Iraqi E-learning Platform (IeLP) – from July 2021 (moved from ACT server)

e) English Language Training (ELT)
   - CALT – Computer Adaptive Language Testing installation will be available to any interested Partner instructor

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ASSUMPTIONS

A. Partner Desires Support: The DEEP Programme Could Support Partner Schools in the Following Ways:

1) Training Aspects: Provide training on:

- Ways of Developing an ADL System: Utilizing the experience of countries that have already developed their own distance learning systems, focus on all the important steps that need to be taken to build the system. Demonstrate the practical results of the implementation of these steps.
- Approaches to Shift from Traditional to Distance Learning: Extensive experience was gained during the pandemic on the transition from traditional to distance learning in various combinations. Accumulating this practical experience and conducting associated training will help education institutions, that are on the initial path, as well as those which are already actively using distance learning technologies.
- Use of Learning Management Systems (LMS) to Support Educational Processes in PME Institutions: There are many options for organizing the educational process using LMS, from the placement of ADL Courses on it to comprehensive support of the educational process where ADL Courses are only the part of the complex system. It is important to know the possible options for using the LMSs, the pros and cons of each option or their combinations, and the sequence of actions to implement a certain option. In addition, it is very important to understand how to use the LMSs from the perspective of the instructor, student, and administrator. Assistance in organizing such training is necessary, as well as assistance in developing training programmes for further implementation.
- Use of Different Authoring Tools to Create Distance Learning Materials: The large number of tools for developing ADL content for use in the ADL system can create difficulties for instructors. It is useful to prepare instructors to use the tools they need to master their specific tasks.
- edagogical Approaches in Distance Learning: Many pedagogical approaches exist in the ADL system, so mastering them is very important for a modern instructor. Training on a variety of approaches implemented during the pandemic period, both positive and negative aspects, should be required.
- Administrative Aspects: Conduct consultations with DEEP Country security sector leadership on the ways to build a distance learning system based on the successful experience of Partner countries and support their implementation. Provide assistance in the development of legislative documents for Partner ADL systems by disseminating and translating existing documents used by the countries that have already implemented ADL systems.

B. Support Funding Availability: DEEP will continue to provide financial support to those Partners willing to develop an DL capacity.

C. SME Availability: DEEP should be able to meet the demands related to the "e-Instructor Certification Programme" and other specific related demands provided by Partner education institutions. Within the NATO DEEP eAcademy there are instructional designers, multimedia designers, programmers, LMS ILIAS administrators, LMS Moodle administrators, UI and UX designers. Considering the trends, the team will also be able to support the VR/AR/MR and AI fields.

D. Technology Capacity to Support: Types of platforms, etc. available in 2021; include cost estimates by platform

1) NATO DEEP ADL Portal – cost: 15k EUR/ year (cloud hosting, maintenance, helpdesk, and upgrading)
2) NATO DEEP VC Portal – cost: 10k EUR / year (cloud hosting, maintenance, helpdesk, and upgrading)
3) NATO DEEP eAcademy Moodle – cost: 5k EUR/ year (cloud hosting, maintenance, helpdesk, and upgrading)

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IDENTIFICATION OF POTENTIAL COURSES OF ACTION FOR FUTURE DEEP SUPPORT

To ensure maximum options and flexibility for both the Partner country and DEEP providers, multiple distance learning areas have been identified that can be supported. Potential courses of action (combined with best practices/ lessons learned) for each of the five identified distance learning fields follow:

A. Institutional Support:

1) **End State**: Professional administration and management organization, and system in place to support a modern distance learning programme.
2) **Challenges**: Faced by PME institutions during the transformation process from residential to non-residential distance learning were:
   a) Legal requirements for the distance learning system
   b) Limited faculty experience in distance learning education and training
   c) Lack of a dedicated distance learning support staff
   d) Absence of technology: workable ADL platform and other needed ADL software
   e) Needed ADL system hardware (e.g., computers)
3) **Potential Course of Action Options (combined with best practices/lessons learned)**: To support institutional transformation towards distance learning, the following approaches should be considered:
   a) Conduct an institutional evaluation to identify the strengths and weaknesses of the education institution's internal quality assurance and quality development procedures needed to optimize distance learning organizational structures. The institutional evaluation needs to identify what the PME institutions should do to shift from residential to non-residential learning. Key will be identification of the necessary changes in hardware, software selection, resource needs (e.g., money, time, staff etc.), and an overall organizational approach.
   b) Determine why the changes are needed to allow distance learning to be delivered at the institution. Both challenges and opportunities must be evaluated. The identified changes should be determined in terms of products, technology, structure, and culture. The Partner institution should identify an individual that takes leadership responsibility to implement any planned changes. That person must be alert to things that need revamping, open to good ideas, and supportive of the implementation of those ideas into actual practice.
   c) ***Distance education institutions have access to a local area network (LAN). The LAN must provide maximum access to the internet and all required network capacity. The school may be required to make a policy decision to extend the LAN into school dormitory areas or be updated.***
   d) Must decide on the best learning management system (LMS) and videoconferences servers or look for a cloud solution for the Partner school; all with the needed certification.
   e) Ensure an appropriate level of cybersecurity for all distance learning services.

f) There is a need to determine needed services and software.

g) Dedicated school administrative entities (e.g., branches, centres, departments) should be created to support faculty/student ADL utilization at the highest level, which may require MoD/General Staff administrative approval. The teaching staffs will require support from the highest levels.

h) A NATO based Cloud service could help some Partners in case of experience deficiency and/or resource shortages.

i) During the transformation process from resident to non-resident learning, the conduct of a weekly review by Partner schools could facilitate the monitoring and fast adaptation in variable conditions.

j) School schedules may have to be adjusted for the planned start and graduation of cadets several years into the future to ensure that quality of education and training can be maintained.

k) ***For overall faculty development, provide training for faculty on technical and pedagogical aspects of using ADL in the educational process. Create two courses for the faculty: basic and advanced courses. For the basic course – focus on essential functionality to conduct classes online. For the advanced course – focus on more advanced pedagogical aspects.***

l) Ensure availability of training videos or text materials that describe the basics of developing distance learning courses, and the peculiarities of organizing and conducting classes in distance mode will be important.

m) Provide funding and central support to the teaching staff that are re-engineering their course designs to best use technology-enhanced approaches.

n) The ability to conduct group and collective projects in a distance learning mode will be important. This relates to the collection, processing, and analysis of information for research topics. This will require constant contact between the instructor and the individual student work groups.

o) Collaboration among schools in the same Partner country is important for the adaptation of other distance learning best practices/lessons learned. A joint distance learning platform can be used by several PME institutions to facilitate the process of implementing distance learning technologies into the educational process. It also allows economic efficiency and facilitates the solution of administrative and personnel issues related to the management of the platform.

p) Given the conditions of the individual Partner school, a hybrid approach for both resident and non-resident learning could be a preferred solution.

q) As available, employ the experience of other countries in the development of their own distance learning systems. Demonstrate the practical results of their implementation.

r) If possible, DEEP portals should be provided for Partner PME institutions to support their educational processes. This will minimize Partner financial and time costs, to include the purchase of expensive hardware and software and the need for technical specialists to install and maintain them. One example could be a multi-tenant LMS for PME institutions where multiple independent organs operate in a shared environment (e. g., MOODLE example)

s) Assist partner countries with the development of legal documents that a country may need for the establishment of a distance learning system.

B. Curriculum Development

1) **End State**: Modern curriculum/curricula in place written specifically for an on-line learning classroom. This would include exercises, research projects, and student measurement (e.g., written and oral tests, student in-class presentations, etc.).

2) **Challenges**: Faced by PME institutions during the transformation process from residential to non-residential distance learning were:

   a) Many PME institutions lack both essential tools (computers, cameras, electronic dashboards etc.) and technical prerequisites (high-speed internet, bandwidth, access to online libraries and databases etc.).

   b) Technical and practical subjects are more challenging to transform into online lessons or exercises than theoretical subjects. Virtual or Augmented Reality (VR/AR) may offer viable solutions but requires additional equipment, training, expertise, and time to develop.

   c) Online devices are often subject to security restrictions – and face the general suspicion of distracting students from their genuine work.

   d) Testing procedures and practical application of newly acquired knowledge also need to be adapted to virtual modalities.

   e) Overall, distance learning curriculum development requires more time and resources, and more assistance to both faculty and students than the preparation of traditional face-to-face programmes. Online teaching cannot replace the social interaction between all actors involved in teaching and learning processes. Especially in military education, establishing trustful relationships between leaders, subordinates, and peers is essential for the successful execution of tasks and missions – and it can only grow through permanent personal contact. Therefore, blended or hybrid curricula should create as much space as possible for real-time and near real-time interaction.

3) **Potential Course of Action Options (combined with best practices/lessons learned)**:

   a) Development of online/hybrid curricula requires thorough preparation and planning that integrates curriculum designers, instructors, and technical staff/trainers to determine what shall be learned and how.

   b) Online sessions need to be modelled for online execution.

   c) The preparation/presentation of modules or lessons could be done by two peer instructors who provide complementary views and expertise and can back up each other.

   d) Curriculum planners/course directors need to set clear timelines to deliver readings, teaching materials, and lesson concepts. If possible, there should be dry runs or rehearsals to evaluate and tweak the module/lesson.

   e) Students need precise information on the courses/modules/lesson and access to readings/material in time to absorb the material prior to classroom delivery. Instructors should provide easy-to-follow material and avoid "cognitive overkill" where possible.

   f) To maintain student motivation and attention span, instructors should apply various active learning methods and approaches to activate and involve their classes. This includes giving exercises or presentation requirements to students to work on during asynchronous periods and then present the results during the plenary sessions.

   g) Online/hybrid curricula need as many live synchronous sessions as possible to maintain a social connection between instructors and students.

   h) Immediate student feedback is essential for the development/consolidation of online/hybrid curricula, especially during the initial phases.

   i) Pilot courses/lessons offer the opportunity to test a new module/lesson throughout the cycle of development, implementation, and evaluation of a curriculum.

   j) To reduce confusion and training hours, a PME institution should use one common standard platform and learning management system (e.g., Moodle, ZOOM, BBB, etc.) to execute its online/hybrid curricula.

C. Faculty Development

1) **End State**: Partner school instructors can design and deliver lessons using active learning methods in a distance learning classroom (both synchronous and asynchronous).

2) **Challenges**: Faced by PME institutions during the transformation process from residential to non-residential distance learning were:

   a) Partner schools may have a limited or unreliable ADL (Virtual Conferencing System and LMS access).

   b) Partner schools may have limited or non-existent teaching and faculty development resources.

   c) Partner schools/countries may not have the fiscal resources to purchase needed distance learning-associated technology (e.g., servers, bandwidth, etc.).

3) **Potential Course of Action Options (combined with best practices/lessons learned)**: Divided into two primary options: 1. The first addressed faculty development concerns from an optimally resourced and well established PME institution's perspective. Its findings reflect what an "ideal" school should have and do to prepare its faculty for remote and hybrid/blended learning of the present and the future. 2. The second approached faculty development from a minimally resourced and less developed or inadequately trained faculty viewpoint. Its conclusions and recommendations captured the faculty development challenges associated with a notional institution that lacks sufficient personnel and technology capabilities to conduct remote or hybrid learning effectively. Both options emphasize the need for faculty to be proficient in teaching, digital, and social literacy.

   a) **Option 1 (Optimal course of action) (combined with best practices/lessons learned)**: This addresses all three areas (teaching, digital, social) where an institution has a reliable ADL (Virtual Conferencing System and LMS access) and existing teaching and faculty development resources.

      i. **Teaching Literacy Competencies**:

      - Increase specificity about the competencies (knowledge, skills, techniques) faculty need in the three literacies--teaching, digital, and social--for online/hybrid instruction. Consider the perspectives of faculty, students, institution leadership, and staff.
      - Identify specific competencies along the following dimensions: Institution type (War College, Military Academy, NCO school, etc.).
      - Curricular focus (STEM and practical training vs. Humanities/Social Sciences)
      - Basic/essential vs. advanced
      - Identify specific resources needed to help faculty reach these competencies (such as workshops, courses, technologies, personnel, time, etc.)
      - Effective application of adult learning principles
      - Ability to achieve a balance of engaging teaching methods.
      - Support different learning styles online (i.e. - Kolb's Learning Styles and Experiential Learning Cycle)
      - Apply online teaching methods.
      - Construct a co-creation learning environment (how to develop knowledge creating cultures in the virtual classroom)
      - Develop learning outcomes and effective assessment instruments (both formative and summative)
      - Use modality appropriate active learning techniques in the online classroom.
      - Translate curriculum to a digital space, particularly for physical and hands-on requirements.

      Synchronous Virtual Environment

      - If available and permitted, use instant messaging via mobile options
      - Know capabilities of what systems students are using – iPad, smartphone, etc.
      - Structure discussions that have guiding questions but allow for natural extensions / flow into smaller groups using break out rooms using VCS capabilities such as polls, whiteboards, etc.

- polls, etc.
- Employ problem/project-based learning to create practical research/student presentation projects appropriate to the course.
- Invite guest lecturers to provide more opinions and perspectives.
- Inner/outer circle seminars (limits of larger discussion groups; create smaller circles with multiple smaller discussion groups within the larger group that are actively listening; swap students in and out of the groups)
- Use Zoom's spotlight function. Socratic seminars.
- Encourage the use of chats or Slack to develop sidebar discussions and questions relevant to the learning outcomes.
- Maximize the ability to create different activities within specific learning objectives to provide academic flexibility.
- Use the hand raise function to manage synchronous online discussion. Establish participation guidelines and learner expectations.
- Create an environment allowing students to be able to talk. Camera must be on--helps develop more dynamic discussion. (Bandwidth and VCS dependent)
- Utilize prior experience/knowledge to open live discussion. (Concrete examples to motivate students using their personal experiences – Bloom's Taxonomy affective domain (feelings, attitudes, emotions)
- Employ polling/survey functions of VCS. Polls can serve multiple objectives.
- Shared experiences from participants relative to the topic--how to ask meaningful questions that are relevant and connect content back to learner experiences.

Asynchronous Virtual Environment

- Support expectation management: transparency in outlining learning activities, objectives, and criteria for success to ease mental load for students.
- Use a Building Block Approach: Organize effective learning materials and ensure the material is separated by level. Students need to pass/attain the previous level to move forward.
- Maintain clear directions, expectations, rubrics, and examples for learners
- Create easily accessible uploaded materials of recorded lectures, additional videos, published documents and textbooks (organization of LMS with learner needs in mind)
- Provide clear time criteria that allows for both flexibility but also moves the discussion forward. Online synchronous learning generally takes more time than traditional F2F classes.
- Construct open-book assessments, posing exam questions at a high cognitive level.
- Create hyperlinks to additional material, primarily videos
- Ensure proficiency to use authoring tools (e.g., adobe captivate, Camtasia, H5P, within ILIAS)
- As in the in-person classroom, maximize a learner centric-environment, with the instructors serving as facilitators of learning.

Science, Technology, Engineering, Math (STEM)/Practical Courses

- Engineering kits to be sent home to students.
- Use more graphics and demonstration videos
- Employ interactive exercises
- Create and align working groups with pre-course material
- Have students' video themselves using Flipgrid/Blackboard Kaltura so instructors can evaluate their performance. Have them do a guided self-critique, and then re-record before submitting. Students can also submit comments via a video discussion board; this allows for peer review and learning from peers.
- Utilize an online tech and narrative lab course. 2 days, 4 hours each day; 3rd day they go on site to use the lab.

- Feasible options for use: Virtual Reality (VR)/Artificial Reality (AR); hybrid course with students coming on campus for practical training.
- Create student Partnerships during the in-person sessions.
- Extend the academic year to finish hands-on training obligations.

Staff/War Colleges

- To address privacy concerns, reassure students that the remote learning platforms are secure.
- They do not need as much structure from the school to manage their learning.
- Asynchronous activities support student responsibilities such as childcare.

Pre-Commissioning Schools

- Maximize cadet/younger student interaction with peers because they generally have less ability to structure their time.
- Synchronous activities can help with peer connections.
- Ensure faculty knowledge of student cognitive development to gradually increase the difficulty and complexity of learning tasks

NCOs

- Provision of more one-on-one attention is a great change from the typical asynchronous education of the past.

ii. **Digital Literacy Competencies:**

- Instructors use available technology proficiently to shape the learning experience
- Use online tools within virtual conferencing system (VCS) or learning management system (LMS) for engaging students (with each other, with the instructor, and with the content)
- Prior to teaching students, the faculty needs dedicated training and practice with the use of unfamiliar software.
- Understand how to implement and launch technology tools (LMS, video, and mobile options)
- Blend different programmes when appropriate.
- Understand remote learning privacy and online security requirements.
- If one does not use an LMS, add messaging-based learning to ensure connectedness.
- Blend synchronous and asynchronous modalities (Hybrid/Blended learning methods)
- Apply appropriate netiquette/cultural protocols.
- Ensure knowledge of all LMS options – (e.g., Blackboard has course options as well as course tools that can be used to push out institutional information, professional information, announcements, etc. Can also be used to house "orientation" materials/info and student services information).
- Share video/audio content--recording basics, proper length, looking into a camera, etc.
- Train some faculty in video production/ podcasting production skills.
- Train on Moodle (or any LMS) activities; which ones to use and when to employ them.
- Create timely updates for best practices and emergent tools used in the field. Keep guides/ how-to document updated and specific to the tools available at that institution.
- Construct assessments/exams so instructors optimize support from existing and future anti-plagiarism tools. Train to design assessments that cannot be answered by searching for online information.
- Must know which tools work on which devices - some tools do not work as well on mobile devices (phones/tablets) – Be sensitive to what students are using – it may not work the same for every device.
- Communicate device options, explain how to use them, and confirm that everyone knows where to find resources.

