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MEASURES TO IMPLEMENT A B-LEARNING LONG DISTANCE EDUCATION MODEL IN THE MILITARY UNIVERSITY INSTITUTE[1]

CONTRIBUTOS PARA A IMPLEMENTAÇÃO DO ENSINO A DISTÂNCIA NA MODALIDADE B-LEARNING NO INSTITUTO UNIVERSITÁRIO MILITAR

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Abstract

This article aims to propose measures to implement a b-learning long distance education model in the Military University Institute. The study focuses on the b-learning modality of the long distance education model, specifically addressing the measures that must be taken to implement it. The methodology uses inductive reasoning, a qualitative research strategy and a comparative or multicase research design to analyse the models used in Brazil and Spain, based on data collected through a conventional literature review. The study revealed that the b-learning model can be implemented in the Military University Institute. Similarly, it was concluded that adopting the proposed measures to implement DE will modernise the teaching and learning process, thus increasing profitability in terms of human, material and financial resources.

Keywords: b-learning, e-learning, tutorial, quality, certification and benchmarking.

Resumo

O presente artigo pretende propor contributos, que possam auxiliar na implementação do ensino a distância na modalidade b-learning no Instituto Universitário Militar. Neste sentido, identifica-se como objeto de estudo, o ensino a distância na modalidade b-learning, em particular na procura de contributos para a sua implementação. A metodologia seguida está assente num raciocínio indutivo através de uma estratégia de investigação qualitativa consubstanciada num desenho de pesquisa comparativo ou multicaso (Brasil e Espanha), que assentam na interpretação de dados recolhidos por pesquisa documental clássica. O estudo realizado demonstra que o ensino a distância na modalidade b-learning pode ser implementado no Instituto Universitário Militar. De igual modo, a investigação conclui que a adoção dos contributos apresentados para a implementação do EaD, permitirá a modernização do ensino e aprendizagem, possibilitando deste modo, uma maior rentabilidade no que diz respeito aos recursos humanos, materiais e financeiros.

Palavras-chave: *b-learning, e-learning, tutorial, qualidade, certificação e benchmarking.*

1. Introduction

As modern societies become more competitive, ensuring people's quality of life increasingly requires knowledge-based skills. Not only does the knowledge people acquire have a shorter lifespan, digital society poses new challenges in terms of both education and training – the concept of "learning for life" has given way to a new paradigm of education and training, that of "lifelong learning" (Sousa, 2011, p.1).

Due to their specific features and the missions that they must perform, the Armed Forces (AAFF) and the Republican National Guard (GNR) must provide ongoing training to their staff, as this is an essential and fundamental requirement to achieve their mission. However, these important training activities take human resources away from their workplace,

therefore it would be useful if the training periods could be reduced or adjusted without sacrificing the quality of the education provided.

The advances in Information and Communication Technologies have revolutionised the teaching and learning process and introduced new modalities of long distance training. One such modality is b-learning (blended learning), an innovative methodology that allows for "[…] flexibility in terms of space, time and learning pace" (Vieira, 2010, p.34).

However, the decision to adopt this Distance Education (DE) modality implies changes both at the organizational level and in terms of the qualifications of the human resources that will use the system (Raposo, 2007, p.v).

This type of teaching is still relatively unexplored by the AAFF and the GNR, and the courses offered at the Military University Institute (IUM) are mainly taught in a classroom system. Thus, this study is relevant because it proposes measures to implement a b-learning DE model, which will both modernise the training process and increase the profitability of human, material and financial resources.

The object of study of this investigation is the b-learning DE model, more specifically the measures that can be carried out to implement it at the IUM. To achieve this goal, the study was delimited in three ways: time, space and content (Santos & Lima, 2016, p.44).

In terms of time, the study was delimited to the implementation of b-learning in the group classes taught at the IUM. This decision was based on the fact that a blended approach offers important opportunities to share knowledge through group dynamics that can only be created in a face-to-face setting. Moreover, the literature review only included studies carried out over the last three years because that was when the latest major restructuring of the AAFF occurred, but also because there have been significant technological advances since then, such as the development of new platforms to support the different types of DE.

The study was delimited in terms of space to the IUM and to similar education establishments in Brazil and Spain. Finally, in terms of content, the study will address the b-learning DE model.

The General Objective (GO) of this investigation is *To propose measures to implement a b-learning DE model in the IUM*. The GO was achieved by accomplishing the three Specific Objectives (SO) described in Table 1.

Table 1 – Specific objectives

SO	Description
1	To analyse DE in the AAFF and the GNR
2	To analyse b-learning in similar education establishments of c countries
3	To analyse measures that can be taken to implement b-learning in the IUM.

The following Research Question (RQ) was defined to help guide the investigation: *What measures can be taken to implement a b-learning DE model in the IUM?*

2. Theoretical and conceptual framework

This chapter contains the literature review and presents the state-of-the-art and the analysis model.

2.1. Literature review and key concepts

This section will outline the key concepts that underpin the study's conceptual framework (Figure 1).

