Uisrael
REVISTA CIENTÍFICA

September – December 2025 period
Vol. 12, No. 3
rcientifica@uisrael.edu.ec
https://doi.org/10.35290/rcui.v12n2.2025.1435 · e-ISSN: 2631 - 2786

Differentiation in Academic Management of Military Training Programs: A Comparative Study at the Armed Forces University ESPE

Diferenciación en la Gestión Académica de Carreras de Formación Militar: Estudio Comparativo en la Universidad de las Fuerzas Armadas ESPE

Date of receipt: 2024-11-08 · Acceptance date: 2025-03-28 · Date of publication: 2025-09-10

María Fernanda Serrano Aldaz[1]
Universidad de las Fuerzas Armadas ESPE, Ecuador
mfserrano@espe.edu.ec
https://orcid.org/-0009-2240-0180

Manolo Germán Cruz Ordoñez[2]
Universidad de las Fuerzas Armadas ESPE, Ecuador
mgcruz@espe.edu.ec
https://orcid.org/0000-0002-1959-6639

Mishell Romina Angulo Alvarez[3]
Universidad de las Fuerzas Armadas ESPE, Ecuador
mrangulo@espe.edu.ec
https://orcid.org/0000-0002-6434-6137

Cristina Maribel Dávila Molina[4]
Universidad de las Fuerzas Armadas ESPE, Ecuador
cmdavila1@espe.edu.ec
https://orcid.org/0009-0007-6725-088X

Abstract

This research examined the differentiation in academic management of military training programs at the Universidad de las Fuerzas Armadas ESPE, using a comparative approach between specialized and non-specialized programs. The study analyzed the structure and characteristics of these programs. The results indicated that the military sciences program stands out for implementing a dual training modality, which entails a greater hourly workload and close academic collaboration with the Ministry of Defense. This modality, in which cadets alternate between academic studies and practical training, is unique when compared to non-specialized programs and is regarded as essential for ensuring the development of officers proficient in both military skills and academic competencies. Furthermore, it was observed that the academic management of the Military Sciences program is oriented not only toward the acquisition of theoretical knowledge but also toward the ethical and practical formation of future officers. The study concluded that this differentiation in academic management is fundamental to the preparation of competent officers. It also suggested that this differentiated approach could serve as a model for other higher education institutions interested in integrating academic education with practical skill development.

Keywords: academic management, military education, focused careers, University of the Armed Forces ESPE

Resumen

La presente investigación examinó la diferenciación en la gestión académica de las carreras de formación militar en la Universidad de las Fuerzas Armadas ESPE con un enfoque comparativo entre las carreras focalizadas y no focalizadas. La investigación analizó la estructura y características de estas carreras. Los resultados mostraron que dicha carrera se distingue por implementar una modalidad dual de formación, que implica una mayor carga horaria y una estrecha colaboración académica con el Ministerio de Defensa. Esta modalidad en la que los cadetes alternan entre estudios académicos y formación práctica es única en comparación con otras carreras no focalizadas, y es vista como esencial para asegurar la formación de oficiales capacitados en habilidades militares y competencias académicas. Además, se observó que la gestión académica en la carrera de Ciencias Militares no solo está orientada a la adquisición de conocimientos teóricos, sino también a la formación ética y práctica de los futuros oficiales. Se concluyó que esta diferenciación en la gestión académica es fundamental para la formación de oficiales competentes. El estudio también sugirió que este enfoque diferenciado en la gestión académica podría servir de modelo para otras instituciones de educación superior interesadas en combinar formación académica con habilidades prácticas.

Palabras clave: gestión académica, educación militar, carreras focalizadas, Universidad de las Fuerzas Armadas ESPE

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

Introduction

In the context of military education, the integration of academic programs alongside traditional military training is important in order to respond to modern security challenges, which are increasingly complex and multifaceted. According to Metz (2021) and Zelbo (2024), modern military academies are adapting their curricula to include studies in political science, international relations, and information technology, reflecting the need for officers who are not only military strategists but also diplomats and globally informed leaders.

The ESPE Armed Forces University in Ecuador has been a pioneer in this integrative approach, designing programs that prepare students not only in military skills but also in academic competencies applicable in various civic and administrative contexts. As Fernández and Álvarez (2018) point out, the university has strengthened the country's defensive capabilities and promoted a broader vision of the role of the military in society, including areas such as natural disaster management and technological development. This training model responds to global trends in military education, similar to those implemented in Brazil and Cuba, where technical and professional training has effectively integrated theory and practice over the last twenty years (Silva & Oliveira, 2019; Lorenzo, 2012).