- Explain the benefits of headsets for synchronous VCS activities and provide consistent and reliable equipment if furnished to the learner.

STEM/Practical Courses

- If using videos, you need to verify what each student looks like to validate student on video presentations (photo roster, not just names). Perhaps ask them to provide additional photos or create webpages that can be used for connection as well as verifying identity.
- Train faculty on how to use, access and/or design content for AR/VR systems.
- Generate quiz item banks with variations of input data. Emphasize quality over quantity for mechanical skill testing.

iii. **Social Literacy Competencies:**

- Obtain regular and useful feedback from students on what is working and not working for them.
- To ensure connectivity to students, provide a virtual "Welcome Package" from the instructor prior to the first day of class --google site, tips, and tricks to be a successful learner, links to LMS and other resources to review before Day 1; personal info and video about the instructor (background, teaching philosophy, CV, personal details) so they feel connected as a human being.
- Faculty presence is essential in the online environment.
- Develop online listening skills. Ask good questions. The understanding of others starts from a good understanding of oneself.
- Students provide a virtual introduction that responds to guiding questions about themselves and personal details. Instructor creates a spreadsheet with these details to use them in communications later in the course.
- Establish connection/community on day/week 1 with icebreaker techniques.
- Require introductory videos from everyone at the start of the course.
- Learners identify their expectations from the class
- Create a course trailer. Construct an introductory video with all the provocative questions and central content, prompt student to ask some specific high-level question and answer them in separate videos.
- Instructors should acknowledge their level of confidence/comfort in relating to students on a personal level, identifying areas of struggle, or mental health concerns, etc.
- Instructors should acknowledge that all students have different levels of need in their relationships with peers and faculty - some need more social interaction while others need less.
- To maximize extrinsic motivation, create a trivia question based on index cards that students submit at the start of class. Students can phone a friend (peer in the session); getting it right lets the student choose the music that is played during the break. Helps students connect over music.
- Support psychological safety in the class--space where students feel comfortable sharing, where they will not be chastised/ridiculed, where they can share failures and successes. Empower students and think about it from the perspective of how to create a safe space for them to feel comfortable giving and receiving feedback: for example: spend some time in a synchronized call doing a 5-minute check in, but let students sign up to facilitate that and ask the check in questions. Saves instructor time and gives students ownership. Pre-work week 1 is to have students annotate clarifying questions about the syllabus (regular and infographic). This approach is more likely to identify areas of confusion in the anonymous online space than in the physical classroom.
- Build project teams
- The instructor should not be afraid to be themselves - without them, they student might as well just read the book.

STEM/Practical Courses

- More difficult to construct social spaces as students may lack personal connection to the subject (it is not religious studies, history, politics, etc.).
- High level of understanding required before discussion.
- Easier to construct social spaces for Humanities and Social Sciences.

Staff/War College

- Professional network analysis is possible with this group because they have probably crossed paths in the past. An introductory activity of identifying the professional degrees of separation between individuals in the programme can help build rapport in the course.

iv. **Applicable to all Three Competencies:**

- Emergent technology task force can be created to evaluate new tools and how they can be used in the learning environment at that institution. It is too much for faculty to keep up on what is available, to get licenses, to learn how to use it. Should be a group that includes faculty, instructional designers, educations tech people, admin, etc. to help identify resources, purchase them, and train faculty to integrate it.
- Provide workshops and trainings on all these topics either in-house or by bringing experts from other institutions.
- Two-minute mentors—develop a repository of on-demand videos searchable by category to learn techniques.
- Create/enhance teaching and learning centres. Hire someone with experience and/or training in faculty development, educational technology and/or instructional design to help facilitate training and support for faculty in online learning.
- Catalyse shareholder buy-in to help motivate faculty to use scaffolding, templates etc.
- Create self-guided asynchronous online courses for faculty in multiple languages.
- Provide established and accessible recording studios for lectures, seminars etc.
- Develop hybrid-optimized lecture halls, conference rooms etc.
- The faculty should not assume they understand the learner's perspective – do the research and put the work in!
- Each institution might benefit from having an instructor serve as a dedicated technical evangelist/advocate who is willing and comfortable to apply new and innovative tools.
- Organizations need to invest in proper enterprise-wide technology licenses (e.g., Zoom, Rise/Articulate, Slack, etc.) and invest in training for its effective use
- Determine what training is essential and design them to be active in their approach. Offer the training and provide ongoing support. Be sure to make them available in a central location where they can be found. Keep in mind the learner's perspective and the different devices that students may be using.
- Create an emergent technology task force that can evaluate new tools and how they can be used in the learning environment at that institution. It is too much for faculty to keep up on what is available, to get licenses, to learn how to use it. Should be a group that includes faculty, instructional designers, education technology personnel, administrative personnel, etc. to help identify resources, purchase them, and train faculty to meaningfully integrate it.
- Provide virtual space and time for instructors to create materials, mentor others, and share materials. This should be separate from existing responsibilities.

b) **Option 2 (Minimal Approach course of action) (combined with best practices/lessons learned):** Partner defence education institutions with limited or non-existent resources and funding, possessing limited to no access to reliable internet and functional ADL platforms (VTC and LMS), and the minimal ability to use and acquire additional resources as needed.

i. **Teaching Literacy Competencies:**

- Identify (SMEs) as special teams/cells (educators, ADL/IT specialists) that consult with the faculty on best practices, options to cope with difficulties with planning, organizing, and conducting the educational process in a distance/remote modality.
- Identify an SME in education/IT to be present and support an instructor to ensure best performance in a virtual learning environment.
- Create an organization or identify an individual responsible for the LMS that can solve issues related to LMS and video conferencing services.
- Instructors apply teaching methods that are appropriate to an online or hybrid course (assumes institution permits online/remote learning)
- Apply adult learning principles
- Use Bloom's taxonomy
- Develop skills that support different learning styles online
- Find and repeat a teaching style that works virtually
- Emphasize faculty/student co-creation in the learning environment
- Use active learning techniques in the online classroom
- Apply the Substitution, Augmentation, Modification, and Redefinition (SAMR) model (Annex C)
- Develop learning outcomes and effective assessments (both formative and summative). Outcomes should be similar or identical to face-to-face learning outcomes. Adapt the assessment process to DL modality.
- Employ evaluation instruments and feedback techniques (written feedback)
- There is greater instructor-learner interdependence, faculty should leverage the technological skills of learners.
- Mere substitution of F2F learning by online lessons (video conferences) is not enough.
- Flipped classroom model is effective with the correct balance of synchronous and asynchronous sessions/lessons. (Requires institutional support/policy)
- PME includes some practical content that the distance learning modality cannot address with current technology.
- Military computing systems have some policy constraints and limited capabilities (e.g., video access restrictions, institutional policy restrictions)
- Distance learning requires additional time to prepare instruction, learner content, review classes, etc.
- Flexibility is critical for the changing learning environment for a particular class.
- Instructors must be trained in the use of unfamiliar software (LMS, video conferencing services, etc.) to ensure interaction
- Learning outcomes can be achieved through SAMR (substitution, augmentation, modification, redefinition) (Annex C)
- If the proper capabilities exist, there should be a balance between synchronous and asynchronous lessons in a DL classroom.
- To develop faculty self-confidence activities - start with minimal/basic things, easy activities, proceed further with more demanding activities
- Ensure faculty awareness of socialization, communication, psychological barriers, ZOOM fatigue, security, etc.
- Given video conferencing service restrictions (bandwidth, video sharing etc.), LMS capabilities (mainly repository), faculty need to create an active learning environment and engage learners to participate
- Distance learning (faculty development) requires more time and smaller groups. Adapt groups for learning outcomes.

- Standardized remote learning could limit academic flexibility. Ensure faculty has sufficient academic freedom/flexibility to attain the learning outcomes.
- Faculty should not be restricted to lectures (video lectures). It is the easiest way to "lose" learners. Limit video lectures to 15-20 minutes, preferably divided into smaller sections.
- Summative assessment might reveal academic integrity issues, so recognizing academic dishonesty must be emphasized in a faculty development/training course.
- Faculty development training should use the same LMS, video conferencing system, (+ alternative means PACE) the same activities, and assessments that the faculty and the learners will use in the actual DL classroom.
- Rule of 3 – it takes three times longer doing any online task/activity to feel comfortable before mentally moving on to learning and/or other tasks/activities.
- More experienced faculty who know distance learning should advise and mentor their colleagues.
- Create a Primary, Alternate, Contingency, and Emergency (PACE) plan (contingency plan for unexpected remote learning emergencies).
- Faculty development programmes must address all three competencies – teaching, digital, and social literacy.
- Keep things simple.
- Offer the faculty different faculty development courses/events (including mentoring and coaching) based on their expertise and experience with distance learning. One of the options is a comprehensive course focusing on teaching, digital, and social literacy.
- Regular self- and peer assessment helps faculty analyse their teaching and enhances awareness of best practices.
- Focus on how to achieve the learning outcomes in a virtual classroom. Additional time might be required.
- Critical and creative thinking should be included in faculty development.
- Either in-house experts or guest experts on distance learning can conduct faculty development training.
- Time needed for faculty training: optimal one week for each literacy – teaching, digital, social) with small group instruction (8-12 faculty in the class). Must have Internet connection, laptops/computers
- A school can create a mentoring/coaching programme for instructors.
- There should be a special repository area on LMS/intranet/shared drives/school websites with useful links, resources, etc.
- Develop guidance/guidelines/video guides/tutorials for the faculty on distance and remote learning
- Micro learning on specific skills/tools for small groups

ii. **Digital Literacy Competencies:**

- Instructors use available technology proficiently to shape the learning experience
- Train faculty in the use of unfamiliar software, technology tools (LMS, video, and mobile)
- Use online tools for engaging students (with each other, with the instructor, and with the content)
- Develop a proficiency in messaging-based learning, chats (if required)
- Blend different programmes, synchronous and asynchronous sessions, tasks
- Be aware of privacy and online security requirements.
- Follow and enforce netiquette protocols.
- The faculty that uses LMS and video conferencing regularly does not have difficulties with transition to distance learning/remote modality.

- Faculty still must go through faculty development (focusing on online/hybrid learning), additional training on LMS and video conferencing.
- "Pick one tool and master it."
- Faculty need time to enhance their digital literacy to a sufficient level.
- A mentoring/coaching programme might be helpful.
- Develop short courses/webinars on using information technology/ADL.
- Create written guides/video guides/ tutorial videos on the tools (different technology) for the faculty to access and address when needed.
- Provide faculty with the flexibility to select and use a particular technology tool that best fits the learning outcomes.
- For LMS use, there are free options – Google suite if permitted by the academic institution.
- Ensure access to video conferencing services.
- Make all faculty aware of select internet resources (Kahoot, Padlet etc.).

iii. **Social Literacy Competencies:**

- To ensure connectedness, instructors can facilitate social connections that support learning.
- Good written communication and oral will be critical.
- Must have patience for potential failures/imperfect teaching moments (for all categories).
- Share power/information with students (crowd-sourcing and co-creating content /w students)
- Allow for community building online (how to build psychological safety)
- Create cohesion/team building online for a committed virtual learning environment
- Provide mental health support and recognize when to seek professional assistance for learners
- Emphasize learner responsibility for the success of self and peers
- Host virtual office hours
- Create a faculty community of practice
- Conduct smaller, less formal discussions on particular tools and methods (for all categories).
- Create feedback for instructors on social skills, coaching, and mentoring
- Understand the balance between virtual presence and being absent (instructor engagement and presence in the virtual environment).
- Ensure regular feedback from learners, peers, and supervisors, emotional openness, coaching and mentoring, team rules/group rules, existence of a contingency lesson plan, group tasks/ project, and develop faculty self-confidence.
- There could be a community of practice to address virtual social issues (e.g., virtual coffee room" for social interests).
- Additional Considerations for Social Issues: Presence, Immediacy, Expectation Management, Motivation, Connectedness, Personal Relevance, Authenticity of Learning, Active Learning, Autonomy.

D. Distance Learning Advanced Distributed Learning (ADL) Technology

1) **End State**: All required technology is in place to support any form of distance learning (both synchronous and asynchronous) that a Partner school desires to conduct.

2) **Challenges:**

   a) Lack of tutorials, microlearning videos for staff training

   b) Need to extend faculty training to course support, researchers, guest lecturers, mentors

   c) Lack of microlearning videos for student familiarization with online platforms

   d) Must determine language use, multi-languages, interpretation needs for synchronous webinars

   e) Time management for both faculty and students

   f) Number of students / faculty member/instructor in one class?

   g) Student motivation

   h) Legal aspects, including personal data

   i) Need for a smaller scale class = better quality - if possible 1/1 approach, or at least 1/2

   j) Creation of asynchronous content - needed for post-course support and catch up for some people.

   k) Potential lack of communication skills (proper learning objectives etc.) and joining instructions and student support

   l) Requirements for technology - reliable audio setup and internet

   m) Need to use breakout rooms a lot with summary at the end.

   n) Creation of the Flipped Classroom: meet when it is essential to practice.

   o) Lectures will only serve as recordings if not planned to be conducted interactively.

3) **Potential Course of Action Options (combined with best practices/lessons learned):**

   a) Faculty training on existing and new technology

   b) Adopt new technology synchronous and asynchronous (LMS, and web conference solutions)

   c) Support a blended approach: flipped classroom content, asynchronous and synchronous.

   d) Design content for online delivery: course design, video lectures, micro-learning, online activities for students

   e) Using online tools demands revision of in-person teaching methods.

   f) Maintain human aspect: faculty available for students via synchronous and asynchronous tools.

   g) Run pilot, test online products before delivery. Capture lessons learned and update when possible.

   h) Student/ course participants familiarization with online environment

   i) Ensure existence of an online test, evaluation, and student feedback process

   j) There are multiple video teleconference portals available for distance learning utilization:

      i. BigBlueButton: Big Blue Button has been successfully introduced by the NATO DEEP eAcademy. The installation is customized, providing new opportunities, even recording the sessions in mp4 format, which is of importance for further application of the recording.

      ii. Microsoft Teams

      iii. Google Meets

      iv. Google Hangouts

      v. Zoom

      vi. Webex

      vii. Gotowebinar

      viii. GotoConference

      ix. GoToMeeting

x. ClickMeeting

xi. Jitsi

xii. Adobe Connect

k) Learning Management System (LMS) Platform

i. The LMS ILIAS (LMS Moodle) offers many possibilities for the instructor, based on their skills, knowledge, and digital competencies. LMS ILIAS can be, inter alia, an aggregator of training content. The platform allows centralization of training resources in one solution. There is no limitation to the built-in system modules, because almost all LMSs allow files to be embedded in the most conventional formats, as well as YouTube videos, podcasts, etc. This provides access to teaching materials from many sources, gathered in one place. Someone can argue that we can also arrange something like this with the help of a website. E-learning platforms, due to a large system of roles and permissions, as well as authentication options, allow us to share materials with specific groups, e.g., providing training for a group of 10 people who participated in the workshops and then tracking the progress of their individual work/ activities on the platform.

ii. In addition, the instructor can engage/ involve the participants while using the communication modules built into the platforms. Of importance is that we can organize a multi-level evaluation system of classes in these dedicated training areas. This includes pre-tests and post-tests, as well as ordinary course tests. We can monitor and witness progress in gathering the knowledge of the participants. The platform also provides the opportunity to build a training needs survey and post-training assessment. To use the capacity of the e-learning platform, it is worth addressing each lesson / workshop separately and preparing materials to which participants will also have access after a week, a month, or longer. Using only e-learning platforms, without supplementary real-time classes, will never be as effective as mixed forms (hybrid approach). The combination of the options - conducting classes in real-time on one hand (via videoconferencing portal BigBlueButton), and the capacity of the e-learning platform (e.g., LMS ILIAS), on the other hand, generates a unique opportunity to run productive classes, providing an efficient channel of knowledge transfer between the tutor and learners.

l) H5P Utility

i. H5P is a free and open-source interactive content creation tool giving educators access to more than 40 different interactive content types. “Active learning is a key aspect of contemporary educational design and practice. It provides opportunities for learners to engage with the content via a range of activities and think critically, while contextualising it to their professional situations”

ii. There are many different content types, including: course presentation, interactive video, chart, dialog cards, arithmetic quiz, drag and drop, multiple choice, memory game and more.

iii. H5P software is very flexible and used in many ways, for presenting content, letting learners test themselves, market new products, and more.

iv. Using the H5P can significantly increase the amount of interactive educational material for the training of military personnel that is a very important task at the present stage of the military education and training system development within the framework of DEEP.

v. The software H5P offers different ways to collect and evaluate data about the learning experiences of students. The most flexible and powerful option is to use the standardized Experience API (technology allowing for wide data collection, both on- and off-line). It still requires some effort for installing configuration and maintenance.

vi. Students could be empowered to also reflect upon their learning process based on data and aggregated data. Having the means to track and think about their progress will help them become more self-reliant than constantly being told when to do what by an instructor or computer system.

vii. The H5P format is open and the tools for creating H5P content are open source. This guarantees the creation of their own content and are not locked into the fate and licensing regime of a specific tool.

viii. Create a common space for H5P development and re-use of created materials – for example in a new Moodle installation.

ix. H5P enables existing content management systems (CMSs) and LMSs to create richer content. With H5P, instructors and students may create and edit interactive videos, presentations, games and more. Content may be imported and exported. H5P content may be embedded in any platform that supports embedded content (iframes).

m) Computer Adaptive Language Testing (CALT)

i. CALT supports language testing in accordance with NATO STANAG 6001 standards. It ensures that test item formation is formed with the feedback principle when the correct answer the next test item proposed is of a higher complexity level, and the wrong answer shows the necessity to propose an easier test item compared to the one answered incorrectly and vice versa.