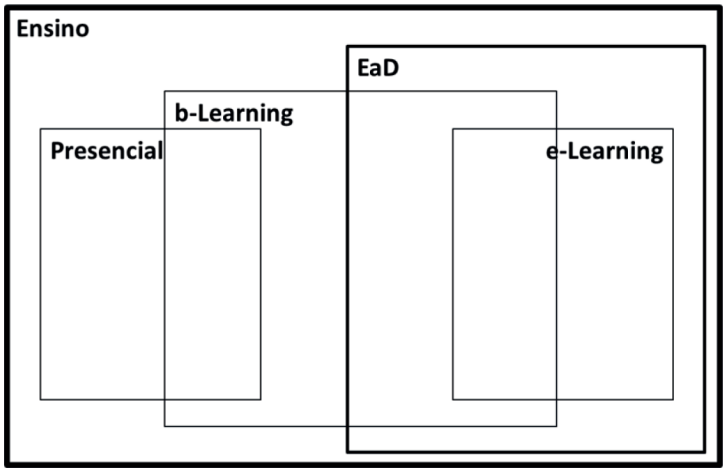

Figure 1 – Conceptual framework
Source: Ferreira (2018)

2.1.1. Distance education

The DE model enables learning by removing the limitations of space and time. It is used in educational contexts that involve geographic and / or temporal distance between teachers and students, the use of technology to distribute the learning materials (except in the case of correspondence courses) and to communicate with students, who have control over their own learning process (Lima & Capitão, 2003, p.35).

E-learning or electronic learning can be defined as:

> […] a type of interactive distance learning that involves the use of new multimedia and internet technologies to present study materials in different formats, in which the communication between the trainer (when there is one) and trainees can be synchronous (in real time) or asynchronous (flexible study hours / schedule).
>
> INFOPÉDIA, (2017).

This concept is used broadly to encompass a wide range of activities and is not always synonymous with quality. To address this problem, the University of Minho elaborated a Quality Charter for e-learning, which defines 4 quality indicators / requirements (organization,

pedagogy, technology and evaluation) that can be used to assess the quality cycle and meet the needs of both teachers and students (Dias et al, 2014, p.3).

2.1.1.1. Organization

This indicator specifies the criteria to identify the needs of a given course, the members of the teaching team, the syllabus, and the technology that will be used to support this teaching model. In practical terms, this entails identifying the relevance of the course, the pedagogical skills required, the relevance of the study materials and the technologies that best fit the course.

2.1.1.2. Pedagogy

This indicator clarifies and adds rigor to the pedagogical model. It is used to determine if the course design fits the proposed methodology, if the course contents and the order in which they are presented is coherent, and by defining a set of rules for the model and describing how they will be monitored.

2.1.1.3. Technology

The use of technology (and its ease of use) is a key aspect of this type of model because it promotes trainee autonomy and interaction among trainees.

2.1.1.4. Evaluation

This indicator should assess both teaching and learning. The stages of the assessment process should be identified, as well as the learning assessment instruments that can be used during the assessment process to collect and analyse data from learning activities.

2.1.2. B-learning

B-learning can be defined as a hybrid model (Mason & Rennie, 2006, p.xxxii) with an online training component and an on-site component. It can also be described as:

> […] A form of knowledge transfer that acknowledges the benefits of making part of the course materials available online and combines them with those of having a physical classroom with a group of students and a teacher or trainer.
>
> Mesquita (2007, p.43)

2.2. Analysis model

The analysis model (Table 2) used in the study includes four dimensions: organization, pedagogy, technology and evaluation, and the key concepts are DE and b-learning.

Table 2 – Analysis model

Specific objectives	Research Question	What measures can be taken to implement a b-learning DE model in the IUM?			
	Subsidiary Questions	**Concepts**	**Dimensions**	**Variables**	**Indicators**
SO 1 To analyse DE in the AAFF and the GNR	**SQ 1** What are the b-learning models of similar establishments from similar countries?	DE	Organization	b-Learning	Current model
					Course curricular structure
				Appropriateness of the qualifications of the teaching team	Current training offer
					Skill certification
					Availability of a teaching team
					Availability of a DE support system
					Support platforms
				Monitoring and support of trainees	Tutoring
					Current platform
					Guides / manuals
			Pedagogy	Methodology	Tutoring: face-to-face or remote
				Learning strategies	Tools
					e-Content
			Technology	e- Content	PDF, videos, links, PowerPoint presentations, chat, video conference, etc.
				DE platform	moodle, others
			Evaluation	Assessment	Types of assessment
					Assessment criteria
				Continuous improvement	Teaching model
					Monitoring
					Assessment model
					Technology use

3. Methodology and Method

This chapter presents the methodology and methods that provided the answer to the RQ.

3.1. Methodology

The study used inductive reasoning supported by a qualitative research strategy (Santos & Lima, 2016, p.31). This involved collecting data from different sources by carrying out a literature review and interviewing experts whose experience and knowledge of the topic could enrich the investigation.

A comparative or multicase research design was adopted. According to Bryman (2012), this type of design is best used when one wishes to analyse two or more contrasting cases using identical methods. Finally, a benchmarking analysis was carried out to identify measures that can be included in the model that will be implemented in the IUM and to ensure that the b-learning model can be monitored through the quality cycle.

An objective analysis of the b-learning DE model was carried out using the IUM teaching structure as the study sample because this enabled the analysis of a complete universe

from the AAFF and the GNR. By analysing current benchmarks in similar countries, it was possible to consistently identify the measures that must be taken to implement b-learning in the IUM.

3.2. Method

This subchapter describes the establishments that participated in the study, the procedure, and the data collection and processing tools and techniques.

3.2.1. Participants and procedure

Participants. The foreign establishments that participated in the study were the Spanish *Escuela Superior de las Fuerzas Armadas* (ESFAS) and the Officer Improvement School (EsAO) of the Brazilian Army. The Portuguese participants were the Army Sergeants School (ESE), the School of Arms (EA), the Signals Regiment, the GNR Doctrine and Training School and Command, the Air Force Military and Technical Training Centre, and the Portuguese Navy School of Naval Technologies.

