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The COMFOR-SA Virtual Learning Centre Becomes a Special Hub for Gaining New Modern Standards for the IT-ARMY E-Learning Programmes

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Abstract*: The Education and Training Command and School of Applied Military Studies of Turin (COMFOR-SA) - Virtual Learning Centre (VLC) owing to a solid and round experience in e-learning, and because of being a support and distance learning developer and provider for university and military courses, has received the task of organizing an ambitious program and serving as special hub for all new contents and e-learning courses for IT-Army education and training programmes. The VLC continues the strong cooperation established with University of Turin (UniTO) in the specific field of e-learning in direct support to courses. In addition, a new broad concept has recently been developed that aims at having a dedicated Portal for Self-Paced Courses combined with a Portal of Knowledge in a unique environment. In a Lifelong Learning perspective the potential target audience is composed of all categories, such as Officers, NCOs and Volunteers. Users can find, via internet or Intranet and by using all kind of devices, the right course and contents whenever and wherever required or needed. The model is specifically designed to offer a full spectrum and integrated e-learning service where all providers (teachers, instructors and Subject Matter Experts) are involved (crowdsourcing) with a Knowledge Management and Teaching procedure. It is also enriched by a User's E-portfolio where all progress can be stored and articles and paperwork can be uploaded. In this new concept a strategic role is played by teachers and support personnel and for this reason the first MOODLE Military Online Course (Mil-OC) for teachers was organized nationwide. They were trained in how to use different tools and plug-ins. More courses will be organized in the next future in order to increase the number of teachers involved in the program and to improve their e-learning knowledge and skills. This new comprehensive idea of providing E-learning is the pillar of all future projects and helps to reach another goal: developing digital skills among military personnel. The COMFOR-SA has invested a lot of effort and, thanks to the cooperation with the UniTO, is now ready to take the lead in Military E-Education.*

Keywords*: Digital Skills; Life Long Learning; Military E-Education; Mil-Online Course; Virtual Learning Centre.*

I. INTRODUCTION

Nowadays e-learning is highly relevant and plays a key role because it adapts as a good tool to different environments and scenarios. It is used to reduce the time that students have to spend for attending lectures, both online and blended courses fit this requirement, and also in direct support to regular lessons in case of a more traditional residential didactic. The e-learning contents can be delivered both via internet and Intranet and be adapted for all modern devices [1]: this way, they can reach more potential users, especially young generations who are more familiar with new technologies

and people who are attracted by modernity more than the content itself. For the Armed Forces of a modern country, in addition to the reasons mentioned above, it is also important for the implementation and modernization of the lifelong learning programs that has become more strategic than in the past in the area of education and training of military personnel, especially in a period of time where budget cutting is actual and realistic for the future in a medium and in a long perspective. Besides, the military organisation has to face the problem related to the frequent rotation of personnel in different tasks and job positions; this is true and more adopted than in other organisations. Military personnel have to be trained and updated during their entire professional life in order to be well prepared for all new kind of positions and in accordance with new possible scenarios and threats. A lot of small courses, that in the past were organised only in a residential and traditional way, can now be substituted or integrated by e-learning activities. In Italy the position of military teachers is affected by a frequent personnel rotation. All the material prepared by a teacher, if correctly stored and saved on e-learning platform, can be useful to the newcomers. E-learning lessons can be easily used and adapted by new teachers. In a modern lifelong learning project in the Military organisation there is the necessity to have a virtual library as well, (Web Catalogue) where personnel can easily look for all doctrines, official procedures, concept papers and publications and at the same time with a controlled access. The paper discusses the e-learning model designed by COMFOR-SA for IT-Army education and training programmes also after the first MOODLE Military Online Course.

II.   THE STATE OF ART

The COMFOR-SA is responsible for the education and training for Italian Army Officers at different levels. Basic, advanced and specialised are three levels where COMFOR-SA is involved. The target audience is composed of different students with assorted backgrounds and preparation (Regular Officers, Direct Entry Officers, Reserve Officers and Special Reserve Officers). It manages a lot of courses and in order to modernize the way of delivering and providing them, it has introduced the e-learning as integral part of the learning process for Officers [2].