ii. The main utility of CALT is that it is shorter in time because the computer tests adapt to the proficiency level of the test-takers, and the test items which are above or below competence are not proposed. This allows spending less time to obtain the precise information on the test taker's competence level. Reduction of time for language testing increases the motivation of the test-takers to pass the test, as they concentrate on the items at their complexity level. It allows the test-taker not to be bored answering easy questions and to feel frustrated passing on difficult test items. CALT makes it possible to show the results on the monitor after finishing the test to facilitate the work of personnel conducting the test who don't need to spend time with additional checking and assessment.

iii. CALT also demonstrates a high-reliability coefficient providing the low probability of standard error in measurement (also defined as the standard deviation of error assessments). CALT software provides a high level of security for test results, opportunity to have immediate feedback after each testing session, and a flexible navigation system.

n) Multimedia Tools for E-Instructor (podcasts and videocasts):

i. This is a workshop that can be provided by the DEEP ADL team to familiarize participants with the principles of creating and implementing podcasts and videoblogs. It is also related to the ability to create audio and video materials in a didactic and training working field. Finally, it is about the acquisition of digital competences by workshop participants to create audio and video materials using available tools.

ii. By introducing practical journalistic exercises participants become acquainted with various types of podcasts. Brainstorming ideas helps them point out essential podcast components. Podcasts are addressed as a powerful educational tool. Free-of-charge editing audio software and resources for free background music will be discussed. Finally, participants analyse and learn "when" and "how" they can disseminate their recordings, which brings them over to best podcast hosting websites and a quick overview of podcast directories.

iii. Participants discuss training and education video use with the perspective on visual stimulation, digital literacy, microlearning and a flipped classroom. Having discussed best video formats for an online training workshop, participants explore available tools to develop a video, emphasizing the key action of transforming a presentation into a video. Recommendations about using one's own mobile device are discussed. For those with experience, open-source software for video recording and live streaming (OBS) is presented with a lecture recording in studio.

iv. It is recommended to merge synchronous and asynchronous tools.

v. The workshop can train up to eight participants at a time and is conducted during six working days over a two-week period, with a minimum of online meetings.

vi. Each participant ends the workshop with two final projects and is awarded a workshop completion certificate.

o) NATO DEEP eAcademy – extending asynchronous e-learning offering

i. Since the demand for training in the field of e-learning is nowadays extremely large, asynchronous content could be the answer to some DEEP Partner needs. The NATO DEEP eAcademy is well-equipped in authoring tools and can provide e-learning developers training to create modules on various topics. SMEs can be provided in various fields – from the methodology of distance education to more technical topics. While focusing on curriculum development, the team could also work on creating workflow and proper documentation to be used as a basis for training Partners. This includes scenario templates, technical documentation, evaluation, and reporting.

ii. Outlining topics "most-wanted" by our Partners, identifying SMEs, and developing e-learning modules.

iii. Translation of e-learning modules into many languages.

iv. Cooperation and re-use of content between Partner institutions (exchange of e-learning modules).

v. Training Partners in e-learning design and development, including Partner institution experts.

vi. Revamping the structure of e-learning courses on the NATO DEEP ADL Portal, to include a new administrative experience and gathering learner data for better analysis and accessibility.

p) DEEP eAcademy eInstructor Certification Programme

i. Using the structure and lessons learned in eAcademy postgraduate studies, the NATO DEEP eAcademy (in cooperation with other institutions) can offer a training programme for e-instructors. If there are sufficient participants (~20 personnel per course), this Certification Programme could be offered on a regional, programme and country level. A 5-month 10 course programme would be ideal.

ii. he curriculum would focus on the following three areas:

- Use of synchronous tools in training and education: conduct effective webinars (BBB, ADOBE CONNECT, ZOOM)
- LMS training (main LMS features for basic online course design and online student management)
- E-learning/ADL tutoring (online teaching methods, active teaching methods online)

q) DEEP E-Postgraduate Studies (subjects focused on authoring tools)

i. The main goal is to prepare civil and military faculty in PME institutions to become fully operational in an e-learning environment. The students learn how to create courses and how to work with e-learning developers. Their main task is to create scenario-based e-learning.

ii. Provide the possibility to create working groups that will focus on developing e-learning courses.

iii. Create a community of professionals around using authoring tools on the working level – e.g., monthly meetings focused on certain e-learning development topics.

E. English Language Training (ELT)

1) **End State:** Partner nation schools can provide professional ELT to all students without external support. This would include the development and administration of tests IAW NATO STANAG 6001E. Courses/ schools that are 3-5 years in length could graduate students that attained a Level 1 to Level 2 certification according to STANAG 6001. Schools would have the capability to organise classes in person, online, or in a hybrid or blended format.

2) **Challenges**:

   a) Partner school/nation funding is not available to purchase needed ADL equipment and/or provide sufficient internet access and bandwidth for effective online or blended language training.

   b) Partner school/nation ELT instructors received little training in preparation for developing and/or delivering distance language training and might not even have an adequate level of English language proficiency.

   c) Some Partner nations have limited or no capability to develop and administer language proficiency testing IAW NATO STANAG 6001.

   d) The Partner nation school system might possess very poor ELT within its secondary school system resulting in very low entrance language proficiency level making distance learning even more challenging

   e) Student and instructor motivation for distance language training might be low and difficult to maintain.

   Potential Courses of Action:

   a) Formal as well as informal faculty development should focus primarily on the adaptation and development of the curricula, the programme design, and materials for online language training, on successful delivery of online language courses, and on efficient use of technology. Faculty development for virtual training needs to be systematically approached and made available to all instructors who might become involved in delivering online training.

   b) Institutions should also be aware of the need for new procedures (team teaching, identifying instructors who are more skilful and using their potential, online classroom observation by supervisors and providing feedback, teams of instructors working on the curricula for online training and materials development / adaptation). Guidelines for online training should define instructor and student responsibilities and schedules.

   c) Groups of students working online in a synchronous manner would ideally be smaller than groups in the classroom to give every participant the possibility to communicate.

   d) Institutions can hire well-qualified instructors, normally difficult to hire because they cannot travel to a certain location but are able to work online.

   e) Instructors or those making course design decisions should understand the benefits and limitations of synchronous vs. asynchronous activities for language learning to make informed decisions that will lead to maximum student participation.

   f) Curricula for online language instruction need to address opportunities for one-to-one attention in the form of individual classes / conversations / interviews with the instructor.

   g) Communication using online platforms is very often challenging (e.g., sound quality, video quality, insufficient bandwidth causing interruptions). Students need constant feedback (not necessarily verbal) from their instructor to be able to improve their communication skills. Difficulties in hearing the nuances in intonation and accent and seeing facial expressions and gestures cause loss of a large part of normal communication. This has a negative impact on the process of foreign language acquisition. Smaller groups and one-to-one attention can help to overcome this challenge. Ideally the ELT classes should not be larger than six students and every student needs to be allocated one-on-one time with the instructor.

   h) Instructor training should be provided in four important fields including curriculum development, materials development, successful delivery of online training and efficient use of technology. Successful online training cannot be provided by simply transferring the existing face-to-face courses online.

Documents, materials, methods, techniques, and instructors must change. Instructors should be provided extra preparation time to ensure they get the opportunity to explore new ideas. Training should ideally be followed by a teaching cycle which is then periodically followed by additional training cycles. This way new ideas can be used in practice.

i) In terms of efficient use of technology, it is important to overcome possible reluctance and lack of motivation by providing instructor training and support. At this point it is necessary to emphasize the importance of extra preparation time for instructors that struggle with technology.

j) To maintain student motivation, key will be frequent contact, one-to-one-attention, small groups, and timely and meaningful feedback on student work and progress. Students should be encouraged to communicate their problems and learning difficulties to the instructor as soon as possible. The response of the instructor is crucial for the student. If possible, instructors should also learn to watch for signs that a student is struggling due to feeling isolated or anxious because these feelings play a major role in the decline of motivation. It is important to keep in mind that a motivated instructor is the best motivator for students.

k) It is also important that students take responsibility for their own learning and understand the purpose of methods and activities.

l) For student evaluation, classroom assessment needs to be frequent and should include a variety of methods. This will motivate students and help the instructor monitor their progress.

m) It is easier to provide efficient online or blended language training for students who already have a certain level of proficiency as less time is spent on instructions. However, it is also possible that very low levels of proficiency require more effort and careful planning. Different teaching activities are also easier to organize with students that already have a certain level of language proficiency.

n) Besides the importance of strong connection between synchronous and asynchronous activities, it's important to determine which activities can be done as asynchronous and which activities call for interaction and communication. In language training this is very often the difference between the ways individual language skills are developed. The important principle that should guide the planning process is the difference between student-centric and instructor-centric instruction which should be in balance and in accordance with instructional objectives.

o) To ensure efficient instruction in both synchronous and asynchronous format technology must support both formats and various activities.

p) The training-teaching-training cycle, important for introduction of new ideas into practice, is easier to provide if at least some of the instructor training takes place on-line. However, online instructor training is less dynamic and provides fewer opportunities for active participation and practical activities. It also provides few opportunities for informal exchange of experience among instructors. Planning instructor training in blended format can ensure a better training experience. Instructors need to be completely released from their regular duties when participating in online faculty development, allowing them sufficient time to prepare properly. While the possibility to employ instructors on a virtual platform could enhance the quality of instruction, it may also be confronted with a time difference that would entail work at very early or late hours and therefore influence instructor performance.

q) Numerous platforms for synchronous and asynchronous activities exist and can be used for language training. The decision of which platform(s) to use must be taken at the level of the education institution. All subjects should use the same platforms so that everybody is familiar with them, and they do not cause confusion among students and faculty. Any user-friendly platform is acceptable, but it is important that the platform can be accessed from all devices (personal and official). The platforms need to offer a variety of options (share screen, power point, video, recording, board, chat). Breakout rooms are an essential feature (they allow dividing the groups into smaller groups or pairs and increase communication time for every individual student). Stable internet connection ensures communication without interruptions and enables students and instructors to communicate better.

r) Instructors must be familiar with the virtual platform and able to help students if they have problems using the platform.

6

ASSESSMENT, MONITORING, AND EVALUATION (AM&E)

DEEP will conduct an annual assessment of every country school programme. Every DEEP programme will use the Monitoring and Evaluation (M&E) component of AM&E to implement the assessment. Monitoring is defined as tracking efforts to determine whether inputs (e.g., money and effort) are translating into outputs (e.g., equipment, training, education, and information). These outputs then serve as the basis for tracking progress toward objectives (e.g., outcomes). Evaluation examines outcomes and is crucial to understanding what is working and what is not. (Angela O'Mahony, et al, "Assessing, Monitoring, and Evaluating Army Security Cooperation: A Framework for Implementation," RAND Corporation, Santa Monica, CA, 2018, pp. 6).

A. The process of Professional Military Education (PME) reform is inherently slow moving, requiring time, patience, and a Partner nation to make a long-term commitment when it accepts NATO DEEP support. It typically takes years to produce lasting, positive education reforms such as creating new curricula and building faculty capacity—and even more time and DEEP support ensuring institutional reforms endure. The assessments in this report focus on the actual outcomes of each country programme, especially the effects on Partner nation (PN) educational institutions and processes. This is different than focusing on the output of a country programme, meaning a description of the programme events or activities that took place. The ultimate objective of PME reform is increased professionalization of Partner nation armed forces and the strengthening of relationships with NATO and its members. The application of M&E to assess individual country programmes is essential to gauge progress toward this ultimate objective.

B. To support the M&E evaluation, the DEEP will employ the SMART Objective process. To be included in each DEEP country Strategic Plan and the annual DEEP Monitoring and Evaluation Analysis document:

   1) Specific Objective: Target a specific area for improvement.
      a) Definition: Objective is discrete; describes what is expected, by whom, and for/with whom.
      b) Common Terms: Succinct, focused, significant, simple, straightforward, strategic, sensible
      c) Questions to Ask: What do I want to accomplish? / Does the objective orient on a single intended outcome? / Does the objective indicate what specifically needs to be done? Why is this goal important? / Who is involved? Does the objective indicate who has the responsibility to help achieve the objective? / Does the objective indicate its principal target in the Partner nation? / Where is it located? / Which resources or limits are involved?
      d) Example: Support development of a curriculum (e.g., Leadership) that will be delivered by the Partner (e.g., Tunisian War College faculty) without external support / Support development of a policy proposal that can be utilized by the regional Partners to address problem "x."

   2) Measurable: Quantify or at least suggest an indicator of progress.
      a) Definition: Success is clearly and objectively defined; a regular, observable, objective, and sustainable method of measurement is in place.

b) Common Terms: Quantifiable, meaningful, manageable, maintainable, related to goals

c) Questions to Ask: How much? / How many? / Has a unit of measurement been established? / Near-, mid-, and long-term? / Has a baseline for measurement been established? / Does the objective indicate "how much" or "how many" units should increase or decrease? / Can government officials observe significant change from the baseline? / Is there a system in place to monitor progress regularly and objectively? / Is it sustainable? / How will I know when it is accomplished?

d) Example: Develop a 45-hour course on Strategic Logistics to be delivered at the graduate level (e.g., master's degree programme) that will be taught by the NDU faculty without external support / Support development of policy options requiring extensive immigration control, to be able to be applied within the next three years by country "x."

3) Achievable: State what results can realistically be achieved, given available resources.

a) Definition: Requisite authorities, programmes, and resources in place; Partner nation agreement secured; political and fiscal risks considered

b) Common Terms: Agreed upon, acceptable, attributable, actionable, appropriate, aligned, accountable, agreed, adapted

c) Questions to Ask: How can I accomplish this goal? / Near-, mid-, and long-term? / Do the authorities and programmes exist to achieve the objective? / Are sufficient PfPC resources likely? / How realistic is the goal, based on other constraints, such as financial factors? / Is there a way to overcome resource constraints? / Has the Partner nation been consulted about how to achieve the objective? / If so, has the Partner nation offered any resources (financial or otherwise)? / Does the Partner nation have the capacity to absorb the PfPC resources and programmes required to achieve the objective?

d) Example: The MOD and school leadership (MOD/MFA) all support development of the curriculum (policy). The faculty (MOD staff) is motivated and has the appropriate background. PfPC budget is in place. European and U.S. academic provider experts are qualified and available. All indications are that the curriculum (policy options) can be developed in the next 18-24 months; all making this effort achievable/attainable.

4) Relevant: Determine relevance to a mission/political goals

a) Definition: Contributes to strategic goals; focused on significant Partnership outcomes; prioritized and hierarchically organized. Determine relevance to a mission/political goals. This step is about ensuring that the goal matters to the right stakeholders.

b) Common Terms: Realistic, reasonable, rewarding, results-oriented, important to a mission

c) Questions to Ask: Is the objective aligned with higher-level planning goals? / Is the objective nested within a hierarchy of objectives? / Is the objective challenging? Is the objective framed in terms of Partnership outcomes rather than process? / Does this seem worthwhile? / Is this the right time? / Does this match stakeholder efforts/needs? Is the PfPC/my working group the right entity to support this goal? / Is it applicable in the current budget environment?

d) Example: Given the Partner's intent to make this curriculum in compliance with NATO/Euro-Atlantic standards, a key stakeholder policy objective, as well furthering interoperability capacity, this request is relevant to stakeholder goals / Given stakeholder desire at this point in time for expanded policy options for "problem x," the geo-political importance of the region/country in question, and those options to be in accordance with NATO/Euro-Atlantic priorities, this request would be relevant to stakeholder objectives.

5) Time-related: Specify when the result(s) can be achieved (near-, mid-, and long-term)

a) Definition: Establishes a deadline or reasonable time frame for completion

b) Common Terms: Time-based, timely, trackable, traceable, and many terms starting with "time-" (e.g., limited, constrained)

c) Questions to Ask: Is there a deadline or time frame for completion of the objective? / Is the deadline/

time frame reasonable in terms of stakeholder capacities, priorities, and available security cooperation resources? / Is the deadline/time frame reasonable in terms of Partner capacities, priorities, and available resources? / What is executable/attainable/achievable in the near-, mid-, and long-term?

d) Example: Curriculum development support should be concluded in 18-24 months when they are able to deliver the pilot course without external support / Policy planning recommendations should be complete in 12 months for "problem x." These are both near-and mid-term solutions.

7

SUSTAINMENT MONITORING FOR SUCCESS, FAILURE, OR MODIFICATION

A. The ultimate goal for any DEEP programme is for the Partner school to be able to conduct the supported curriculum or faculty development work without external support. As in the case of any education institution, this would require the school to be able to sustain the support it had been receiving. The creation of an internal sustainment programme for a school would ensure that successive generations of faculty would be prepared to be able to carry on teaching new/current curriculum with the most modern teaching methodologies.

B. These sustainment programmes would typically involve the schools' creating programmes for the training of new faculty. This could be the utilization of the DEEP Master Instructor Programme (MIP) within an institution's Faculty Development Programme to train new faculty, or some similar process of ensuring that new faculty have the ability to deliver a DEEP-supported distance learning course. Key for the DEEP programme will be to have a system in place to ensure that the Partner school continues to have the capacity to sustain the supported work.

C. There would be two components of a DEEP sustainment programme; one that the Partner school is responsible for and the other that the DEEP country/school academic lead is responsible for:

D. Partner School Responsibility:

   1) At the conclusion of every specific DEEP programme component (e.g., creation of a particular distance learning course, Master Instructor Programme implementation, etc.), the DEEP team should discuss the sustainment way ahead with the Partner school leadership. The discussion would address the need for the Partner school to be able to ensure that all future faculty members will have the ability use all that the DEEP programme brought to the school. The Partner school should be encouraged to create a formal programme to ensure the sustainment is institutionalized, where new instructors are trained to conduct the prior DEEP-supported work, and new and innovative curriculum development and assessment methodologies are routinely considered.