3.2.2. Data collection instrument

The data were collected analysed and processed throughout the investigation, which was structured in 3 phases: an exploratory phase, an analytical phase and a conclusive phase (Santos & Lima, 2016b). One of the data collection instruments used in the first phase was the literature review, which focused on articles, documents and research studies on B-learning.

The other instrument used in this phase was the interview. In the first phase, exploratory interviews were used to help delimit the topic. In the second phase, semi-structured interviews were conducted to support the data analysis and conclusions presented in chapters 4 and 5.

3.2.3. Data processing techniques

The data were processed using the categorical content analysis_technique (Santos & Lima, 2016, p.123) to analyse the categories listed in Table 1 using the interviewees and the SQ as variables.

Table 3 - Categorical content analysis

Interviewees	SQ 1	SQ 2	SQ 3
LtCol Amaral LtCol Sebastião LtCol Ferreira Major Gonçalves Major Queiroz Lieutenant Commander Silva	Portugal		Portugal
LtCol Juan Manuel Ramos Santamaria LtCol Luis António		Spain Brazil	Spain Brazil

4. Presentation of data and discussion of findings

This chapter will provide the answer to the three SQs and the RQ.

4.1. Distance education in the Armed Forces and the National Republican Guard

4.1.1. Distance education in the Armed Forces

In 1992, the Navy created the Navy Centre of Distance Education to develop and deliver DE courses, in order to ensure that all Navy personnel completed the 12th grade level of education (Piriquito, 2004, p.24). The Navy's main training document is the training quality manual, which identifies and describes all stages of the training cycle and sets the quality requirements for the training establishments of the Navy Professional Training System. This system provides education in a classroom setting. However, some courses are also available in both e-learning and b-learning (Marinha Portuguesa, 2017). The Navy b-learning platform currently offers 12 courses.

Guideline No. 14 (2014, p.1) issued by the Portuguese Army defines procedures and establishes specific guidelines to implement DE using either an e-learning or b-learning model. In 2015, Guideline No. 87/CEME/15 issued guidelines to consolidate distance education in training and education establishments, tasking the Army with consolidating DE (preferably through the e-learning model) by 2015/2016 to optimise the resources used in training and education (Portuguese Army, 2015, pp.1-2). Currently, the Arms School, the Army Sergeants School and the Services School offer several DE courses in a b-learning system through the moodle platform.

According to Piriquito (2004, p.25), in 2003, the Air Force defined "a new course model for the General Air Warfare Course, which consisted of a three-month non-resident phase and a five-month resident phase." The purpose of this order was "to reduce the time officers were absent from their assigned units and gradually implement [DE] in the Air Force" (Piriquito, 2004, p.25). Currently, the Air Force has an e-learning content office responsible for administering b-learning courses through an online platform. In 2016, the first b-learning course was approved by the Portuguese Institute for Employment and Vocational Training.

4.1.2. Distance education in the National Republican Guard

DE in the GNR is addressed in the regulations of the courses that use this teaching model. The GNR Training System first offered this teaching modality in 2007, when the Portal for Vocational Training of the Ministry of Internal Administration was created. Blended learning was introduced in the Corporal Course in 2008 and is still offered today (Augusto, 2009, p.19). This teaching model is also used in the Captain Course of the Guard School (GNR, 2015, p.5).

4.1.3. Distance education in the Military University Institute

According to Sousa (2011, p.43), DE was introduced in the IUM through Information No. 30 issued in 2010, which was approved by order of the then Director of the IESM. The information was accompanied by the following proposals: contacting the Open University to inquire about the possibility of providing consulting in distance education to the IESM;

adopting the moodle platform; and taking measures to implement the b-learning project in the IESM (Sousa, 2011, pp.45–46).

Only one of the proposals outlined in the Information was put into practice, the implementation of the moodle platform still in use today, that is, the b-learning project was not implemented (Sousa, 2011, pp.46–48). However, according to Amaral (2017), there have been several attempts to implement a b-learning distance education model in the IUM.

It can be inferred from the above that the current teaching model of the IUM is based on face-to-face teaching.

4.1.4. Brief overview and answer to SQ 1

The answer to SQ 1, What are the DE projects of the AAFF and the GNR?, is that, over the last years, both the AAFF and the GNR have made efforts to develop a b-learning teaching model, and that some b-Learning courses are offered in each branch and in the GNR.

The contacts initiated in 2010 led to a protocol between the IUM and Open University, and the moodle platform introduced at the time is still used today, unlike the b-learning project (proposed in Information No. 30 of 2010), although some attempts have been made to implement it.

4.2. B-learning in education establishments of similar countries

This chapter analyses the distance education systems of two countries with whom Portugal has similarities, Brazil and Spain, in order to understand the difficulties, opportunities, benefits and downsides of this methodology. This analysis will help identify measures to implement a b-learning DE model in the IUM.

4.2.1. Officer Improvement School of the Brazilian Army

4.2.1.1. Background

Founded in 1920 in the city of Rio de Janeiro, the Officer Improvement School (EsAO) is a military education establishment that provides advanced training for Brazilian Army captains (Ministério da Defesa, 2017). This Military Higher Education Establishment offers specialisation courses (*stricto* and *lato sensu*) for career officers of the Brazilian Army, the Brazilian Marine Corps, and officers from similar countries (Oliveira and Silveira, 2010, pp.3–4).