Based on a previous and long cooperation in organizing courses at university level with the University of Turin, (the Bachelor and Master Degree in Strategic Sciences created for Officers and civilian students) in the occasion of implementing the e-learning MOODLE platform for military purposes this cooperation was emphasized. COMFOR-SA experienced an e-learning website in the past especially for a distance learning support but when the decision of turning to an open source platform was taken, COMFOR-SA and UniTO started a strong collaboration for mutual and technical support and know-how exchange. In 2013 a common project was designed and developed. It is based on some main lines of development:
- the extension of the University metropolitan area network to the Military Campus and the connection of optic fiber network with the COMFOR-SA didactic LAN;
- the Wi-Fi coverage of the two main didactic areas where Strategic Science courses are organized;
- the implementation of two MOODLE platforms: the Military and the SUISS (University Interdepartmental School for Strategic Science) platforms. They were designed as separated and independent websites but fully integrated and linked in order to give to students the possibility to surf them and look for contents wherever available without logging in and out several times a day (see Figure 1);
- the know-how exchange and sharing;
- the teachers' preparation on e-learning with dedicated courses and specific workshops (experience exchange);
- the offer of courses in a blended way in direct support to regular university courses. As for 2017-18 all university courses in Strategic Science are delivered on MOODLE platform. All professors and teachers are required to adopt it. Naturally the level of interaction and use depends on the skills of the teacher with new technology and the time spent in order to re-organize the lessons;
- the technical support for all users with a section who is responsible for helping (Help-desk);
- the development of a complex management system for access procedure.

A Virtual Learning Environment (VLE) was created to support the education of the military officers and the Strategic Sciences students (Direct Support Learning for regular university courses). Additional tools were integrated in the platforms, such as an Automatic Assessment System (ASS), an Advanced Computing Environment (ACE) and a web-conference system. Some of these tools are particularly useful for teaching and learning scientific and military disciplines.

This important experience was positively reversed on other types of courses for different students at various levels and with a different function (Distance Learning). Distance learning courses were organized in the military education in the past. It was the first intensive use of e-learning technology in the Army but it was limited to provide doctrines and lessons such as publications in electronic versions and presentations. The new digital methodologies adopted now offer more interactive opportunities and the variety of learning objects developed is increasing the possibility to make an adaptive teaching. The interaction with university professors and their experience from different areas of studies, the challenge offered by a different perspective of teachers and students, combined with new technological tools and advantages gained by the use of e-learning, enable teachers to deliver knowledge in many new ways.

The use of e-learning is strategic for the implementation of internationalization programs [3] such as the Military Erasmus and the Erasmus exchange. In both initiatives the e-learning reduces the length of the residential phase for the exchange. Consequently, it reduces the costs and allows to share a minimum level of knowledge among students before the residential phase, in addition to giving the chance to create a common virtual community among the participants to the course, especially when there are foreign students. The use of the platform reduces the necessity to send information regarding the course with a lot of e-mails. In addition, it allows students, during the exchange, to stay in contact with the sending institute and to easily fill in the gap for missing lessons after the period of time abroad. Students can continue the regular university career without any problem.

In other words, the VLE permits to achieve additional results: the enhancing of the quality of learning and the implementation of internationalization programmes [4].

Figure 1. The two Moodle platforms and the web addresses

III. THE NEW E-LEARNING PROJECT FOR THE IT-ARMY

Thanks to the expertise proved in e-learning by teachers and technical personnel, COMFOR-SA received the task by IT-Army Staff to set-up and implement a new broad concept about e-learning in the military education. A new modern and easy-going virtual environment where, in a lifelong learning perspective, doctrines and publications combined with online courses are available for all military categories of personnel. It means that groups of experts in a specific area of interest can be able to tailor online courses for internal personnel in accordance with different backgrounds and categories and in relation to a different need to know. Starting from the positive results achieved at COMFOR-SA, the initial idea was to share the experience with the other Military Schools. Their e-learning systems are hosted by COMFOR-SA VLE and supported by E-learning Section. Subsequently the idea was to use this experience and reverse it for all other categories of learners (not only the traditional figure of students). This requested the adoption of multiple actions that could go on in parallel and lead to a final common goal. Different portals were created and a functional

procedure for managing the access was also defined. The COMFOR-SA VLE will operate as Hub for all portals and for the E-learning.

3.1 The methodology

In this project a strategic role is played by teachers, instructors, Subject Matter Experts (SME) and support personnel. The main goal is to create a group of people (a critical mass) involved in e-learning at various levels and with different tasks, able to:

- use MOODLE platform and all plug-ins and resources available;
- prepare learning objects;
- support colleagues in the designing and building of interactive materials.