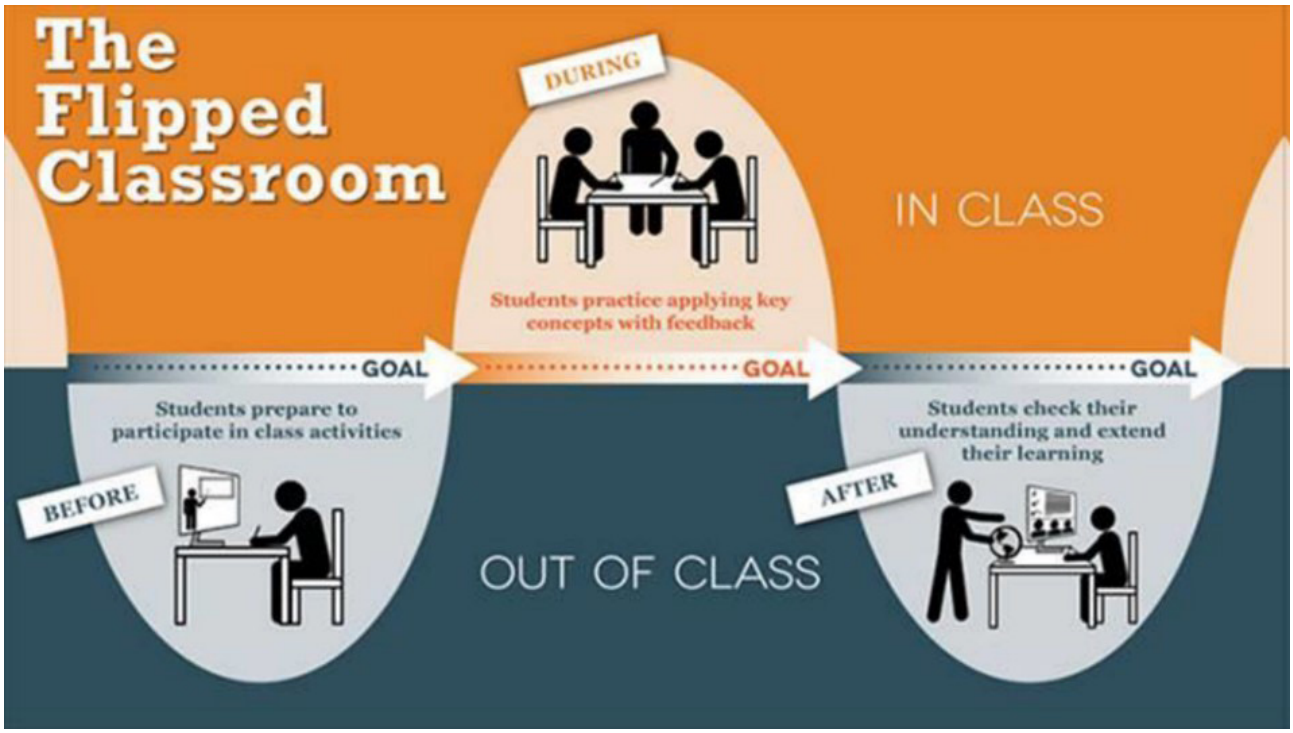
   2) The Partner school could also identify select faculty members, capable of working in English, to serve as providers for DEEP efforts in other countries.

E. DEEP Programme Responsibility:

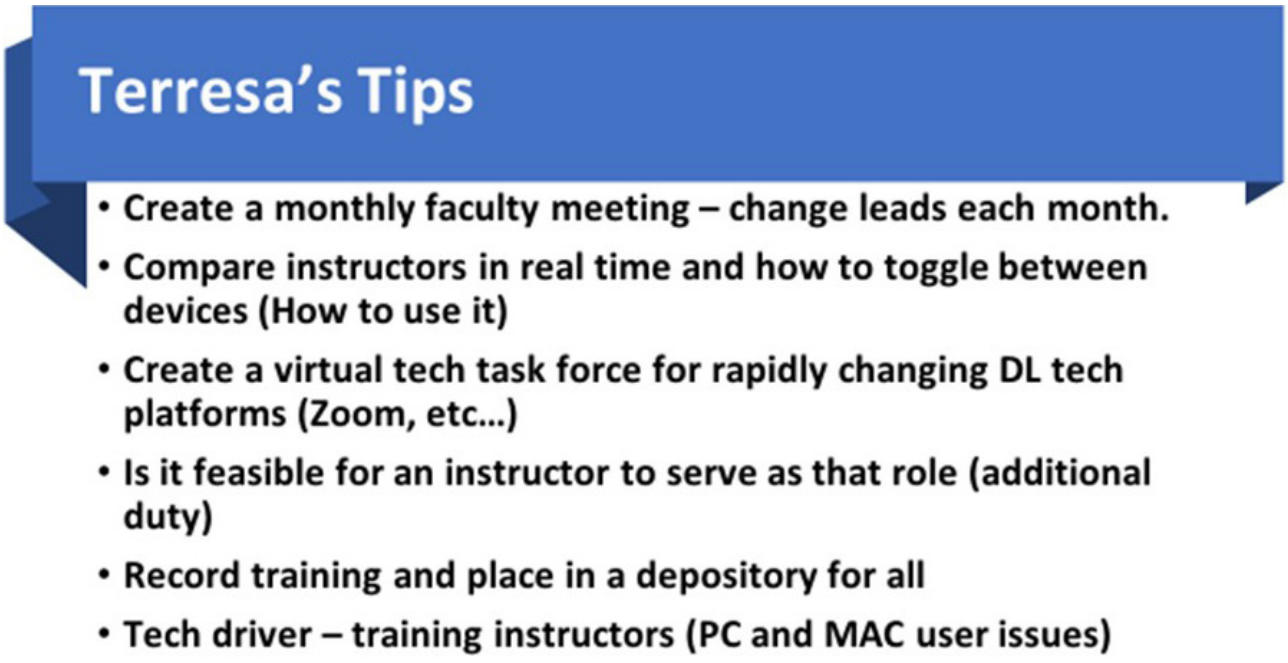
   1) A DEEP team will travel to the Partner school once every 12-18 months to review the programme that had been completed. This sustainment phase could last up to five years, depending on the needs of the Partner school. Optimally, the DEEP team would be able to sit in on classes to observe instruction and review written curriculum for the relevant programme. If any challenges or limitations were identified (e.g., insufficient addressal of curriculum topics, lack of a student-centric approach in the classroom, limited ability to measure student learning, etc.,), the DEEP team would seek to provide assistance. They would either provide support during the review visit or, if there was not sufficient time or the appropriate subject matter expert was not available because of the nature of the issue or the amount of work required, they would schedule a follow-up workshop in country to address the deficient issue/s.

   2) Based upon the needs of other countries, the DEEP programme would use the providers from the Partner school in the sustainment phase to support other like-DEEP projects.

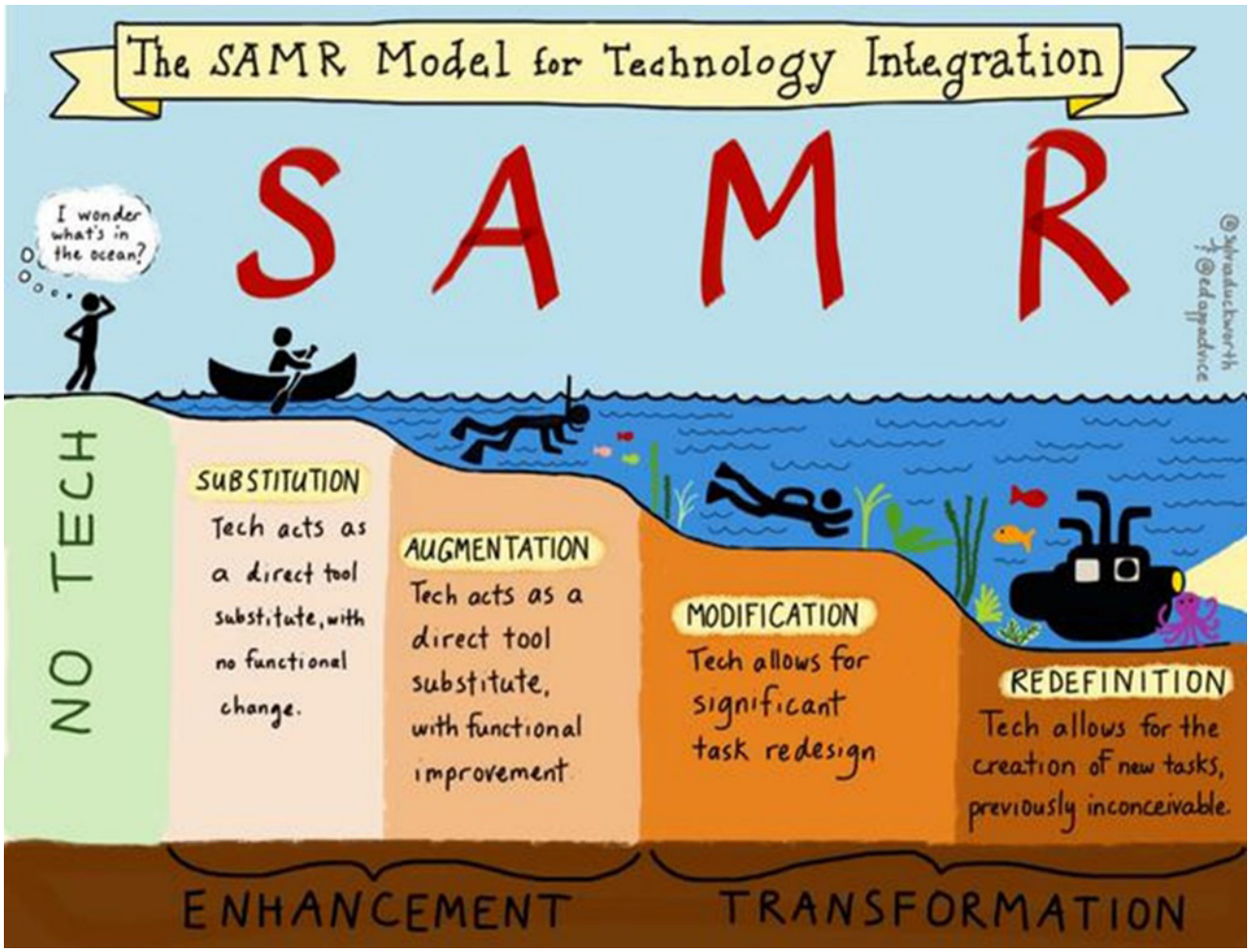
Annex A: The Flipped Classroom



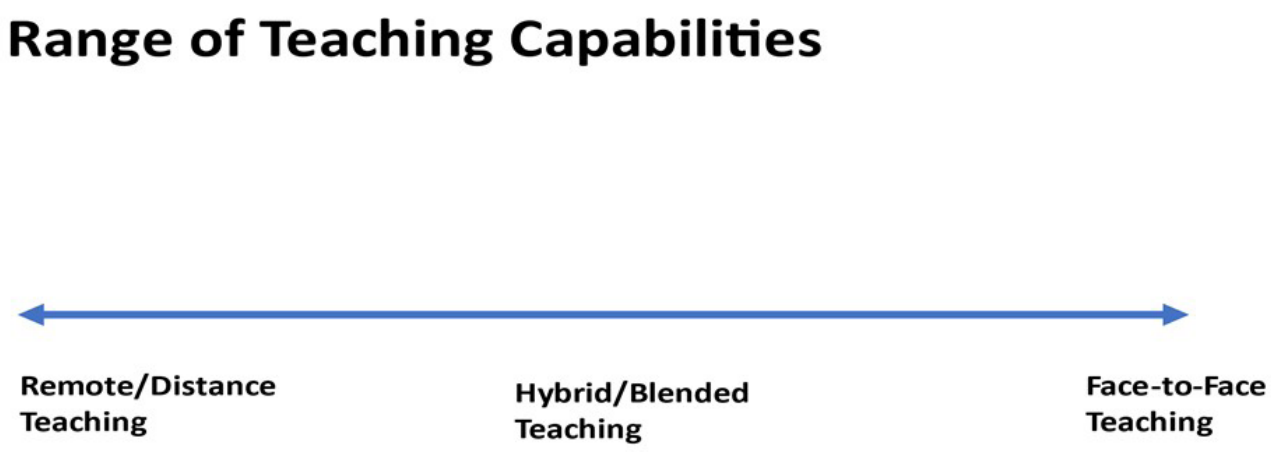
Annex B: Terresa's Tips for Faculty Development Support



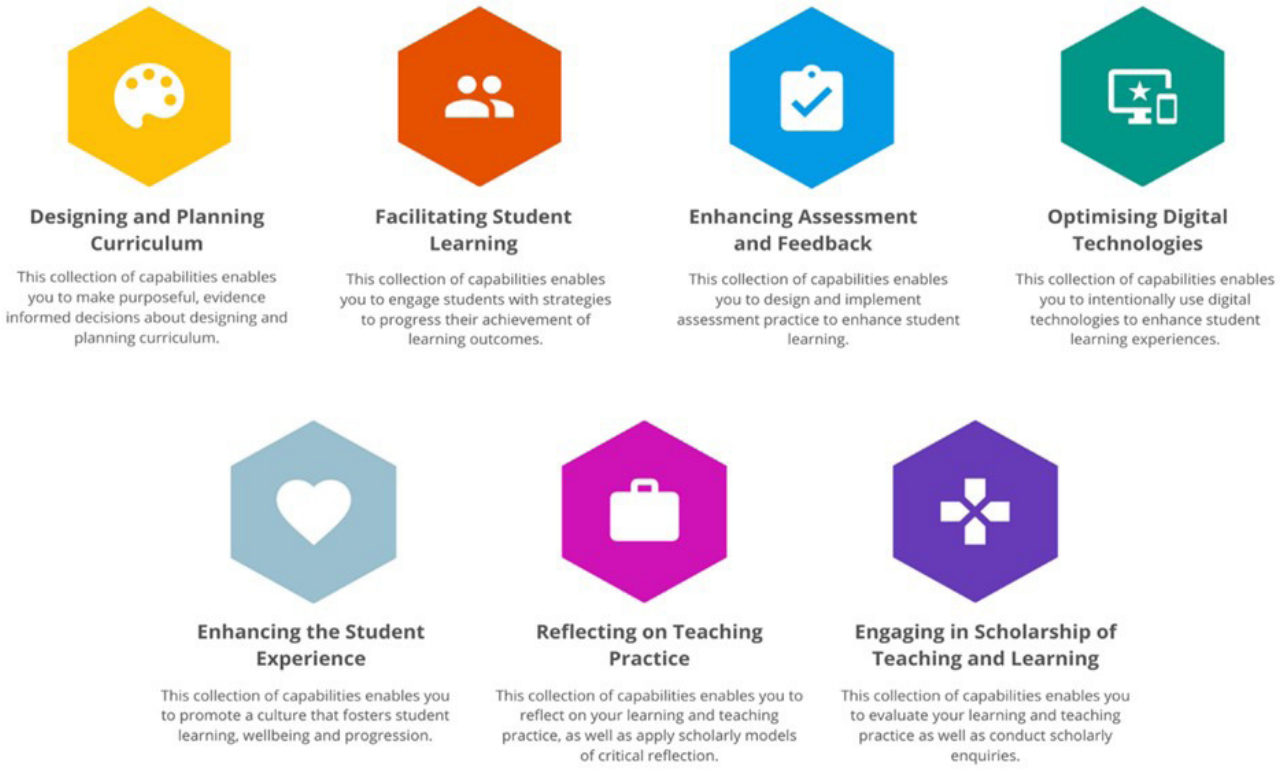
Annex C: SAMR Model



Annex D: Range of Teaching Capabilities



Annex E: Specific Knowledge, Skills and Principles that Contribute to 'Teaching Excellence' Across Seven Interdependent Domains https://learningandteaching-navitas.com/articles/introducing-ten/



Annex F: Three Literacy Buckets

FACULTY DEVELOPMENT MATRIX

	(Knowledge/Skills) Good principles	Context	Organizational framework
Teaching literacy Outcome: Instructors apply teaching methods that are appropriate to an online or hybrid course	- Adult learning principles - Balance of engaging teaching methods - Supporting different learning styles online - Online teaching methods - Co-creation (how to develop knowledge creating cultures in the class) - Learning outcomes and effective assessment (both formative and summative) - Active learning in the online classroom - Basic technology use skills for LMS and other platforms with a focus on using them to teach well. - Translating curriculum to a digital space (particularly physical/ hands-on exercises)	What is the cultural context of learning in the society? What is the cultural context of learning in the organization? Who is the audience? What level of autonomy do lecturers/instructors have to develop? How much background do the lecturers/instructors have in teaching? What formative and summative assessments are used? What hardships are students facing that might limit their ability to focus/complete their work? What kinds of physical/hands-on components are essential to learning but may be difficult to offer in a virtual environment? What kind of equipment do instructors and students need to ensure success.	To support Faculty development: - Identify human resources (L&T staff, faculty with expertise) - The FD programme, how is it set up? - Time set aside for FD - On demand guides/guidelines - Technological support - Digital support - Learning community - Mentoring Who is authorized for the institution: - To make pedagogical decisions. - To introduce new technological options - To make changes to LMS/other systems on the macro and micro level Are time and opportunities for professional development of instructors built into the operational cycle?
Digital literacy Outcome: Instructors proficiently use available technology to provide the learning experience.	- Tools for engaging students (with each other, with the instructor, and with the content) - Understanding how to implement and launch technology tools (LMS, video, and mobile) - Blending different programmes - Understanding privacy and security online - Skip LMS or at least add messaging-based learning - Blending synchronous and asynchronous - Netiquette	What are the technological options? What type of reliable, consistent access exists to Wi-Fi and the internet? (Are there any costs associated) What is the current comfort level in using technology (for students and instructors)? Are there existing technologies already in use? If so, what? How are they received? What standards or expectations need to be created for the use of technological tools? (For instructors and students) How do issues of hierarchy and control inform technology options. What is the typical instructor's digital proficiency?	