These courses prepare officers to command and direct different types of units, enabling them to perform General Staff roles and other duties required of senior Army officers (Ministry of Defence, 2017).

4.2.1.2. Distance education in the Officer Improvement School of the Brazilian Army

DE is well consolidated in Brazilian Military Education, with numerous benefits for the Army and for the student captains. The Brazilian Army Education Portal describes some of these advantages:

> […] reaching students all over the country and in other countries, promoting autonomy and respect for individual learning processes, providing equal access to information, reducing long-term costs, eliminating geographical barriers, promoting continuous training, eliminating the need for time away from the workplace, rationalising resources, and providing preparatory education and support to their dependents.
>
> Exército Brasileiro, (2016).

The EsAO of the Brazilian Army offers a DE course (the CEaD), taught by an officer qualified with the General Staff Course of the Brazilian Army and eight captain instructors who completed their training at the EsAO. These officers act as tutors and are tasked with delivering the first year of the Officer Improvement Course (CAO) (DE phase) and with ensuring that students are learning in a consistent and satisfactory manner.

On average, per year, the CEaD is delivered to about 450 student captains attending the first year of the CAO (G. Junior, email interview, 02 November 2017).

The EaD phase has a workload of 720 hours delivered over 40 weeks, and is structured as follows: (i) 400 study hours outside the working period, which corresponds to two hours per day or ten hours per week over 40 weeks; (ii) 320 hours during the working period, which corresponds to eight hours per week over 40 weeks (EsAO, 2016, p.11).

The course provides captains the knowledge they need to perform their duties in peacetime and wartime conditions. The course structure is based on the principle of self-learning and aims to better prepare officers to perform their duties and meet the needs of the Army (EsAO, 2016, p.12).

4.2.1.3. Characterisation of the b-learning project of the Officer Improvement School of the Brazilian Army

At EsAO, the first year of the CAO is offered in a b-learning format through a webpage[2] where student captains can access the course contents during the DE phase. Students are provided all the materials they need to learn and fully interact online. This involves the use of specific tools such as the Virtual Learning Environment provided by the moodle platform and the Brazilian Army Education Portal, where the course contents are made available through *webAula* (the virtual learning environment of the Brazilian Army).

Student officers are given a compact disk (CD) containing the syllabi and objectives of the disciplines covered in the CAO. The CD also includes publications and the *webAula* teaching tool (Oliveira and Silveira, 2010, p.8).

According to Oliveira and Silveira (2010, p.7), the "CEaD instructors tutor student officers through Skype, messenger and *webAula* (Education Portal), or alternatively by telephone, FAX or email".

> In addition to the tutoring provided by the CEaD instructors, each student officer is assigned a local tutor (a captain who has already completed the EsAO courses). This tutor, who is appointed by the commander of the unit where the student officer is serving, assists the student in organizing the study programme, supervises school tasks and checks evaluations. Thus, the tutor monitors the learning process, allowing students the opportunity to correct mistakes during this period.
>
> (EsAO, 2016, p.44)

[2] Available from http://www.esao.ensino.eb.br [Accessed 12 November 2017].

Students are allocated eight study hours per week in their military organizations. The local tutor is responsible for supervising the training and for transmitting the necessary knowledge (EsAO, 2016, p.21).

During the course, students undergo five mandatory Training Assessments (TA), the first three of which are delivered online (EsAO, 2016, p.15). The online assessment process is conducted in accordance to the standards set out in the CAO Guide, which specifies that TA1, TA2 and TA3 are made available in the Army Education Portal (webAula) for students to perform in a location of their choosing, in their units or elsewhere. The local tutor plays an important role in supporting, executing and checking the tasks performed by the student. Additionally, the system itself corrects these assessments (EsAO, 2016, p.15).

As TA4 and TA5 are more complex, they are delivered in a controlled environment in a face-to-face setting. The study materials and the answers to the assessment questions can be accessed in the virtual environment (EsAO, 2016, p.15).

Finally, Table 4 lists the disciplines that make up the DE curriculum, which are mainly taught in a virtual environment (b-learning).

Table 4 – Disciplines included in the DE phase of the CAO (first year)

Discipline	Workload (hours)
Scientific Research Methodology	90
Strategy	30
Political Science	60
International Relations	60
Military History	45
Military Leadership	30
Professional Military Ethics	90
Organizational Management	150
Fundamentals of Land Doctrine	165
Total	**720**

Source: EsAO (2016, pp.26-27)

4.2.1.4. Officer Improvement Course of the Brazilian Army

The CAO is the Brazilian equivalent to the Field Grade Officers Course (CPOS). Its current structure was set out in Ordinance No. 104 of 20 October 1998 issued by the Army General Staff, which established the CAO for:

> […] captains of the Infantry, Cavalry, Artillery, Engineering, Signals, Logistics, and Military Equipment arms and services. The course is integrated in the military education system and is delivered over two years, the first of which is offered through DE and the second in a face-to-face setting at EsAO.
>
> (EsAO, 2016, p.11)

> According to the EsAO, "the course prepares officers who have graduated from the *Agulhas Negras* Military Academy to hold positions and perform the duties of the rank of enhanced captain and senior officer in the Army Organizations that do not require Command and General Staff qualifications."
>
> (EsAO, 2016, p.11)

4.2.2. Escuela Superior de las Fuerzas Armadas

4.2.2.1. Background

The *Centro Superior de Estudios de la Defensa* established in 1964, merging the Higher Defence Studies Schools and the Joint Staff School, aims to prepare officers with General Staff training to perform joint general staff duties. In 1999, following a restructuring of the Spanish AAFF, the general staff schools of the branches were merged into the *Escuela Superior de las Fuerzas Armadas* (ESFAS), which is integrated in the *Centro Superior de Estudios de la Defensa Nacional* (Gobierno de Espana, 2017).