Two courses on MOODLE (Basic and Advanced) were designed and made compulsory into the curricula needed to be a military teacher. The first Military Online Course (Mil-OC), the basic one, was specifically created for them. The learning strategies adopted in this online course were:

- the collaborative learning among participants (since the learning phase they were pushed to cooperate in different activities, also in the creation of material) [5];
- the peer-to-peer evaluation;
- the change of role: a learner is a student in the open online course but he is required to gradually change into a teacher in an own course where he applies what he learned.
- the support from the teacher became highly important. Through forums and chats he played the role of facilitator and promoted a social and cooperative environment among the participants. The idea is to create a network among future users of MOODLE in the way to grow up as a group of people trying to help each other while learning (crowdsourcing).

3.2 The portal for Self-Paced Courses

This portal was created to compensate for the military personnel's education in a lifelong learning main concept. It is organised for all categories of personnel with the aim to fill any gap in their education. Courses are available in every moment of their career. The University of Turin, thanks to a great experience on open online courses, is contributing in designing them and developing new solutions.

By properly configuring the platform it is possible to tailor a specific personal educational path for each individual. Consequently, in accordance with their progresses, students obtain new E-badges that will be considered as the base for any evaluation as pre-requisite for new e-learning courses. This activity is easily tracked by the system. It permits to use a new capacity of MOODLE platform which is able to delineate educational programmes that will be defined and requested at IT-Army Staff level (centralized definition) for gaining specific competencies.

Figure 2. The portal of Self-Paced Courses

3.3 The portal of knowledge

For any modern organization it is really important to have a location where it is possible to store, update and disseminate doctrines, publications and any documents related to knowledge. This

portal was designed with the purpose of creating a multimedia library where all publications and documents of military interest are available. Also new media with the same purposes are admitted, for example videos.

The main idea is to create a sort of electronic readers' club where learners can easily access contents and afterwards can confront with experts on a specific matter in an interactive and multimedia way. The portal was also designed to host virtual classes where mini-lessons could be delivered for a deeper education and, by using a webcam and a microphone, it could be possible to create a link between experts and learners.

In addition with the resource MOODLE Database, a general publication archive, was created; thanks to an indexed search it is easy to look for a publication with keywords. It is a new important evolution of e-learning, because independently from the MOODLE platform the learner is using in a specific moment, he can link the publication of reference.

The platform gives the opportunity to create a social community, based on the same interests where groups of people start to know each other, to build the team and work together while practising the cooperative learning. The maintenance of publication and their updating will be easily reversed on available courses due to the automatic updating management system of links. There is no need to update every link to a publication in a course in case of changes to the publication.
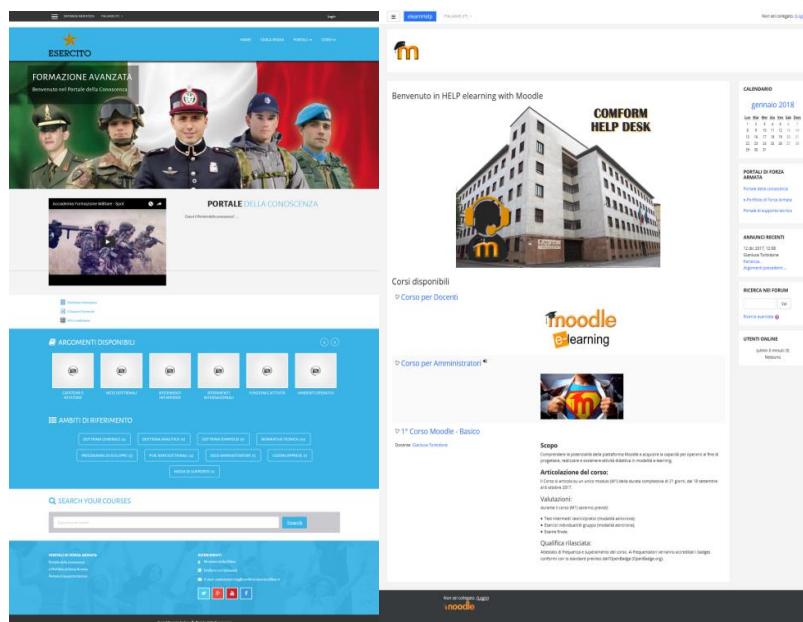

Figure 3- 4. The Portal of Knowledge and the Portal of Support

3.4 The portal for foreign languages

Another big area of interest for Military E-learning is the foreign languages and this portal was designed to provide e-learning formats for foreign languages courses with a special focus on refresh and crash courses. The learning process for foreign languages is a complex one and it requires the use of a variety of tools and plug-ins. For these reasons a dedicated website on MOODLE was created for the IT-Army School for Foreign Languages and the COMFOR-SA Department of Foreign Languages. The highly specialised portal for languages allows students to have a unique and integrated VLE for a deep education in foreign languages and to practice and learn through a lot of specific multimedia resources.