	(Knowledge/Skills) Good principles	Context	Organizational framework
Social literacy Outcome: Instructors facilitate social connections that support learning.	- Sharing power with students (crowd-sourcing and co-creating content /w students) - Community building online (how to build psychological safety) - Cohesion building online - Emotional support - Mental Health support - Crisis teaching/empathy	What is the netiquette? How open are people online? How is professional rapport established in the course? How is professional rapport established between faculty members? Where do interpersonal interactions occur in the course? What opportunities are there for student to connect socially with each other?	To support Faculty development: - Identify human resources (L&T staff, faculty with expertise) - The FD programme, how is it set up? - Time set aside for FD - On demand guides/guidelines - Technological support - Digital support - Learning community - Mentoring Who is authorized for the institution: - To make pedagogical decisions. - To introduce new technological options - To make changes to LMS/other systems on the macro and micro level Are time and opportunities for professional development of instructors built into the operational cycle?

Annex G: Basic Faculty Development Requirements for Each Literacy Bucket

Minimal COA: Outcomes for Basic Faculty Development

Teaching Literacy	Digital Literacy	Social Literacy
Instructors apply teaching methods that are appropriate to an online or hybrid course	Instructors use available technology proficiently to shape the learning experience	Instructors facilitate social connections that support learning
• Adult learning principles • Bloom's taxonomy • Supporting different learning styles online • Find and repeat a teaching style which works virtually • Co-creation (how to develop knowledge creating cultures in the class) • Active learning in the online classroom • SAMR • Online teaching methods • Balance of engaging teaching methods • Learning outcomes and effective assessment (both formative and summative) • Evaluation, feedback techniques (written feedback) • Ability to communicate efficiently (written communication is critical) • Be creative and take risk, going out of comfort zone	• Use of unfamiliar software, technology tools (LMS, video, and mobile) • Use online tools for engaging students (with each other, with the instructor, and with the content) • Messaging based learning, chats (if required) • Blending different programs • Blending synchronous and asynchronous sessions, tasks • Privacy and online security requirements • Netiquette protocols	• Ability to communicate efficiently (written communication is critical) • Patience as a virtue concerning failures/ teaching moments (for all categories) • Sharing power with students (crowd-sourcing and co-creating content /w students) • Community building online (how to build psychological safety) • Cohesion/team building online • Emotional support • Mental health support • Crisis teaching/empathy • Learner responsibility for the learning success of self and peers • Hosting office hours • Faculty community of practice • Small less formal discussions on particular tools, methods (for all categories)

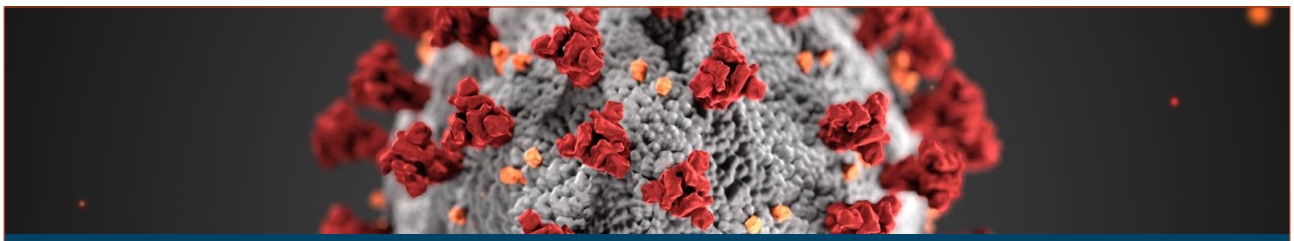
Annex H: Additional Competencies

Minimal COA: Additional Competencies

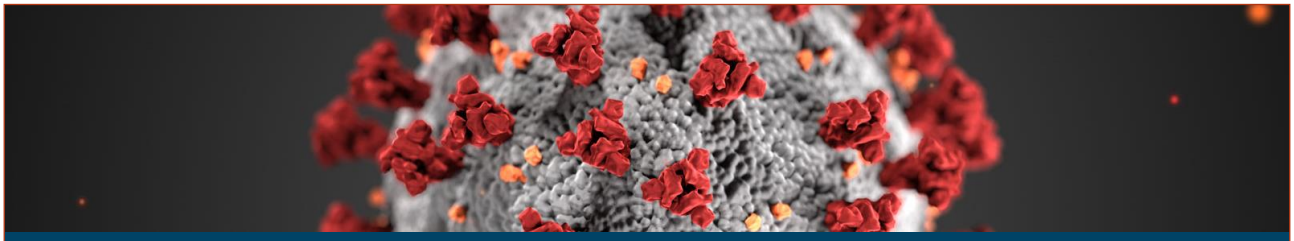
NCO Schools	Change "sage on the stage" to "guide on the side" teacher role
Military Academies	Motivation with regard to Adult Learning principles
War Colleges/Graduate institutions	Motivation to use digital tools for learning
STEM and Practical Training	PBL, VR elements, blended learning, curriculum rescheduling

COVID-19 Online Learning Survey

+ Open discussion on the pandemic response and "new normal"



In Autumn 2020 NTGTG IT&ED created a survey with a goal to capture experiences across the Nations and NATO on how the global pandemic (COVID-19) has affected military training and education; and the uses of online and distance learning

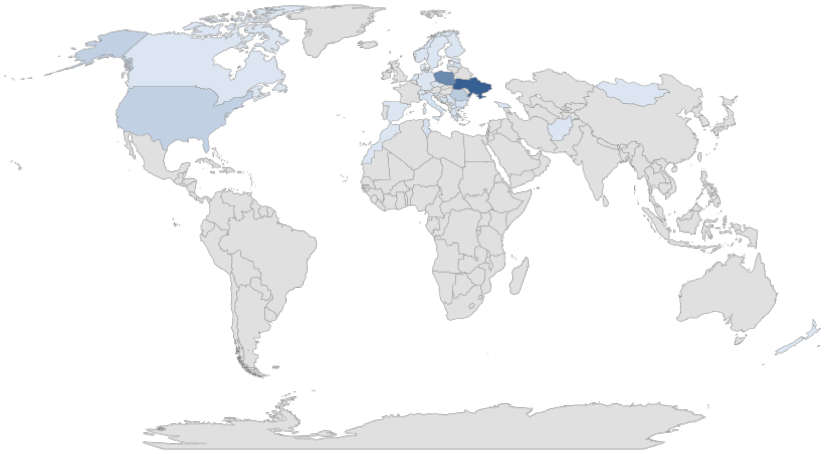


- Data collection at the multiple international events
  - NATO DEEP COVID Conference,
  - Romanian eLSE Conference,
  - NORDEFCO ADL Conference,
  - Georgian ADL Conference,
  - BIH ADL Conference,
  - Ukrainian ADL Conference
- Available in 3 languages: English, Polish and Ukrainian

Which Countries are Represented?

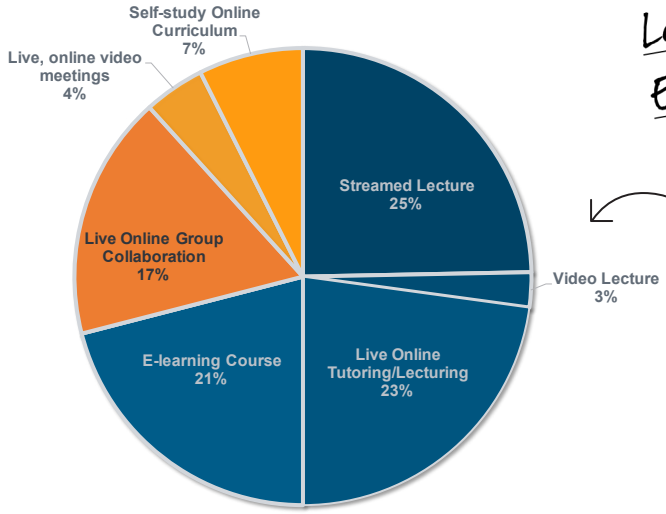
Country	Count
Afghanistan, Azerbaija, Canada, Denmark, Finland, Georgia, Germany, Mongolia, Morocco, NATO, Netherlands, New Zealand, Slovenia, Spain, Sweden, Switzerland	1 each
Czech	2
Norway	2
Bulgaria	3
Greece	3
Italy	3
North Macedonia	3
Serbia	3
Tunisia	3
Bosnia and Herzegovina	4
Estonia	4
Latvia	4
US	10
Romania	12
Poland	40
Ukraine	57

169



Most Useful Activities for Learning Outcomes

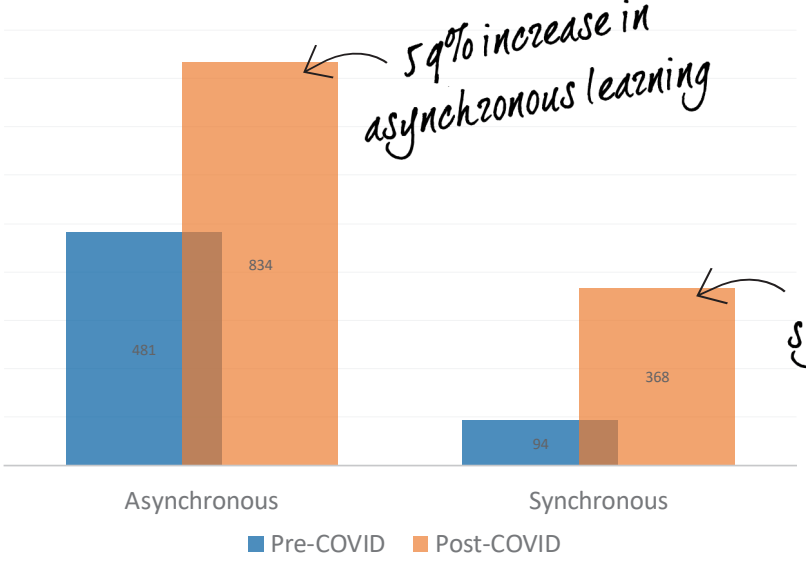
What activity has contributed the most to reaching learning goals?



Lectures and E-Learning were perceived to be the most useful activities

Most Useful Mode of Activity

Perception of synchronous vs asynchronous activities

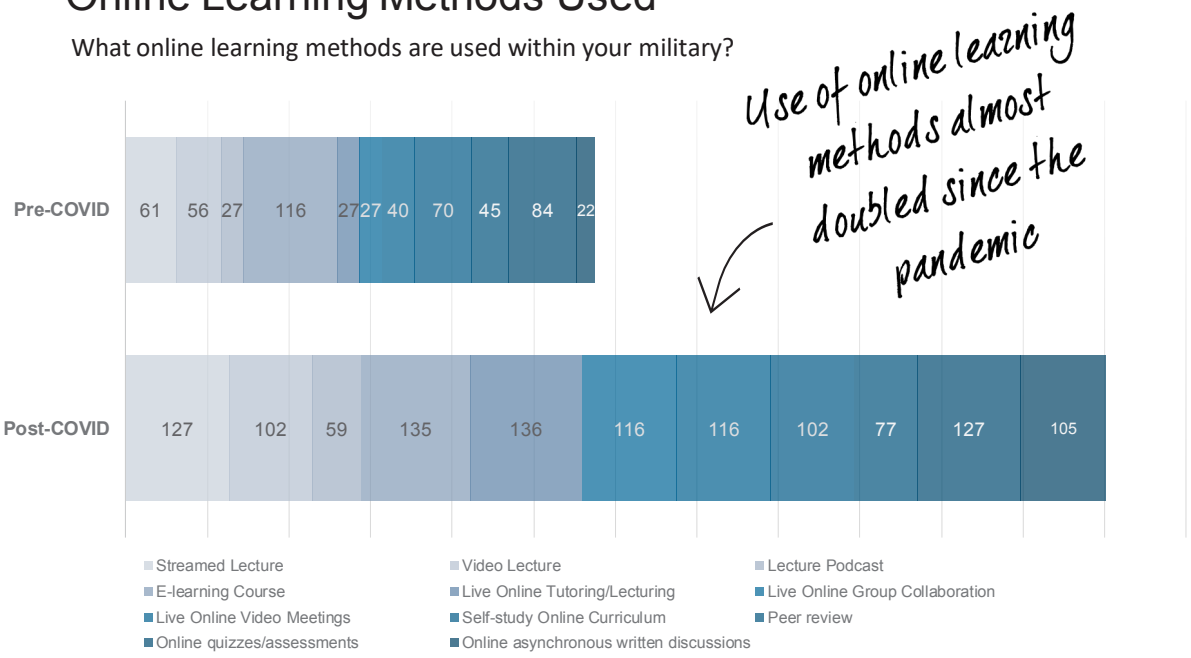


59% increase in asynchronous learning

202% increase in synchronous learning

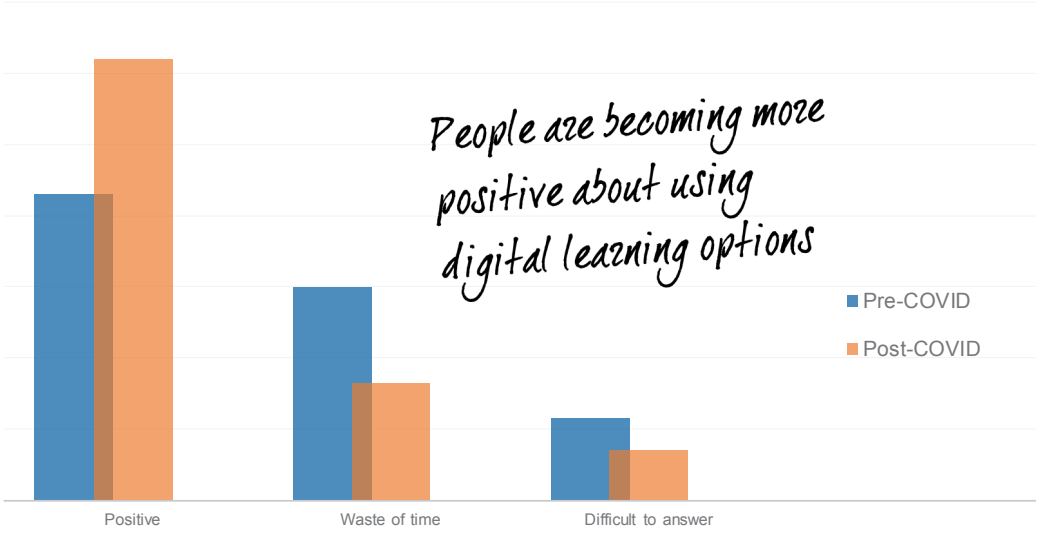
Online Learning Methods Used

What online learning methods are used within your military?



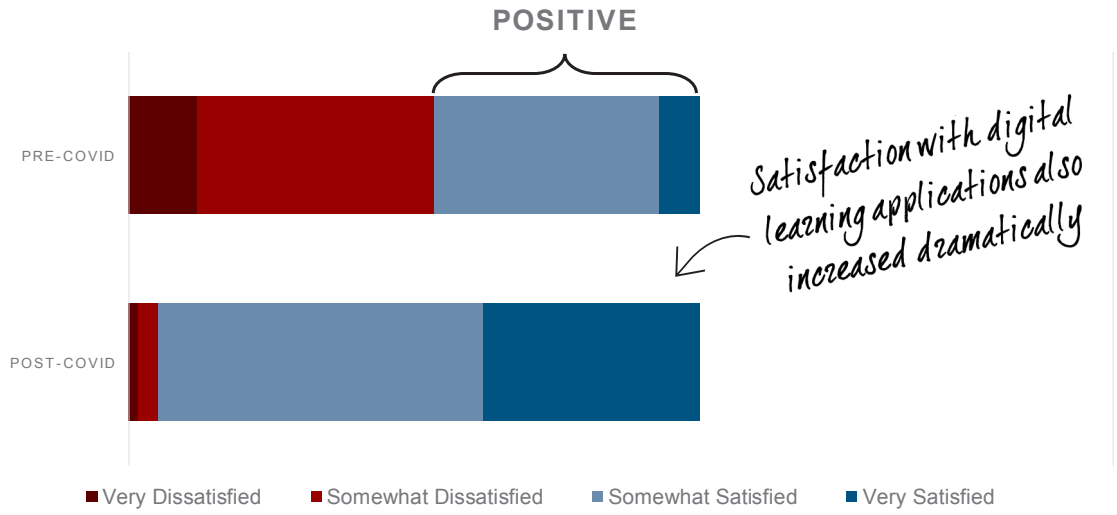
Attitudes Toward Using Digital Learning Applications

How did you feel—and how do you feel now—about the use of online, digital learning technologies for military training and education?