The Spanish policy guidelines state that the Military Education System should assist the AAFF during the Defence restructuring process by introducing new approaches, technologies, doctrines and concepts, as well as work to change mindsets by promoting the use of new procedures to plan, integrate and apply the doctrine (Gobierno de Espana, 2017).

The ESFAS participates in this restructuring by providing specific solid foundations to consolidate this common structure. Because it is difficult to envision any operation that does not involve the use of different complementary means, an integrative action by the AAFF is fundamental. The ESFAS has made efforts to channel and promote this activity, harnessing students' knowledge and experience and stimulating their intellectual curiosity and creative ability to provide them the tools they will need in the future (Gobierno de Espana, 2017).

4.2.2.2. Distance education in the *Escuela Superior de las Fuerzas Armadas*

In its current form, the ESFAS Virtual Education Department is a recent department established by Order DEF/416/17 of 4 May 2017 under the authority of the ESFAS Director. The Department currently consists of a colonel who doubles as Lecturer and Department Director, a Lecturer Major, an Engineer Captain and an 1st Corporal (ESFAS, 2017).

The ESFAS Virtual Education Department performs the following tasks: (i) coordinating the Corporate Virtual Campus of the Ministry of Defence, organizing all matters related to the General Directorate of Recruitment and Military Education; (ii) collecting, analysing and consolidating proposals from departments and teachers to implement and promote change and improvement; (iii) supporting the tutoring process by managing and providing the tools required to supervise and guide the learning process and by providing technical support to teachers and students in using the virtual academic platform (ESFAS, 2017).

4.2.2.3. Characterisation of b-learning in the *Escuela Superior de las Fuerzas Armadas*

This teaching modality is provided through a technological platform, the Virtual Academic Portal, which uses both hardware and software to carry out the teaching and learning process entirely in a virtual environment, execute all administrative processes, and provide communication and collaboration environments between the different roles that are assigned in the face-to-face phase of training. To support career-long learning in the military, users can connect to the Virtual Academic Portal at a time and place of their choosing through the corporate intranet or the Internet to download content packs (ESFAS, 2017).

Before the current curricular structure was introduced, the Virtual Academic Portal provided access to study materials in the DE phase. Thus, it was not used as a communication tool by the academic community, nor as a tool to facilitate collaborative work and provide administrative support, academic guidance or tutoring in the face-to-face phase (ESFAS, 2017).

The Virtual Academic Portal is based on the moodle software. Its modular structure allows the integration of the Learning Management System, the Virtual Learning Environment and the administrator tools to create virtual learning contents. Moodle is one of the few free commercial platforms that focus on learning rather than on tools, and thus enables and facilitates the use of constructivist pedagogy (ESFAS, 2017).

One of the most common mistakes in distance education is putting technology before pedagogy. However, using the Moodle software, it is possible to cover all the pedagogical dimensions of a virtual class. This teaching model gives students control over their learning process, allowing them to adjust their work pace, select the content, take an active role in learning, practice collaborative teaching and use tools to discuss and create shared knowledge (ESFAS, 2017).

4.2.2.4. The *Acceso a Comandante* course [Commanders Course]

This course is equivalent to the CPOS. One of the objectives of the course, which are described and set down in the law that regulates the promotion to senior officer, is to train officers to participate in joint operations (Ministerio de Defensa, 2014).

The course is structured in two phases: a specialised training phase taught by the students' branch and a joint phase delivered at the ESFAS. Both phases have a residence and a non-residence component, that is, the course is offered in a b-learning distance education model.

During the distance education period, students complete assignments or questionnaires as defined in the course plan and send them the teacher / tutor on the dates set for the assessment. The purpose of the coursework is to assess student performance through the effort they put into the work and the knowledge they acquired. The work carried out in this phase is graded according to a go / no go system (Ministry of Defence, 2014). The joint phase of the course grants 5.2 ECTS (European Credit Transfer System) in total. Of these, 1.2 ECTS correspond to the non-resident phase (Table 5), with a 30-hour workload, and 4 ECTS to the resident phase, with a 100-hour workload (Gobierno de Espana, 2017).

Table 5 – Curricular structure of the non-resident phase

Discipline	Workload (hours) ECTS
Organization	30 hours 1.2 ECTS
Logistics	
Strategy	
Operations I	
Intelligece	

Source: Adapted from Ministerio de Defensa, (2014).

4.2.3. Brief overview and answer to SQ2

In order to answer SQ 2, *What are the b-learning projects of the education establishments of similar countries?"*, this chapter described in general terms the DE model used by the Spanish Army and AAFF to enhance their staff, with special focus on b-learning.

The importance of b-learning for the Brazilian Army is understandable considering the benefits in terms of rationalisation of human, material and financial resources. Furthermore, the virtual environment used by Brazilian teachers and students offers a wide range of possibilities, from providing access to content to conducting assessments and tutoring. Moreover, some disciplines do not require face–to-face interaction and can be taught online.

A little over a decade ago, the Spanish AAFF made the decision to innovate the military education system to optimise the use of its human and material resources. Analysing the data collected in the study revealed that the virtual environment used by teachers and students offers numerous benefits and opportunities not only for delivering promotion courses but also for keeping the skills of military personnel up to date.