The main objective of this study was to analyze the differences in the academic management of the Military Sciences degree program, comparing it with non-focused degree programs at the ESPE Armed Forces University. This analysis focused on highlighting the particularities of the dual modality, which combines academic training with professional practice under the supervision of the Ministry of Defense. Given that this modality is unique in its structure, it is essential to examine how it influences both the workload and the practical and ethical preparation of cadets, in comparison with non-focused degree programs. Thus, it is hoped to identify the characteristics that make the Military Sciences degree program offer a more comprehensive preparation.

Furthermore, it is important to explore how institutional collaboration with the Ministry of Defense impacts the training of officers who must not only be competent in military skills, but also in academic and ethical areas. Comparing the educational outcomes between Military Science students and those in other non-focused majors will allow for an evaluation of the effectiveness of this modality in the acquisition of essential skills. Likewise, this research sought to determine whether the differentiated approach to academic management in the Military Sciences program can offer a replicable model for other higher education institutions interested in efficiently combining theoretical and practical training.

The rationale for this study was based on the need to train officers capable of responding to the current challenges of the global environment. In this sense, the dual modality implemented in the Military Sciences program represents a specific adaptation of pedagogical principles already established in other educational contexts, such as technical training in Ecuador (Vásquez, 2019; Muñoz, 2020; Gualán et al., 2023). In other countries, such as Singapore, Siew and Koh (2023) point out that experiential learning and practical application are fundamental to leadership development, a central principle in dual education. Although dual training is not an innovation in itself, its application in the military context of the ESPE Armed Forces University is novel, as it combines

solid theoretical training with intensive practical training in collaboration with the Ministry of Defense. This approach responds to the growing demand for professionals who can operate in military and civilian contexts with solid ethical and practical training.

Furthermore, this comparative analysis between focused and non-focused careers was crucial in determining whether differentiated management is a determining factor in the preparation of more skilled and ethically responsible officers. This approach also made it possible to generate recommendations that could be applied in other academic programs, both in Ecuador and internationally. In this way, the present study contributed not only to the field of military education but also to the development of pedagogical strategies that promote comprehensive training adapted to the demands of the contemporary world.

The above reflects a global trend in military higher education, where training is increasingly seen as an integral component of national and international development. By expanding the educational horizons of cadets, institutions such as ESPE ensure that future military leaders can operate effectively in a world that requires both military competence and leadership skills, as well as ethical and strategic decision-making.

1.1 Conceptual Framework

Prior to the conceptual treatment of academic management of degree programs, it is first necessary to review the theory of what is meant by "public policy," which De la Parte et al. (2016) conceive as a set of actions that a state designs and manages through the government and its public administration with the purpose of satisfying the needs of society. In this regard, the following regulatory framework was created for the management of higher education in Ecuador: The Organic Law on Higher Education (LOES), the General Regulations to the Organic Law on Higher Education (REGLOES), the Academic Regulations (RRA), the Regulations for the Harmonization of the Nomenclature of Professional Titles and Academic Degrees conferred by Higher Education Institutions in Ecuador (RANT), the Regulations of the National Leveling and Admission System (REGSNNA), the Regulations on the Career and Rank of Academic Staff in the Higher Education System (RECEPA), and the Regulations for Dual Training Careers and Programs (RECADUAL).

For the purposes of the research, focused and non-focused face-to-face degree programs were considered as units of study. In this regard, the Secretariat of Higher Education, through the REGSNNA (2021), defined focused degree programs as those that aim to "...professionalize workers and public servants...". It also mentions that dual training degree programs may be offered under the focused degree program modality. In the present case, the University of the Armed Forces ESPE offers this type of degree program exclusively for the training of military personnel of the Armed Forces.

From a regulatory standpoint, the General Regulations of the Organic Law on Higher Education (Presidency of the Republic of Ecuador, 2019) conceives of university educational management as the exercise of the functions performed by the dean and/or vice dean of a degree program. For the purposes of this study, Casassus (2000), in the context of the theory of educational management of a degree program, states that the processes involved are the functions of planning, financial

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

management, human resources management, and user relations. As for the analysis of the factor of academic management classified as differentiated, it is first necessary to resort to the theoretical approach of its opposite: the paradigm of convergence; which, according to Dettmer (2004), is the characteristic or action of regulations that tend to converge at the same point and that these are manifested in the context of globalization and social processes, specifically in higher education, enhanced by the influence of new information technologies and various forms of production.