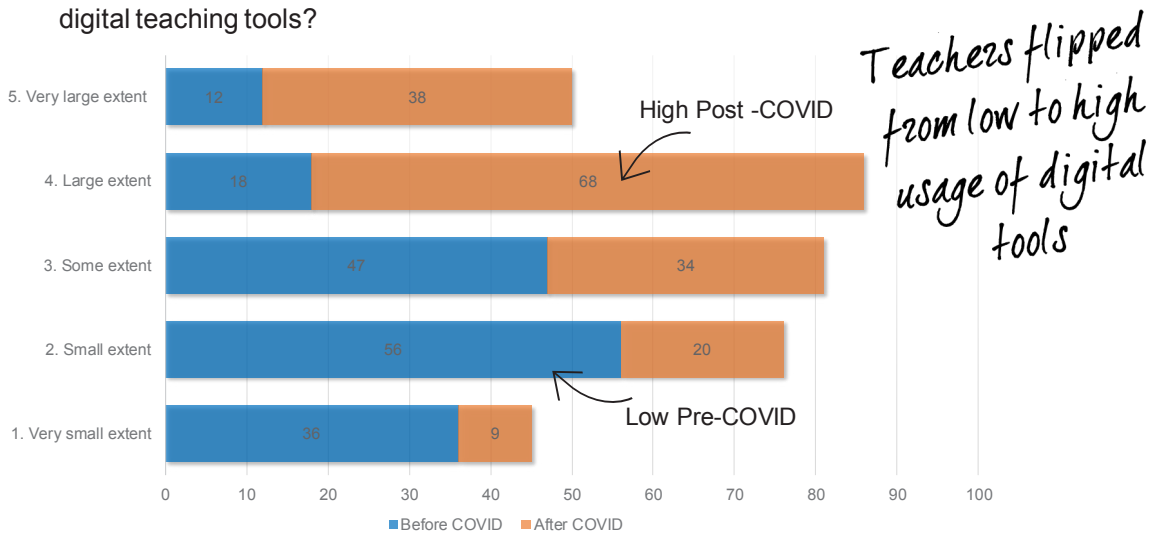
Satisfaction – Available Digital Learning Applications

How satisfied are you with the quality of digital learning applications as they are used within your military system?



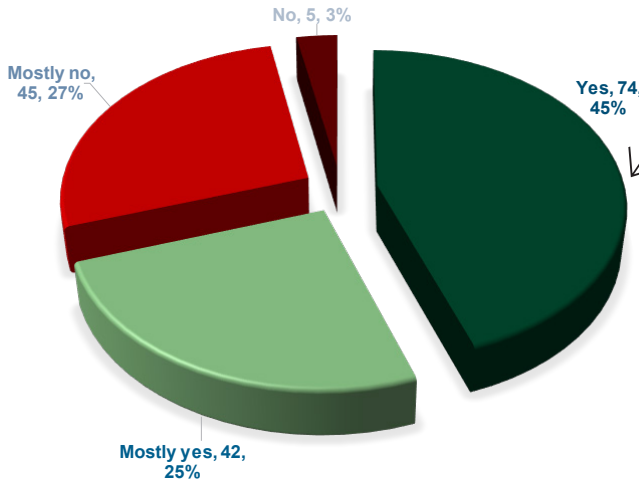
Instructors' Digital Tool Usage

To what extent do you find that military trainers, tutors, teachers, and lecturers use online, digital teaching tools?



Instructor Support – Post COVID

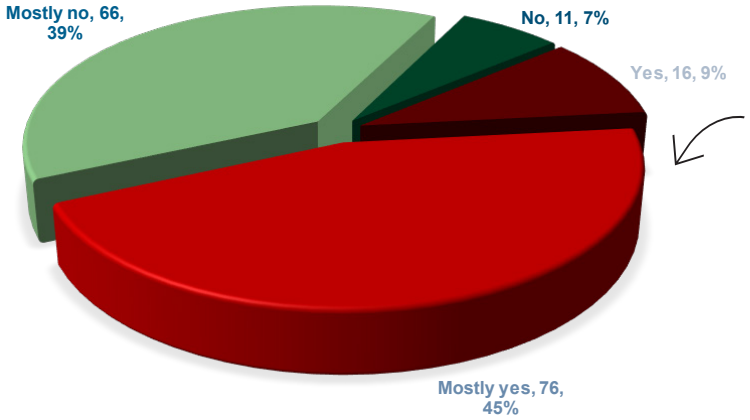
Are your military organizations providing enough support for faculty, staff, teachers, and trainers to help them effectively transition to online and distance learning?



Participants overwhelmingly feel they have enough support for the transition

Go Back to "Normal"

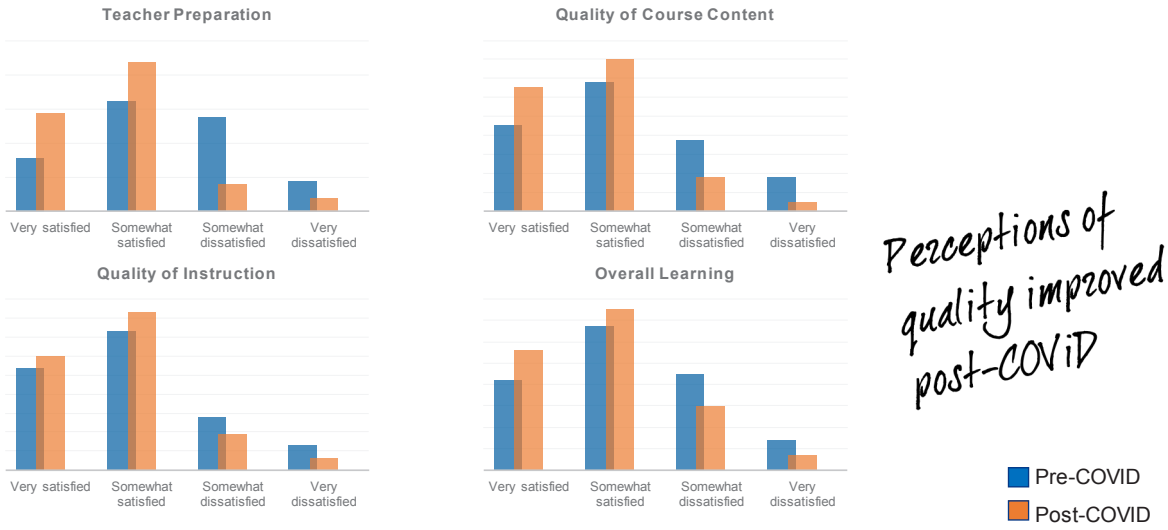
Once the pandemic is controlled, do you think our military training and education programs will return to the pre-COVID (before March 2020) conditions?



However, a small majority feel things will go back to pre-COVID conditions

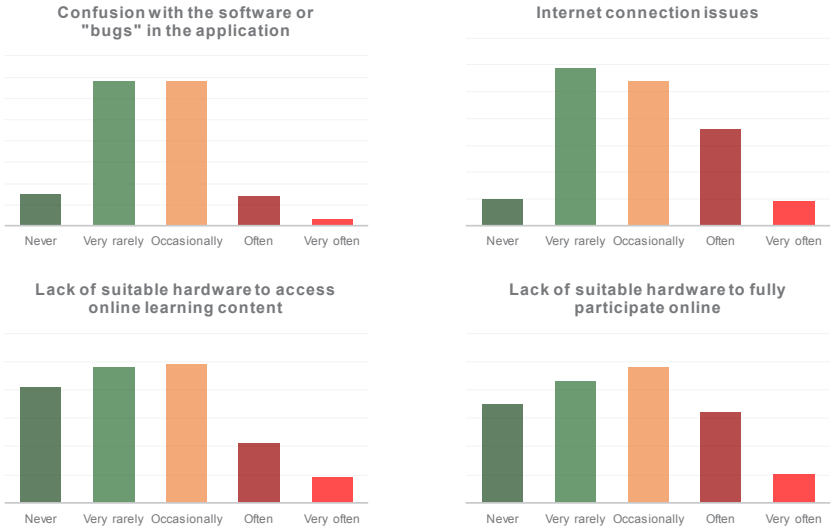
Satisfaction – Available Digital Learning Applications

How satisfied are you with the quality of various aspects of online, distance training or education as it is used within your military system?



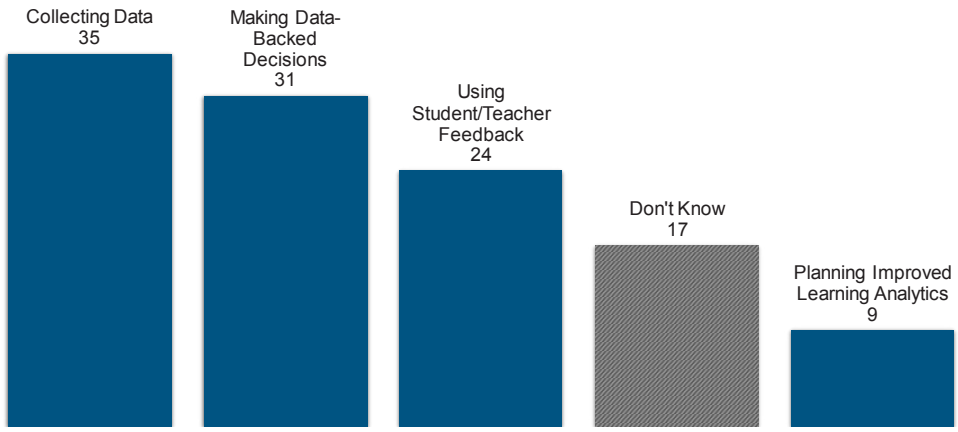
Technology Difficulties:

Have you experienced technical challenges with hardware, software, or connectivity that interfered with the online, digital learning offered



Learning Analytics

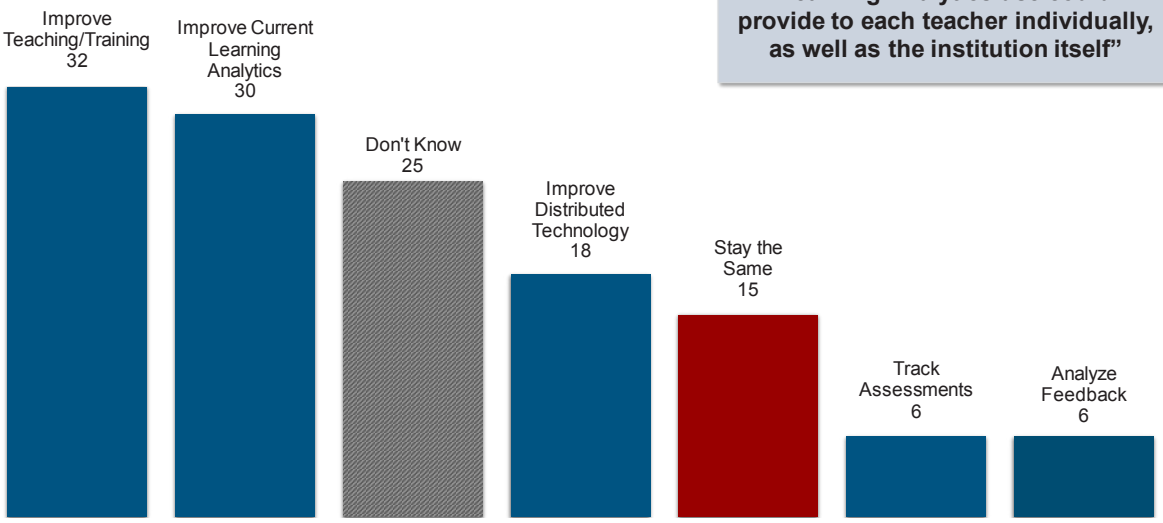
What are you or your military training / education systems currently doing with Learning Analytics?



Learning Analytics

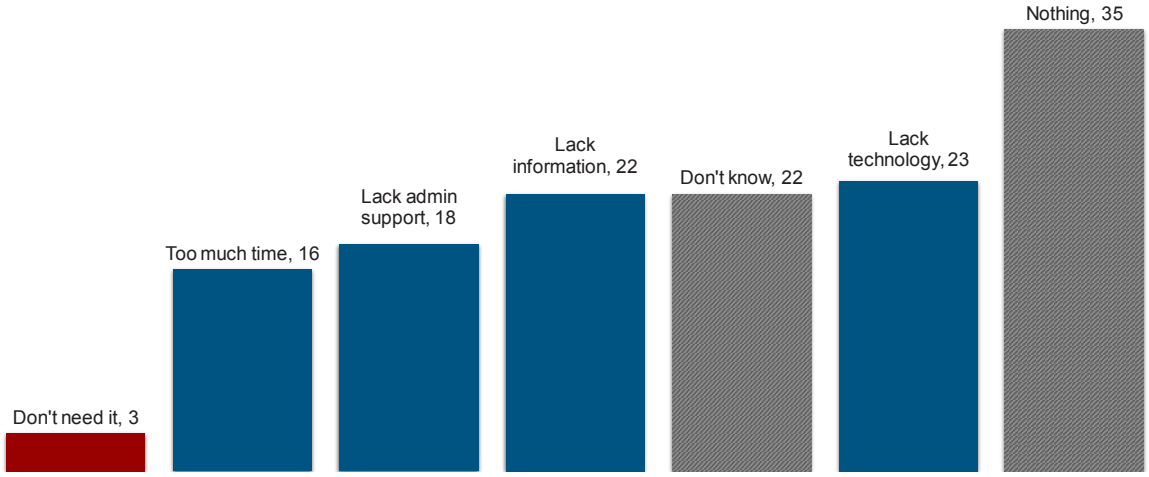
What would you like to do with Learning Analytics?

Sample response:
"I would like to see a more systemic approach to the true scope Learning Analytics use could provide to each teacher individually, as well as the institution itself"



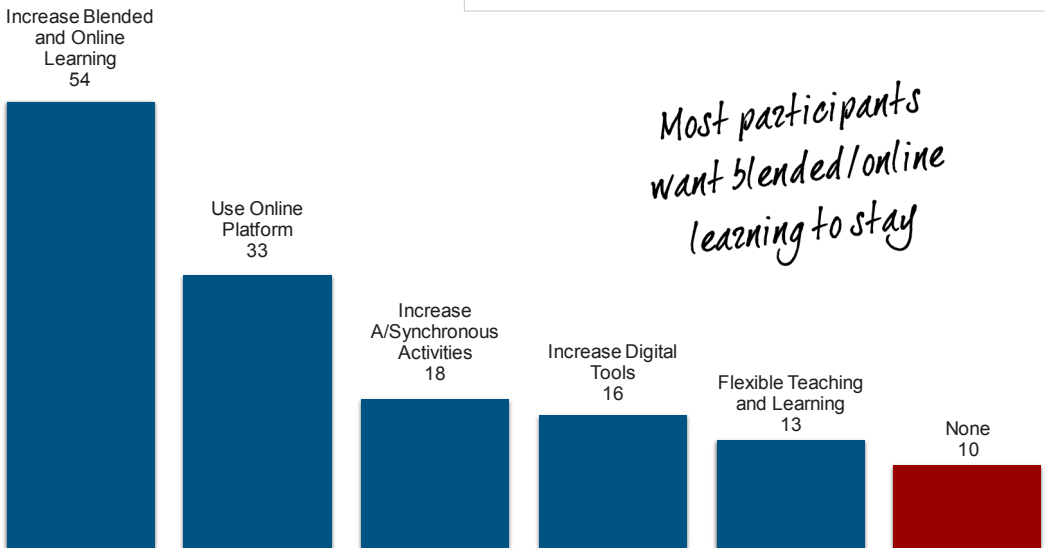
Obstacles to Learning Analytics

What is stopping you from using learning analytics in your organization?



Changes to keep doing

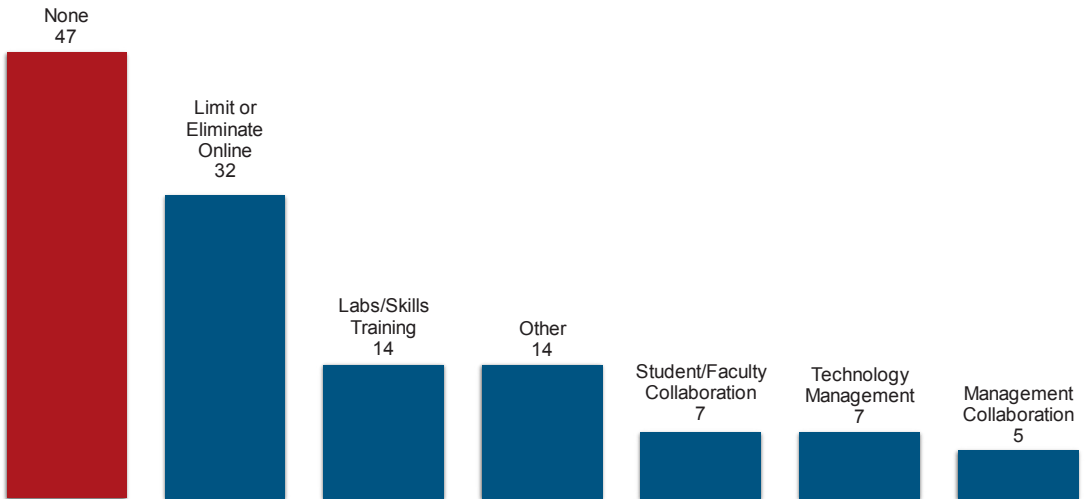
Since March 2020, what changes have been made to your military training and education that you would like to **keep** even after the pandemic?

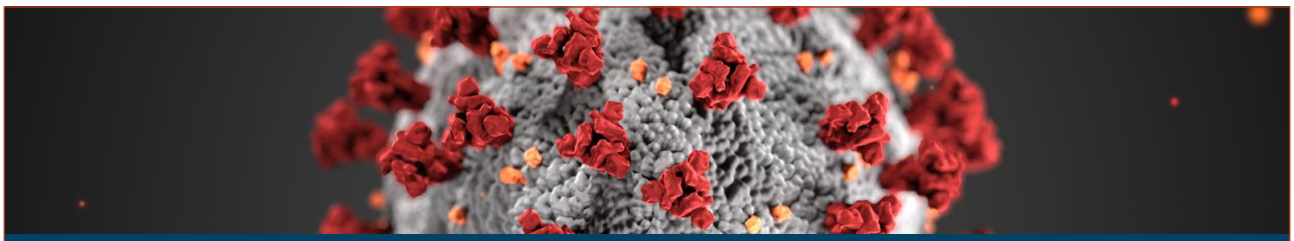


Most participants want blended/online learning to stay

Changes to start doing

What new technologies, techniques, or other processes would you like your military training and education organizations to **start** using or doing?