Although this course is at an earlier stage of development than courses such as the Joint Staff Course, the b-learning model has proved an efficient and effective way of training staff, despite the fact that it is still being optimised and improved. A system such as moodle not only reduces costs but also has the advantage of providing a platform with high potential for development. Considering that the team that supports the DE capability consists of only four elements, the investment in terms of human resources is small, which makes it easier to implement a b-learning DE model.

Finally, the data presented above are the result of years of experience and proven efficiency and effectiveness, and can be used as a benchmark by other military education establishments, both national and international.

4.3. Analysis of international cases (benchmarking study)

This study presents a set of requirements for the implementation of b-learning in the IUM, using as a benchmark two similar countries where the process is already consolidated. The tool of analysis was the benchmarking method, which was used to determine a set of fundamental measures that must be taken to implement the process. In order to build a complete cycle, which is necessary for the whole mechanism to function properly, another tool – the quality charter –must be analysed before listing a set of excellence practices, that is, actions that, when performed, ensure that the objectives are achieved.

4.3.1. Benchmarking (comparative performance analysis)

Benchmarking is a process that has more benefits than downsides (Table 6).

> It can be defined […] as an attempt to improve business practices and achieve superior performance. It is tool to compare business comparison and business management tool that begins with thorough research and ends with the implementation of specific actions.
>
> (Moura, 2017)

According to the European Commission (cited in Moura, 2017), benchmarking is a "continuous and systematic process by which organizations' performances and their functions or processes can be compared against those considered to be the 'best-in-class', aiming not only at standardising performance levels, but also at exceeding them". That is, it aims to improve the efficiency of a firm by using another firm (or firms) as a benchmark by researching that firm and comparing both to identify aspects that can be improved (Moura, 2017).

Table 6 – Benefits and downsides of benchmarking

Benefits	Downsides
Acquiring knowledge	Only copying other systems
Identifying critical success factors	Loss of identity
Professionalising processes	Poorly executed / detrimental comparison
Decreasing errors	
Reducing costs	
Identifying objectives and priorities	

Source: Adapted from Moura (2017).

Tables 7 and 8 present the set of measures that can be taken to implement b-learning in the IUM, using the benchmark method to compare it to education institutions of two similar countries.

Table 7 – Benchmark study on b-learning

	Course Organization, Logistics and Trainee Information			Course Design / Pedagogical Model	
	DE model	Appropriateness of the skills of the teaching team	Supervision and support to trainees	Methodology	Learning Strategies[3]
IUM	b-learning	Training the teaching team (e-Trainers[4]) to use the platform	Dynamic pedagogical monitoring	Mandatory tutoring	Learning strategies are required to use synchronous and asynchronous tools
		Human resources with technical skills to operate the platform	Active tutoring[5]	Individualised or group training (synchronous and asynchronous)	Discussion forums and e-Content
		Human resources with technical skills to provide technical support to the teaching team	Guide / manual describing the procedures and objectives and the course plan	E-Trainer / e-Trainee interaction and interaction between e-Trainees	
			Helpdesk[6]	Mixed (face-to-face and remote)	

Source: Adapted from Dias et al. (2014)

[3] Sequence of procedures or activities that are defined to facilitate the acquisition, storage and / or use of information (Revista Gestão Universitária, 2016).

[4] An e-trainer is responsible for planning, implementing, guiding, monitoring and assessing a b-learning training course (Training of Trainers, n.d.).

[5] Assisting students and answering questions / clarifying issues related to the course topics, monitoring learning progress, and encouraging e-Trainees to participate in the process.

[6] User support service that provides technical and computer support and troubleshooting.

Table 8 – Benchmark study on b-learning

	Technologies			Assessment and Continuous Improvement	
	e-contents	**Platform**	**Evaluation**	**Continuous improvement**	**Certification**
IUM	PDF, videos, links, PowerPoint presentations, flash elements, chat, video conference	Moodle[7]	Learning is assessed according to predefined criteria for the course: diagnostic (when needed), formative[8] and summative assessments[9]. Coursework, multiple choice questionnaires, participation in forums and / or exercises.	Training reaction questionnaires are delivered to improve the pedagogical, technical and curricular components	The process is accredited by the Directorate of Quality and Accreditation Services, an entity tasked with managing the Training Entity Certification System (or other equivalent)

Source: Adapted from Dias et al. (2014)

4.3.2. Quality Charter

According to Dias et al. (2014, p.45), this Charter provides a framework by which to "assess and improve b-learning models and practices, as well as strategies and requirements for a model to regulate this mode of education and training".

> […] the adopted model was designed with the following principles in mind: (i) learner orientation, as, whatever the course design and the intervention context, e-Trainees should be the focal point of the process. The principles of flexibility, accessibility and appropriateness to the students' needs must be present in all procedures and actions; (ii) b-learning should be a flexible learning model with a permanent focus on human resource development; (iii) due to the rapid pace of technological progress, b-learning requires constant adaptation to ensure that the courses keep up with the evolution of the system, organizations and people.
>
> (Dias et al, 2014, p.45)

The same author (2014, p.45) provides a structure for the Quality Charter (presented in Table 9), which includes the following elements:

Requirements – Domains – Criteria – Indicators (to be defined by the entity)

Table 9 - Requirements and intervention domains

Requirements	Intervention domains
Organizational	Course organization, logistics and trainee information
Pedagogical	Course design
Technological	e-Content and platforms
Continuous improvement / Assessments	Evaluation

Source: Adapted from Dias et al. (2014, p.45)

[7] Implementada no Instituto desde 18 de fevereiro de 2010.