3.5 The IT-Army E-Portfolio

The E-Portfolio, based on MAHARA, is a strategic platform in a long perspective because it is integrated in MOODLE and provides a unique environment for learning and sharing experience. It allows to create and maintain a network of people with the same interests and permits to create more academic contacts, which are extremely important for keeping a solid preparation for teachers. Due to the social aspects provided by MAHARA, personnel can create a personal network of experts,

academics, teachers and colleagues with whom to grow up during the career, share paperwork, acquire peer-to-peer feedback and deepen knowledge with available materials. It could be a special repository for knowledge where it is possible to look for materials for new courses delivered both in presence and online. In this repository it is possible to collect documents created by learners, such as research and case studies. To this end, the University of Turin is developing an automatic system which allows users to construct a personal path of education with the resources of a VLE. This means that military personnel can easily find the learning objects that satisfy his education needs.

3.6 Integration of platforms

All platforms are integrated in a unique environment in Single Sign On (SSO), in this way it is possible to move from one platform to another in a transparent and immediate way. The system is configured in order to have a unique authentication where all the most recent protocols are grouped. The GLUU server permits to gather all the set up for MOODLE and MAHARA. Based on a secondary LDAP architecture and on a secure network, the GLUU server synchronises in a way to provide the authentication token with a SAML2 protocol. The management procedure of users occurs on a secondary LDAP server. The graphic layout is really important for the users in order to orient themselves. The use of the same layout for each MOODLE platform creates familiarity for users. The use of a different colour for each single platform (see the figures) immediately suggests the user where he is working.

3.7 Portal of support

The portal of support, based on MOODLE, is integrated in the system of portals and has a specific task to support all users (teachers and learners) in order to use MOODLE. The goal is to create a fully integrated environment that allows to overrun any obstacles that could be represented by a technical problem or a didactic concern. The supervision will be guaranteed by a group of e-learning experts. An interesting opportunity will be offered by creating a dedicated users' space where they can test and experiment new plug-ins and all MOODLE resources and activities. A short course on how to use MOODLE will be available for students.

IV.   RESULTS AND DISCUSSION

Four portals have been opened since 17th January 2018 so that an analysis of users is not yet available, but in September 2017 the first course on the use of MOODLE was introduced in the IT-Army education system and entirely delivered online. It means that learners attended the course while regularly working. Great part of the activities were asynchronous and just few of them were in a synchronous modality. Contrary to other courses with a mandatory distance learning phase like the Army Staff Course, this time learners were not completely exempted to accomplish daily routine at work. It means that the great part of them attended it during free time and weekends. The learners were selected among teachers, tutors and technical personnel of military schools nationwide. They work in different regions, with a different rank and task. 54 people were admitted to the course but 10 abandoned it (2 of them after the first intermediate tests). The remaining part successfully completed it. The course lasted three weeks and was organised in such a way as to progressively intensify the complexity of knowledge about e-learning in general in combination with MOODLE. The course started with a general presentation of MOODLE and continued with lessons on how to set up a course, explaining how to organize resources and activities, with a specific focus on the messages during the first week. Every week feedback and questionnaires were requested to learners. Tests were prepared in order to allow them to understand the many opportunities that MOODLE offers for teaching and learning. The second week the course focused on how to create a quiz and configure it, and how to manage students' groups. Each participant had to organize his own course with the role of teacher and practically demonstrate what he was learning. This allowed to familiarize with MOODLE. At the end, every course was opened to the other participants evaluation (a peer-to-peer). The teacher gave a personal feedback to each student based on the quality of his work. The third week was dedicated to exploring XERTE, Learning Objectives and editors like HTML. Some tutorials explained how to track, filter and set up conditions during the activities. Transversally during the course students were pushed to use the social environment offered by the platform. Lessons were delivered with all