Open discussion on the pandemic response and "new normal"

APPROVED Order of the Ministry of Defence

CONCEPT OF DISTANCE LEARNING IN THE UKRAINIAN ARMED FORCES

I. General provisions, basic definitions and principles of distance learning in the Ukrainian Armed Forces

One of the decisive factors in the successful transformation and modernization of the Ukrainian Armed Forces at the current stage of their operation is a large-scale reform of the defence education system.

The purpose of the reform is to bring defence education closer to modern requirements and prospects for the development of theory and practice of armed combat. World experience shows that this task is possible only through the implementation of a continuous gradual system of lifelong learning for military experts.

The implementation of such a learning model for military experts should aim at:

- Creating new opportunities to update the training content as well as teaching and knowledge dissemination methods.
- Increasing access to learning resources; providing the opportunity to learn without restrictions on space and time, with as little disruption as possible to professional duties.
- And providing tailored training.

Current trends in the development of educational technology and the main directions of government policy in this area, which are described in the Ukrainian National Strategy for Education Development until 2021, will require a concerted effort to develop distance learning in the Ukrainian Armed Forces as one of the most effective tools for implementing a lifelong learning model.

This Concept describes the purpose, objectives, essence, basis and focus of distance learning implementation in the training system for military experts in the Ukrainian Armed Forces and other military entities.

Distance learning (DL) is a special form of goal-oriented process of acquiring knowledge, skills and abilities, a distinctive feature of which is the interaction of geographically dispersed participants in a specific information and learning environment based on the mixed use of modern educational and information technologies.

DL is a form of educational organisation in Higher Defence Education Institutions and Military Training Divisions of Higher Education Institutions (HDEI and MTD/HEI), which implements the DL programme and allows graduates to receive a state diploma/degree for the appropriate level of higher education.

In accordance with the Ukrainian Law on Higher Education, DL is one of the forms of study at Ukrainian higher education institutions, along with intramural (daytime, evening) and extramural forms.

Distance learning is an educational process that is organised and carried out in a distance learning mode or by using distance learning technologies during certain classes, themes, or discipline blocks.

Distance learning is a form of organization of the educational process in defence educational institutions, which implements DL and provides the possibility of obtaining standard state documents on the appropriate educational or educational-qualification level of graduates.

Distance learning technologies are a set of educational technologies, including psycho-pedagogical and information and communication technologies, which enable the process of distance learning to be realised at educational institutions and academic establishments.

The information and communication technologies of distance learning are the technologies used for creating, storing, preserving, and accessing web resources (electronic resources) of educational disciplines (programmes), as well as ensuring the organization and support of the educational process through the use of specialized software and information and communication facilities, including the Internet.

Psychological and pedagogical technologies of distance learning are a system of tools and techniques, which, when consistently applied on a step-by-step basis, ensure the implementation of the objectives of education, training, and personal development.

The repository of distance learning resources is a centralised electronic repository of certified DL resources. The central repository of DL resources of the Ukrainian Armed Forces DL System contains all certified resources used in the training of Ukrainian Armed Forces military experts.

Web-based distance learning resources are a systematic collection of information and educational tools necessary for the study of educational disciplines (programmes) that can be accessed through the Internet (local area network) using a web browser and/or other software tools available to the user.

The distance learning system of the Ukrainian Armed Forces (DL System) is a subsystem of the defence education system, which encompasses administrative staff, DL departments, trainees studying by distance learning or using DL technologies and research and teaching staff, all of them interacting for the organization and implementation of distance learning in a single information and educational environment.

The Distance Learning Management System is the software used for creating, storing, accumulating, and transferring web resources, providing authorised access to these web resources for DL actors, and organising the learning process and controlling learning via the Internet and/or a local network.

The process of DL, education and personal development takes place in a specific web environment with a systematically organized set of web resources of educational disciplines (programmes), web management software, tools for interaction between DL actors and DL management.

The actors of distance learning are the people who study and the people who implement the educational process in distance learning mode (teaching and research-teaching staff, methodologists, etc.).

The main principles of distance learning for military experts are the following:

- Flexibility: DL enables military trainees to study at a convenient time, at a convenient location and at a convenient pace, with a time- and volume-insignificant part of the distance learning process in in-person/face-to-face setting (compilation of summative reports, practical, laboratory work, etc.).
- Modularity: each individual course creates a holistic understanding of a single subject area, enabling a set of independent module courses to form the curriculum that best suits the individual or collective needs of the trainees.
- Parallel conduct: DL can be conducted without (or with a minimum of) time off from the duties of the service.
- Cost-effectiveness: efficient use of training facilities and equipment, concentrated and unified provision of information, use and development of computer modelling to reduce the cost of training military experts.
- Technological effectiveness: using modern information technology in the teaching process to connect the learner to the global information space.
- Internationality: the opportunity to study in foreign educational institutions without going abroad and to provide educational services to foreign citizens and military experts in the Ukrainian Armed Forces (or other military entities) who are serving outside their state.

Quality: the quality of distance education is not inferior to the quality of intramural education because the best teaching staff are involved in the preparation of educational tools, and because the most modern teaching material is used for this purpose. Also, the introduction of a specialised quality control of distance education is considered to ensure its compliance with educational standards.

II Legislative and regulatory framework for distance learning in the Ukrainian Armed Forces

The main legislative and regulatory documents for DL in the Ukrainian Armed Forces are the following:

The Constitution of Ukraine.

Ukrainian Law "On Higher Education".

Decree of the President of Ukraine "On the approval of the Annual National Programme of NATO-Ukraine Cooperation for 2015" April 23, 2015, N^{O} 238/2015.

Decree of the President of Ukraine "On the National strategy for the development of education of Ukraine until 2021", June 25, 2013, N^{O} 344/2013.

Order of the Ministry of Education and Science of Ukraine " On the approval of the Regulations on distance learning", April 25, 2013, N^{O} 466, registered in the Ministry of Justice of Ukraine on April 30, 2013, N^{O} 703/23235.

Order of the Minister of Education and Science of Ukraine "On the approval of requirements for Higher Educational Institutions and Postgraduate Educational Institutions, Scientific, Educational and Scientific Institutions providing educational services by distance learning for the training and advanced training of specialists in accredited areas and expert subjects", October 30, 2013, N^{O} 1518, registered in the Ministry of Justice of Ukraine on October 31, 2013, N^{O} 1857/24389.

III. Relevance of the implementation of distance learning in the training system for the Ukrainian Armed Forces military experts

The relevance of DL implementation in the training system for the Ukrainian Armed Forces military experts stems from:

- The dynamics of change in the development of the military profession, which requires the continuous improvement of professional knowledge, skills, and abilities, which modern servicemen are required to possess, and which leads to the increasingly important part that continuous education plays.
- The use of new information technology in modern weaponry and military technology and, accordingly, the particulars of their use in combat.
- The Ukrainian Armed Forces' transition to a contract-based force, which requires a quality and flexible training system for highly skilled personnel.
- The ability of DL technology to ensure that the content of the training of military experts is adjusted in a timely manner due to the high speed of updating the information resources of the information and education environment.
- The need to reduce the cost of the organisation and provision of the training process.

In the context of further integration of military and civilian education in Ukraine, the theoretical and practical work on the challenges of implementation, as well as the creation and development of the Ukrainian Armed Forces' DL System should be continuous, purposeful, and productive, in parallel with the development of the distance education system in Ukraine.

IV. Objective and core tasks of the introduction, use and development of distance learning in the Ukrainian Armed Forces

The main objective of the introduction, use and development of DL in the Ukrainian Armed Forces is to create the conditions for the provision of quality and modern educational services through the use of information technology and respect for the basic DL principles to all categories of beneficiaries, regardless of where they serve or work.

The core tasks of the introduction, use and development of distance learning in the Ukrainian Armed Forces are the following:

- To shape and ensure regulatory, organizational, scientific, methodological, information and telecommunication, material and technical, human resources and financial and economic support for the

implementation, use and development of DL in the Ukrainian Armed Forces.

- To ramp up the implementation of DL technologies at all levels of defence education and training of experts for the Ukrainian Armed Forces.
- To ensure consistency and leadership in the introduction, use and development of DL in the Ukrainian Armed Forces.
- To shift from a fragmentary use of DL technologies for individual educational modules, subjects or sections of educational disciplines to a full-scale use of both distance and mixed learning, e.g., combined distance and extramural forms of education.
- To develop in-house/proprietary material and to adapt current DL resources.
- To improve and further develop telecommunication infrastructure in Higher Defence Education Institutions and Military Training Divisions of Higher Education Institutions (HDEI and MTD/HEI) and in the defence education system as a whole to ensure the use of DL.
- To ensure the confidentiality of personal information of participants in the distance learning process, the integrity and protection of DL resources and organizational information.
- To ensure compliance with the information security requirements in DL processes.
- To coordinate the implementation and development of DL in the Ukrainian Armed Forces with the development of the state-wide distance education system in Ukraine.

V. Main types of support for the introduction, use and development of distance education in the Ukrainian Armed Forces

The introduction, use and development of DL in the Ukrainian Armed Forces is one of the systemic processes of reforming the defence education and training system, which needs to be fully supported.

The legal and regulatory support for DL involves the creation of legal and regulatory acts that:

- Regulate the interaction between the actors of the educational process organized in a DL form or using DL technologies.
- Regulate the ownership of the DL resources and teaching and learning material.
- Establish procedures for accessing DL resources, including confidential information in the information and education environment of the educational institution.
- Determine the economic interest of the authors of DL resources and copyright protection.
- Ensure that the work of the teaching, administrative and technical staff is regulated.

In addition, the legal and regulatory framework for DL includes internal regulations governing the organisation and implementation of distance learning in HDEI and MTD/HEI.

The core tasks of the organisational support for DL include the following:

- Development and approval of a programme for the implementation of the Concept of DL in the Ukrainian Armed Forces.
- Identification of areas and substantiation of ways to expand educational services using DL technologies in all areas of training for military experts.
- Analysis of the situation with regard to the use of the DL technology developed so far, and development forecasts.
- Planning of activities for the implementation and use of DL in the Ukrainian Armed Forces.
- Determining areas for further action for the development of DL in the Ukrainian Armed Forces.
- Developing proposals for the leadership of the Ukrainian Armed Forces on the development of DL.
- Co-operation in the DL sector with domestic and foreign educational and scientific institutions.
- Development and implementation of joint programmes and projects, etc.

The scientific and methodological support for DL includes the following:

- Developing a methodology for creating DL resources, organising, and implementing the distance learning process.
- Making recommendations on the selection of software for DL, taking into account the existing standards.
- Developing specific software for DL.
- Conducting research and applied scientific studies on the problems of DL development.
- Participating in the implementation of state scientific programmes in the relevant fields.
- Developing scientific, methodological, and expert recommendations on the best ways to shape and develop all types of DL.
- Elaborating modalities and procedures for the certification of DL resources for the Ukrainian Armed Forces.

The educational and methodological support of DL includes the following:

- Developing DL resources based on modern teaching, information, and communication technologies.
- Training and enhancing the qualifications of teaching and research staff in the Ukrainian Armed Forces' DL system in the use of DL technologies, providing methodological support for the review of their professional training, tests, and qualifying examination.
- Organising the dissemination of domestic and foreign experience of DL in the training system for military experts.

The core tasks of the information and telecommunication support for DL, which forms its software and technological basis, are the following:

- Providing instrumental tools for the development of DL resources.
- Providing tools for organising and implementing the DL process.
- Guaranteeing the preservation of DL resources and all organisational information.
- Providing access to the information and education environment to all actors of the distance learning process and ensuring their prompt interaction.
- Ensuring access to information and personal confidentiality in the DL process.

The material and technical support of DL is a collection of diverse processing equipment and peripheral devices that are combined through the use of telecommunication equipment to form processing networks of different scales.

In addition, the material and technical support for DL includes:

- Video conferencing systems and devices.
- Video, audio, and other equipment to produce multimedia educational material.
- Data storage systems and tools.

DL staffing in the development of e-learning material requires the presence of military (civilian) experts with the appropriate qualifications and divided according to their functional responsibilities as follows:

- The DL resource development manager establishes, directs, and manages the development of the DL resource, ensuring communication between all participants involved in its development and sharing responsibilities between all participants.
- The educational designer ensures pedagogical consistency while transferring teaching material to the web environment; S/he selects, compiles and edits teaching material; identifies the pedagogical strategy, activities and multimedia, project components; forms tests and evaluation elements.
- The multimedia designer develops visual course layouts and selects or creates multimedia components,

including graphics, images, animation, audio, video, etc., for an effective use of the teaching material and its learning strategy created by the educational designer.

- The programmer is responsible for the testing and integration of the course with the educational management system and is responsible for the administration of the distance learning management system.
- The subject matter expert is one of the main, if only temporary, members of the team for the DL project; S/he provides knowledge and expertise in a particular subject area, works with the educational designer to develop the course content, ensuring that its elements are correct and accurate.

The staffing process also includes the organization of training and professional development for all categories of DL actors.

Financial and economic support for DL is provided within the limits of the corresponding support for the defence education system.

The prerequisite for ensuring consistency, comprehensiveness, and coherence in the reform of the defence education system and training of military experts in the field of the implementation, use and development of DL is the creation and development of the Ukrainian Armed Forces' DL system.

VI. Primary objectives and target audience for the Ukrainian Armed Forces' distance learning system

The DL system should be part of the defence education system, the aim of which is to ensure the use of DL both separately and in conjunction with other forms of learning, including the issuance of state education documents, as well as DL for individual courses or blocks of courses with the delivery of certificates from the appropriate educational institutions in the defence education system.

The primary objectives of the Ukrainian Armed Forces' DL system are the following:

- To build and develop regulatory, organisational, scientific, and methodological, information and telecommunication, material and technical, staffing, financial and economic support for DL in the Ukrainian Armed Forces.
- To use DL both independently and in conjunction with other forms of learning (intramural, extramural).
- To introduce DL technology at all levels of the continuous gradual system of learning for military experts.
- To provide scientific and methodological support for the use of DL in the training of military experts.
- To establish the Central DL Resource Repository of the Ukrainian Armed Forces' DL system.
- To improve and develop telecommunication infrastructure for the implementation of DL technology.
- To develop international co-operation in the use of DL for the training of military experts.

The target audience of the Ukrainian Armed Forces' DL system includes:

- Military personnel who are preparing to participate in anti-terrorist operations, peacekeeping operations, international exercises, and joint staff service.
- Remote students (extramural form of education) at HDEI and MTD/HEI and full-time students (cadets) (intramural form of education) in self-study and optional training.
- Trainees on refresher and upgrading courses, higher academic courses.
- Officials of the state and administrative authorities in charge of national security and the defence of the state.
- Officers in command-and-control structures, applicants for admission to HDEIs and MTD/HEIs during the preparatory courses and the preliminary competitive selection.
- Ukrainian citizens who are trained in the reserve officer training programme.
- Military personnel who are discharged from the Ukrainian Armed Forces.
- Foreign nationals, in accordance with international treaties.

VII. Organisational structure of the distance learning system of the Ukrainian Armed Forces

The organisational structure of the Ukrainian Armed Forces' DL system includes:

- The head unit for DL in the Ukrainian Armed Forces is the Scientific Distance Learning Center of the National Defence University of Ukraine, named after Ivan Chernyakhovskyi.
- DL units of HDEIs and MTD/HEIs.

The Department of Defence Education and Science of the Ministry of Defence of Ukraine, together with the General Staff Communications and Information Systems Directorate of the Ukrainian Armed Forces, coordinate the implementation of DL.

The core tasks of the Department of Defence Education and Science of the Ministry of Defence of Ukraine, together with the General Staff Communications and Information Systems Directorate of the Ukrainian Armed Forces, for the implementation and conduct of DL in the Ukrainian Armed Forces, are the following:

- Organizing cooperation with the Ministry of Education and Science of Ukraine on the implementation of the DL system in the Ukrainian Armed Forces.
- Coordination of the activities of all the structural components of the DL system for the development of the DL system of the Ukrainian Armed Forces.
- Establishing a legal and regulatory framework for the DL system of the Ukrainian Armed Forces.
- Coordinating international activities of the DL system of the Ukrainian Armed Forces.
- Coordinating the development of theoretical and scientific-psychological foundations of DL in the Ukrainian Armed Forces.

The main tasks of the DL units of HDEIs and MTD/HEIs for the implementation and conduct of DL in the Ukrainian Armed Forces are the following:

- Participating in the preparation of draft regulations of the DL system of the Ukrainian Armed Forces.
- Implementing DL in the relevant areas of training.
- Participating in the development of learning methods for the areas of training for practitioners.
- Developing DL resources in the interest of the branches of the Ukrainian Armed Forces.
- Participating in the creation of the Central repository of DL resources of the Ukrainian Armed Forces' DL System.
- Participating in international cooperation in the DL field.

The core tasks of the Scientific Distance Learning Center of the National Defence University of Ukraine, named after Ivan Chernyakhovskyi, for the implementation and conduct of DL in the Ukrainian Armed Forces, are the following:

- Preparing draft regulatory and legal documents for the DL system.
- Developing common requirements for learning curricula, programmes, and norms for the DL system of the Ukrainian Armed Forces, based on state educational standards.
- Providing scientific and methodological support for the development of the DL system.
- Developing DL resources, taking into account international DL standards.
- Conducting scientific research on the psychological and pedagogical foundations of DL for military experts.
- Developing methodological frameworks for the organisation and implementation of educational process in the form of distance learning or with the use of DL technologies, DL software and hardware.
- Developing guidelines for the organisation and implementation of educational process in the form of distance learning or with the use of DL technologies.