[8] Continuous and systematic assessment used to make a diagnostic, allowing the e-Trainer and e-Trainee and other legally authorised entities to obtain information on the progress of the learning processes in order to adjust processes and strategies (DGE, n.d.).

[9] Overall assessment that determines the students' grade and approval in each curricular unit, and the completion and certification of the learning level (DGE, n.d.).

According to Dias et al. (2014, p.46.), "criteria were defined for each intervention domain, which consist of the benchmarks for best practices broken down into indicators, which in turn represent actions that are considered positive". Thus, these benchmarks reveal the measures that must be taken for an action to be considered a best practice that improves the quality of b-learning (Figure 2).

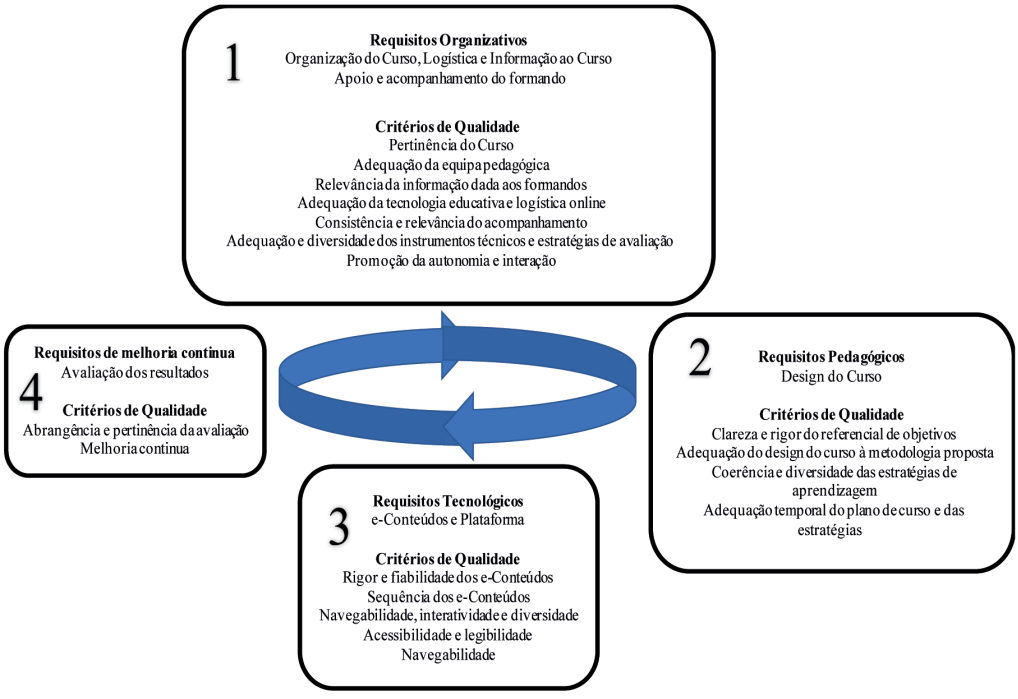

Figure 2 – Quality Cycle

Source: Adapted from Dias et al. (2014)

4.3.3. Best practices

> Best practices consist of identifying the activities that improve quality: (i) organizational requirements: providing learners the necessary elements to understand and use the learning instruments. Active tutoring, which implies taking an active role in supporting and monitoring e-Trainees according to the phase of the training process and the dynamics between group members; (ii) pedagogical requirements: the course design, the learning strategies and the e-Content are diversified and tailored to the learning needs of e-Trainees. There are different communication channels to share experiences and knowledge, which fosters a positive and encouraging learning climate (iii) technological requirements: the e-Content is available in different formats and designed to facilitate the interaction between trainer and trainees, increasing the latter's motivation to learn; (iv) continuous improvement requirements: there are mechanisms in place to systematically and regularly assess student outcomes, learning and satisfaction and the quality of the course or training programme.
>
> (Dias et al., 2014, pp. 48–51)

4.3.4. Brief overview and answer to SQ 3

To answer SQ 3, *What measures can be taken to implement b-learning in the IUM?*, this chapter briefly presented the set of measures that must be taken to begin the process of implementing b-learning in the IUM.

This comparative study assessed four key areas that serve as a framework for the initial project: course organization, pedagogy, technology, and evaluation. Regarding the first area, there is a need for resources and for teaching staff with the required skills. With regards to the second area, this teaching model requires tutors and the use of different tools to transfer information. As for technology, the IUM already uses the moodle platform. Finally, in regards to evaluation, this model requires that both teaching and learning are assessed through set of factors that, when present, increase the likelihood of successful outcomes.

However, a quality assessment system is essential for these measures to be effectively implemented because it is the only way to ensure that best practices are implemented and confirmed.

4.4. Implementing the b-learning DE model in the IUM and answer to the RQ

The study identified the key pillars of a future b-learning model for the IUM. These pillars should correspond to four aspects: course organization, pedagogical model, technology requirements and evaluation model. The course organization should focus on 2 areas: a specialised human component and a physical support component. The pedagogical model should be based on a plan that enables both effective interaction between e-trainer and e-trainees and a learning strategy based on e-content and discussion forums. As for technology, the IUM already uses the moodle platform, which can be used to support this teaching model. Finally, the evaluation model should include formative, summative and possibly diagnostic assessments to ascertain if the knowledge defined in the training objectives has been acquired.