possibilities offered by the VLE in order to show a wide range of means. Additional materials like books and publications and additional lessons and tutorials were attended on a voluntary basis. In accordance with the different backgrounds and experiences of learners especially in the use of ICT and e-learning, feedback (41 learners replied) offers a lot of ideas, especially because it comes from a class of people that will act as e-learning teachers in the next future. Part of the open comments focuses on problems concerning the attendance of the course while working regularly and how sometimes their commanders were not aware on how much time was necessary to attend the course properly. In some cases, a proper equipment for attending the course was not available in the office workstations. It means that the organisation is trying to change but this improvement requires a change of mentality and this will take time. However the feedback shows a positive reply from the learners. Even if all of them are involved in some didactic activities, they will have to change their way of considering teaching and their way of working. The majority is convinced that the contents of the course are important and related to the teachers' activity and after the course they think that they have improved their skills. They were happy about the support received by the teacher (see Figure 5, the scale is from almost never to quite always, the majority is about "often").
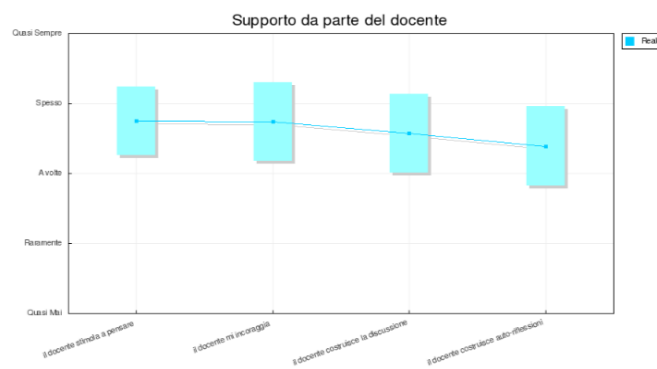

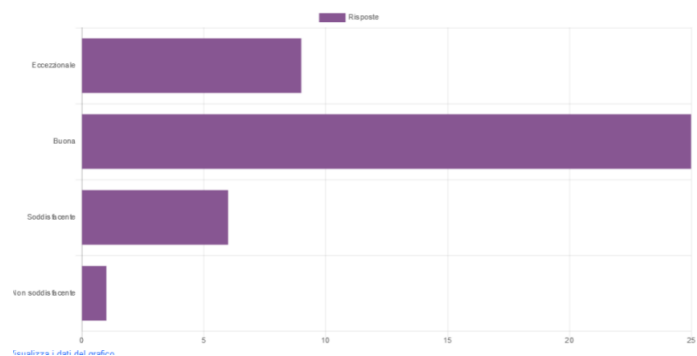Figure 5. Students' feedback about support received by teacher.

Figure 6. Students' feedback about general satisfaction

The general satisfaction about the course (see Figure 6, the scale is from not satisfactory, satisfactory, good and exceptional). Given the heterogeneous composition of the classroom, some of them declared to have not enough digital skills, a quite good number of them (21) showed interest to deepen the knowledge and are ready to attend the Advanced Course that will be launched in Spring 2018 while another group replied "could be" (14) and only a minority is not interested in this chance (6).
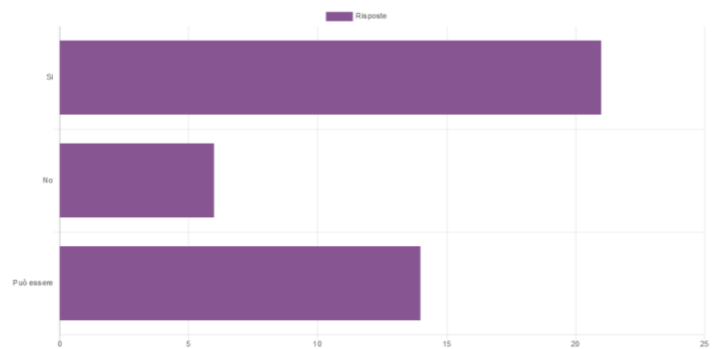
Figure 7. Students' feedback about the possibility to attend an Advanced MOODLE Course

V. CONCLUSION

The introduction of this main concept in e-learning within the military education is having and will have a great impact in future education and training of the Italian Army. The intensive use of VLE, based on MOODLE program, is now available for a modern and interactive didactic for:

- direct support learning for traditional courses;
- distance learning;
- blended courses;
- self-paced learning and Mil-OC;
- disseminate knowledge.

The major investment is now focused on teachers and technical personnel in order to achieve a critical mass of people who are able to use the new technology and to create modern learning objects and courses. For these reasons the Basic MOODLE courses will be available on a regular basis for teachers and an Advanced MOODLE course will be launched very soon. Both courses are now part of the process for being qualified and nominated Military Teachers. These steps are important for pushing a modern qualification of military personnel in a real lifelong learning perspective, in order to be financially sustainable and at the same time suitable for learners.

The COMFOR-SA invested a lot of effort and human and financial resources in the e-learning development because it is considered a special investment for the future of education and training in the military area. Thanks to a privileged relationship in the academic field, mainly with the University of Turin and with other European Union Military Universities (The ESDC network), we are rapidly reaching this goal. The entire area of IT-Army Military Schools will benefit from the use of new technology and a newest and more interactive didactic that aims at developing a modern and up to date education and training for all military students and learners. The intensive use of technology for learning will develop digital skills in all people involved in this main program.

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