- Developing programmes, conducting personnel training and education for trainers for the DL system.
- Participating in the creation of the Central repository of DL resources of the Ukrainian Armed Forces' DL System and supporting it.
- Providing an expert review of all components of the DL system of the Ukrainian Armed Forces, including recommendations for the certification of individual DL resources.
- Participating in international cooperation in the DL field.
- Developing information and analytical support for the DL system.

Other elements of the Ukrainian Armed Forces' DL system (DL units, scientific and methodological committees in the branches of the Ukrainian Armed Forces and in educational institutions, etc.) are created according to the training needs of the military experts.

To provide organizational and regulatory support for the initial phase of DL implementation in the Ukrainian Armed Forces, a Working Group for the implementation of DL in the Ukrainian Armed Forces has been established by order of the Minister of Defence of Ukraine.

The Working group on DL Implementation in the Ukrainian Armed Forces includes representatives from the Department of Defence Education and Science of the Ministry of Defence of Ukraine, the National Defence University of Ukraine named after Ivan Chernyakhovskyi, the Department of Information Technology of the Ministry of Defence of Ukraine, the General Staff Communications and Information Systems Directorate of the Ukrainian Armed Forces, the General Staff Central Office for Information Protection and Cryptology of the Ukrainian Armed Forces, and the General Staff Human Resources Directorate of the Ukrainian Armed Forces.

If necessary, representatives of other management bodies and organisational units of the Ukrainian Armed Forces are included in the Working Group.

VIII. Stages in the creation and development of the distance learning system in the UKR AF

The following stages enable to build the Basic Framework of the DL System in the Ukrainian Armed Forces:

First stage (2016):

- Establishing the organisational structure of the DL in the Ukrainian Armed Forces.
- Developing a legal and regulatory framework and defining standards for DL.
- Creating the Central repository (web server) of DL resources of the Ukrainian Armed Forces' DL System (under the Communications and Information Systems Directorate of the General Staff of the Ukrainian Armed Forces).
- Creating a primary pool of DL resources and ensuring their experimental implementation.
- Conducting pilot projects for the implementation of DL.

Second stage (2017):

- Full-scale development and implementation of both distance and mixed learning modes, e.g., distance and extramural forms of learning, along with solely intramural or extramural forms.
- Development of the Central repository of DL resources of the Ukrainian Armed Forces' DL System.
- Implementation of a system of licensing, certification, and accreditation for the HDEIs and MTD/HEIs of the Ukrainian Armed Forces which provide distance training.
- Integration of the Ukrainian Armed Forces' DL system into the state-wide and global distance education system.

IV. Funding the distance learning system of the Ukrainian Armed Forces

The DL system is financed from budgetary resources within the framework of defence education system financing, international grants, and contracts, as well as from extrabudgetary resources from the activities of individual units of the DL System.

X. Expected results of the creation of a distance learning system in the Ukrainian Armed Forces

As a result of the implementation of DL, the following is expected:

- Increasing the level of professional training and quality of education for military experts through the use of modern teaching and information technology, providing access to additional information resources.
- Increasing the professional mobility of military personnel and their business and social activity.
- Building a unified educational space within the framework of the continuous, step-by-step system of lifelong learning for military experts.

The HDEIs and MTD/HEIs who use DL will be able:

- To respond swiftly to changes in the area of learning (theory and practice of armed combat).
- To effectively solve complex and relevant educational tasks for the development of intellectual and creative potential, analytical thinking, and the development of the self-reliance of their graduates.
- To improve training content and informational and methodological support for educational disciplines through access to informational resources, teaching and methodological material and teaching aids from other educational institutions.
- To efficiently use the scientific and pedagogical potential and the material and technical base.

The Director of the Department of Defence Education and Science of the MoD of Ukraine MG I.V.TOLOK

LAW ON HIGHER MILITARY EDUCATION (UKR) – EXCERPTS RELATED TO DL

5. Distance learning

5.1. Distance learning is a tailored process of education, which is carried out mainly by the mediated, distant interaction between participants and the educational process in a specialized environment, which functions on the basis of modern psychological, educational and information and communication technologies.

5.2. Distance learning (DL) can be used in HDEI (MTD/HEI) for cadet training and remote students (students enrolled in extramural form of education), trainees of advanced training courses and professional development programmes that do not require the study of topics with the use of educational literature whose access is restricted.

During the training of cadets, trainees, intramural (daytime) or extramural students, DL technologies can be used in various combinations (mixed forms of education): during the study of individual educational disciplines (topics) or blocks of disciplines; in the system of advanced training courses; in the course of knowledge tests; when conducting examinations; for quality monitoring of education and in the system of individual training in programmes that do not require the study of topics using educational literature with restricted access.

5.3. DL in HDEI (MTD/HEI) is implemented through the use of distance form of learning as a separate form of education and/or with the use of DL technologies limitedly as a means of updating the content and methods of learning.

5.4. DL in HDEI (MTD/HEI) is implemented taking into account the needs of the Ukrainian Armed Forces, in accordance with the decision of the academic council of the HDEI (MTD/HEI) in agreement with the Ministry of Education and Science of Ukraine.

5.5. The purpose of DL is to provide quality educational services through the use of modern information and communication technologies for certain educational, professional, and scientific training programmes for upgrading the qualifications of servicemen, civil servants, members of the Ukrainian Armed Forces and foreign nationals who study at HDEI (MTD/HEI) in accordance with the law.

5.6. The tasks DL is involved with are the following:

- Creating learning opportunities for cadets, trainees, students, for professional qualification and advanced training regardless of location, nature of occupation, state of health, etc.
- Providing unity and continuity of training from tactical to operational as well as strategic levels of higher defence education.
- Ensuring the continuous improvement of teaching content, focusing on new technologies and teaching methods; maximizing the use of modern information and analytical systems in the educational process.
- Integrating Ukrainian state education into the European and global information space.

5.7. DL and learning with the use of DL technologies are provided by the relevant units of HDEI (MTD/HEI), which are in charge of:

- Supporting the process of implementing and upgrading the DL system of HDEI (MTD/HEI).
- Developing web resources, methodological guidelines for organising or using DL technologies and their software and hardware.
- Providing technical support for the HDEI (MTD/HEI)'s DL system components, including software support for DL web resources.
- Ensuring the protection of information in DL and preventing the leakage of restricted information.

5.8. To ensure the compliance of teaching materials for DL with the requirements for the organization of the educational process, conducting an expert assessment of web resources for educational disciplines at HDEI (MTD/HEI), a Methodological Committee has been set up to provide an expert assessment of web resources for educational subjects. The Methodological Committee includes:

- The head of the committee, who is the deputy head of the educational institution for educational (teaching and research) work (vice-rector for education).
- Members of the committee: heads (deputy heads for educational work) of educational units (institutes, faculties, centres, departments), leading academic and teaching staff, representatives of the division that ensures the implementation of the DL in the educational institution.

The main tasks of the Methodological Committee are as follows:

- Establishing the compliance of the web resources of educational disciplines with the requirements for the organization of the educational process and providing recommendations for their use.
- Determining the availability of web resources for each subject and making recommendations to the academic council of HDEI (MTD/HEI) on the feasibility of introducing DL technology for certain subjects (specializations) of training and in the qualification system, upgrading advanced training.
- Conducting expert assessment of distance learning material used for courses, in order to provide recommendations for their use in the educational process as electronic teaching material and manuals (handbooks).

The Methodological Committee takes into account the requirements of the legal and regulatory instruments on the organisation of the educational process, including the use of DL technology.

5.9. The study timeframe for cadets, trainees, and students in the distance learning mode and/or with the use of DL technology is set in accordance with the study plans and must not be less than that for the daytime mode of study at the appropriate levels of higher education.

The timeframe for the qualification upgrading courses in the distance learning mode and/or using DL technology is determined by the curricula and programmes of the respective qualification upgrading courses.

The number of trainees who will use distance learning is determined within the limits of the licensed training volume (qualification upgrade, specialization) for extramural forms of education according to the agreement with the clients for the training of military experts, taking into account the needs of the Ukrainian Armed Forces.

5.10. The organization and provision of educational activities with the use of DL is carried out by an integrated implementation of teaching, methodological, scientific (scientific-technical), organizational and other types of activities by scientific and teaching staff as well as scientific practitioners.

5.11. DL or training with the use of DL technologies is carried out in the following forms: self-study; training sessions; practical training; control sessions.

DL forms can be used alone or together, depending on the equipment available at the HDEI (MTD/HEI) and the specifics of the programme.

5.12. The qualifying examination of graduates in distance learning form of education is carried out in accordance with the law and corresponds to the qualifying examination used in extramural training.

5.13. Scientific and methodological support for DL includes:

- Methodological (theoretical and practical) recommendations on the development and use of educational and psychological and information and communication technologies of DL.
- Criteria, tools, and systems for monitoring the quality of DL.
- The content, didactic and methodological content of web resources (distance courses) of the curriculum/training programme.

5.14. The system technology support for DL includes:

- The Central repository of web resources of the Ukrainian Armed Forces' DL System: this is an electronic repository of all certified DL web resources whose goal is to create a single database of teaching and learning materials used during the training of military experts in the Ukrainian Armed Forces.
- The hardware (personal computers, networking equipment, uninterruptible power supply, servers, videoconferencing equipment, etc.), which ensures the development and use of web resources for educational purposes, the management of the educational process and the required types of educational interaction between DL actors in synchronous and asynchronous modes.
- Information and communication technology support with bandwidth capacity to provide all DL actors of HDEI (MTD/HEI) with round-the-clock access to web resources and web services for the implementation of the educational process.
- General and special purpose software, which must be licensed or based on open-source software.

5.15. Web resources of educational subjects (programmes) that are necessary for the provision of DL can include:

- Methodological recommendations on their use, sequencing of tasks, specifics of control, etc.
- Educational planning documents.
- Video and audio recordings of lectures, seminars, etc.
- Multimedia lecture material.
- Terminology dictionaries.
- Practical tasks with guidelines for their implementation.
- Virtual laboratory works with guidelines on how to do them.
- Virtual simulators with guidelines on their use.
- Packages of test tasks for performance control, tests with automated result verification, tests with teacher verification.
- Role-playing games with guidelines on how to use them.
- Electronic libraries or links to them.
- Bibliographies.
- A distance learning course that integrates the above-mentioned web-based teaching resources (programmes) into a single educational scenario.
- Other educational resources.

The list of web resources for educational subjects (programmes) required to support DL is determined by the teaching, educational and scientific (scientific) department of the HDEI (MTD/HEI), depending on the profile of the educational discipline.

In order to provide cadets, trainees, and students with DL, the HDEI (MTD/HEI) can create its own web resources or use other web resources that have been reviewed in accordance with the law.

5.16. The Central repository contains the DL web resources linked to their respective educational disciplines.

At the request of the HDEI (MTD/HEI), the Scientific Distance Learning Center of the National Defence University of Ukraine, named after Ivan Chernyakhovskyi, keeps the records of users of the central repository of web resources.

5.17. Local repositories can be set up at HDEI (MTD/HEI). The local repositories are designed to host the DL web resources that meet the requirements for web resources for HDEI (MTD/HEI)'s educational disciplines; these have been tested, reviewed and recommended for use in the educational process.

5.18. The development of web resources for educational disciplines is carried out by scientific and pedagogical staff within the limits of the existing types of workloads (scientific, scientific-technical, methodological activities, etc.).

Annex L: Generic Model for ADL System Development

Many aspects need to be considered when shifting from residential to non-residential learning. The best way to support that process is to develop a distance learning system that meets all needed aspects and to have clear understanding of those needs and the ways to attain them. All aspects must be taken into consideration to systematically develop the distance learning system in a PME institute or in the armed forces.

According to the model proposed by Alexander Osterwalder, which overlaps with the ISO 9000 system management models, PMBoK and PRINCE2 project management models, as well as the EFQM, any model should include nine blocks that reflect the logic of the system's action to obtain resources (Figure 1).

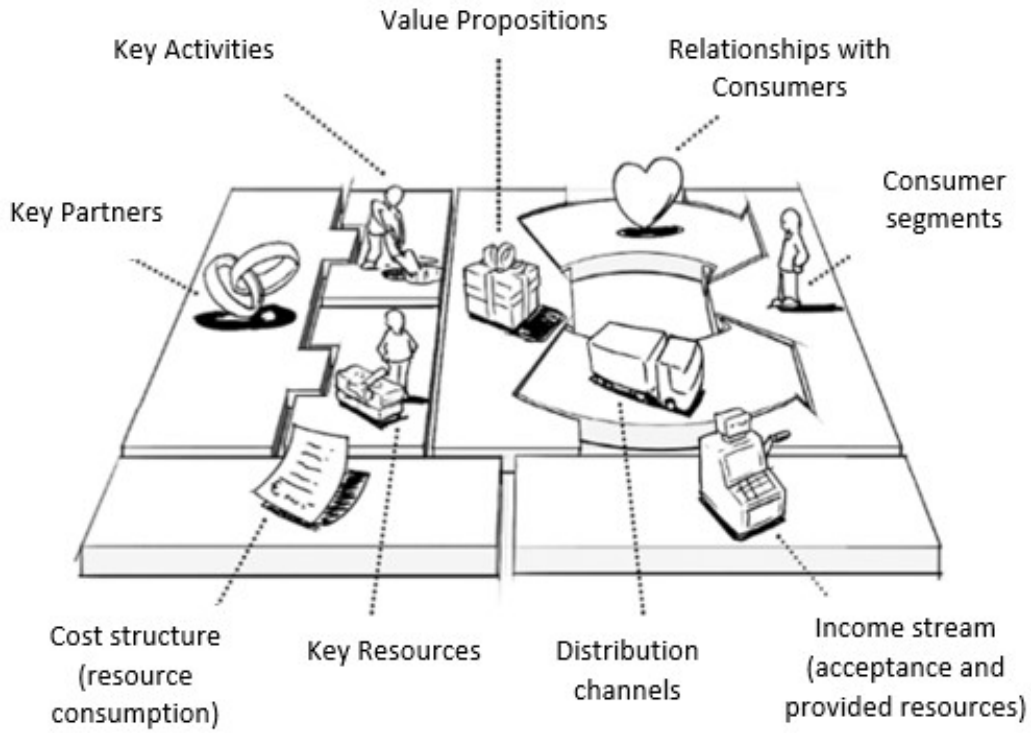


Figure 1. Model of an ADL System development

Source: Creation of Business Models, Oleksandr Ostervalder & Iv Pinie, 2018

The description of any model should include nine components that reflect the logic of the system's action to obtain resources. The nine blocks cover four main areas: the interaction with the consumer, propositions, infrastructure, and financial system efficiency. The nine components follow:

Consumer Segments: This block identifies which groups of people and organizations the system expects to engage and serve. Customer groups represent different segments if: the differences in their requests lead to differences in the offers, interaction is carried out through different distribution channels, and relationships with them need to be built differently.

Value Proposition: The block includes a description of services that are of value to a particular consumer segment.

Distribution Channels: This block describes how the system interacts with the consumer segments and distribute their value propositions to them.

Relationships with Consumers: The block describes the types of relationships that are established within the system with some consumer segments.

Income Stream (acceptance and provided resources): The block includes tangible (intangible) income earned from each consumer segment.

Key Resources: This block describes the most important assets needed for the model to function. These resources allow it to create and deliver value propositions to the consumer segments, keep in touch with the consumer segments, and generate income.

Key Activities: The block describes the actions required to implement the model. These are the most important actions required to develop the system without which its successful operation is impossible.

Key Partners: The block describes the network of suppliers and partners through which the model operates.

Cost Structure (resource consumption): The most significant costs are the costs required to implement the model.

The proposed generic model of ADL System development will provide a general understanding of the ADL development concept for training military specialists which will facilitate a faster and more efficient process of creating a military educational space. In turn, this should accelerate improvement of the military educational and training system.

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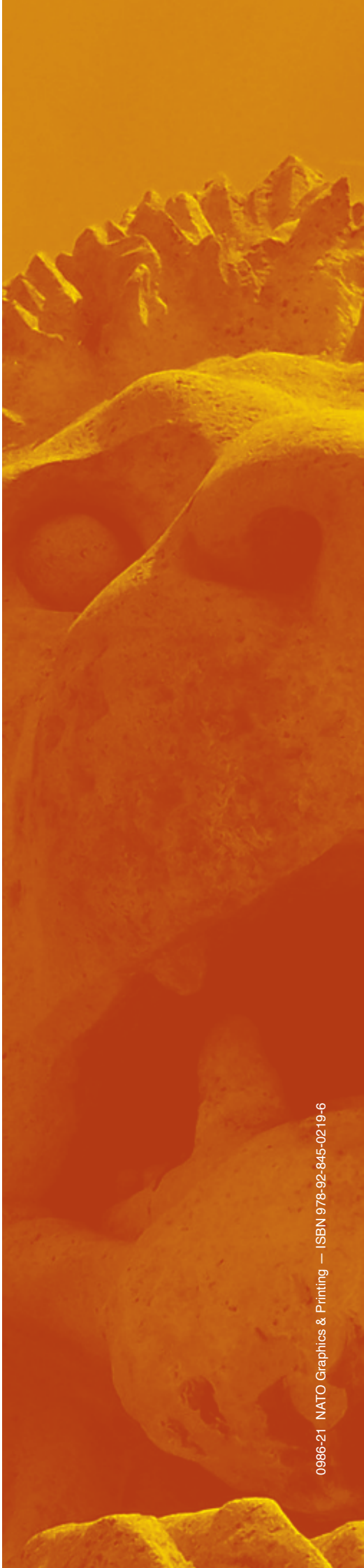

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