The answer to the RQ, *What measures can be taken to implement the b-learning DE model in the IUM?*, is that, over the last years, both the AAFF and the GNR have made efforts to develop a b-learning system, and that some b-Learning courses are offered by each branch and in the GNR. Therefore, to answer the RQ, the following measures are proposed:

– With regards to course organization, logistics and information provided to trainees, there is a need for: (i) a pool of trainers specialised in this type of teaching (e-trainers), who can provide constant pedagogical support; (ii) technical personnel to maintain and operate the platform and provide technical support to the teaching team and the trainees; (iii) a procedure guide available in physical and / or electronic form; (iv) active tutoring to assist students and answer any questions and issues they may have about the course topics.

– The course design and the pedagogical model should be based on a plan that enables both effective interaction between e-trainer and e-trainees and a learning strategy based on e-content (PDF, PowerPoint presentations, etc.) and discussion forums.

– As for technology, the moodle platform is an important element in developing this teaching modality. Therefore, it is important to ensure that this system that uses the internet and / or local data networks to manage educational activities is used in the flexible and accessible manner it was designed for.

– As for evaluation and continuous improvement, the first should include formative, summative and possibly diagnostic assessments to ascertain if the knowledge defined in the training objectives has been acquired. With regard to continuous improvement, Training Reaction Questionnaires should be delivered to analyse the following aspects:

- Pedagogical Component – focus on improving the teaching techniques used by the e-trainer;
- Technical Component – focus on the system / platform and on improving computer support systems;
- Curriculum Component – focus on the Course Plan and on improving and / or adjusting the course curriculum.

If these measures are taken as described, the conditions will be met to successfully implement a b-learning DE model in the IUM. However, this can only be verified after the process is underway, and will require both constant monitoring and continuous improvement.

5. Conclusions

To better clarify the conclusions and findings of the study, this section will begin by restating the General Objective (GO): to propose measures to implement a b-learning DE model in the IUM. This GO was divided into three SO, which helped answer the RQ: what measures can be taken to implement a b-learning DE model in the IUM?

To answer the RQ, three SQ were formulated, which were analysed sequentially in their respective chapters. To that end, the study used a methodology which included inductive reasoning, a qualitative research strategy and a comparative or multicase research design. Two education establishments of similar countries were used as a reference for comparison using benchmarking to identify the measures that must be taken to implement a b-learning system.

The first chapter presented the literature review and outlined the methodology used in the investigation. Simultaneously, an analysis model was elaborated to guide the research work and a body of concepts was defined to clarify the use of some terms relevant to the topic of this study.

The second chapter, which provided an answer to SQ 1, analysed DE in the AAFF and the GNR, which already offer some courses in a b-learning system. The DE system of the IUM was also analysed. The research revealed that implementing this system will entail significant changes to the teaching process.

The third chapter analysed two DE systems of similar countries, thus providing an answer to SQ 2. The findings revealed that b-learning is an important part of the EsAO of the Brazilian Army and that it has significant benefits, particularly in terms of rationalising human, material and financial resources. It was also ascertained that the virtual environment used by Brazilian teachers and students offers a wide range of possibilities. Some disciplines do not require face-to-face interaction and can be taught online without negatively affecting the learning outcomes.

As for Spain's ESFAS, it was found that the virtual environment used by teachers and students offers a numerous benefits and opportunities not only for delivering promotion

courses but also for keeping the skills of military personnel up to date. It was also found that a system such as moodle not only reduces costs but also has the advantage of providing a platform with high potential for development. Furthermore, the team that supports the DE capability consists of only four elements. Therefore, the investment in terms of human resources is small, which makes it easier to implement a b-learning DE system.

The fourth chapter analysed military education establishments from similar countries, focusing on four core areas to define measures to implement b-learning in the IUM, thus answering SQ 3. The analysis revealed that implementing this system will require human and material resources. There is a need for tutors, for teaching staff with appropriate skills, for different tools to facilitate the information flow and for an evaluation model that assesses both teaching and learning. But identifying the elements that must be included in this implementation is not enough. There is also a need for a quality assessment system, as this is the only way to guarantee the implementation and consolidation of best practices.

This study increased the extant body of knowledge on the b-learning distance education model, and made it possible to propose measures to implement this teaching modality. The proposed measures focus on course organization, logistics, and on the information that must be made available to trainees. There is a need for a pool of specialised trainers who can effectively perform this type of teaching and who can provide constant pedagogical support, for technical personnel who can maintain and operate the platform and provide support to teaching team and trainees, for a procedure guide available in physical and / or electronic form, and, finally, for active tutoring to support and answer any questions and issues students may have about the course topics.

Furthermore, with regards to the course design and the pedagogical model, the model that will be implemented should enable both effective interaction between e-trainer and e-trainees and a learning strategy based on e-content (PDF, PowerPoint presentations, etc.) and discussion forums.

In terms of technology, the moodle platform is an important element in developing this type of teaching. Therefore, it is important to ensure that this system that uses the internet and / or local data networks to manage educational activities is used in the flexible and accessible manner it was designed for.

Finally, regarding evaluation and continuous improvement, trainees should undergo formative, summative and possibly diagnostic assessments to ascertain if the knowledge defined in the training objectives has been acquired. Similarly, Training Reaction Questionnaires should be delivered to assess the pedagogical, technical and curricular activities and to ensure continuous improvement.

This study's *limitations* refer to the fact that other institutes from similar countries and other higher education establishments in Portugal which are considered benchmarks in b-learning were not analysed.

Despite this, *future studies* are needed to implement a b-learning pilot project in the Military University Institute, as this will enable the development of online management systems and the production of digital content for the curricular units.

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