With this premise, following Dettmer (2004), it can be corroborated that the phenomenon of divergence appears as a trend opposite to convergence and manifests itself as a feature antagonistic to homogenization and standardization; which is why initiatives have been designed to differentiate higher education systems and processes in response to structural and organizational changes or market demands. He also asserts that there are valid arguments that contravene convergence, such as the reduction of the autonomy of educational systems or the promotion of disparity in social or labor structures, which positively encourages a thorough examination of the diversity and differentiation of higher education policies.

For the present research, it is necessary to consider and refer to the distinction made by Huisman (1996) between "differentiation and diversity" in the field of higher education, attributing the former to "something new" within an educational system, while relating the concept of diversity to the variety of entities within the system or different forms of it. Brunner (2006) states that two dimensions are considered in the study of institutional differentiation in higher education systems: level and sector. Based on this first classification, the author identifies university and non-university levels, while at the level of sectors, he mentions the public and private sectors. In addition, the author describes other variables that are international benchmarks for comparative studies, namely: size, admission, program duration, certificates, academic versus vocational content, cooperation, financing, expenditure per student, legislation, academic staff, quality assurance and the labor market, transfer, and tensions in systems with more than one educational level.

In the comparative exercise of the degree programs offered by the university, we will consider what Birnbaum (1983) distinguishes as institutional diversity and its six variables: control, size, enrollment, student ratio, and program types. This concept is complemented by Meek's (2000) contributions with the following approaches that form part of diversity in higher education: systemic, structural, programmatic, procedural, reputational, clientele composition, and values and cultural climate.

Another important factor to consider is what Clark maintains as a component of diversity in "academic discipline," since this manifests itself as the driving force behind research and development processes. He asserts that higher education is based on the division of labor and the differentiation of professional knowledge, which leads to increasing diversification and structural disintegration of disciplines in institutions.

The study considers the systemic perspective proposed by Guy (2000), who argues that this fact stems from the different visions that arise in the relationships between government, higher education, and society. He also asserts that diversity is a product of the masses' demand for higher

education, the segmentation of the system, and the diversity of programs, which is why it must be analyzed from a systemic approach.

Finally, the environmental perspective provided by Van Vught (1996) was addressed, as it includes aspects that are very necessary for the study, such as the ecology of the population as a source of variability and homogeneity of institutional forms, the dependence on resources as a means of interaction between organizations and their environments, and finally, isoformism as a mechanism of survival through adaptation to the environment in which they operate.

1.2. Trends in military education and academic management.

Military education has undergone a significant transformation in recent decades, driven both by technological changes and new global security demands. Academic management in these institutions has had to adapt, not only to incorporate technological advances but also to prepare officers for roles that require interdisciplinary skills and leadership abilities in complex scenarios. According to studies by Keegan (2020), the introduction of information technologies and advanced simulations in military training programs reflects this trend toward more interactive and technologically enriched teaching.

In terms of academic management, military institutions have adopted more collaborative and student-centered approaches, inspired by contemporary pedagogical practices in higher education, including problem-based learning methods, which Johnson and Meyer (2019) identify as crucial for developing critical thinking and decision-making skills in high-pressure contexts. These methods not only improve students' ability to apply theoretical knowledge in practical situations, but also foster a culture of continuous learning essential to a military career. In addition, academic management in military academies has begun to focus more on ethics and social responsibility, preparing officers to lead with integrity and social awareness. According to Thompson (2021), this change responds to a global demand for armed forces that act under strict ethical standards and are capable of integrating effectively into multinational operations and peacekeeping missions.

The ESPE Armed Forces University, for example, has been a leader in implementing programs that integrate these new pedagogical and management paradigms. The inclusion of courses on human rights and international humanitarian law, as highlighted by Silva and Castillo (2018), demonstrates a commitment to training officers who understand and respect international law and ethical principles. Although the importance of military education and its adaptation to contemporary changes is widely recognized, there remains a notable lack of detailed empirical research on the effectiveness of new pedagogical methodologies in the academic management of military institutions.

Previous studies have addressed various aspects of military education, but few have investigated specific academic management practices that influence the preparation and performance of future officers in a real-world context. Furthermore, despite the incorporation of advanced technologies and interactive pedagogical approaches in military training, there is a significant gap in the study of their effective integration into the traditionally rigid curricula of military academies. As Baxter (2022) points out, while technology has revolutionized tactical training, its impact on general

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

academic training is still not well documented or understood. Another under-explored area is the impact of human rights and ethics training on the effectiveness of officers in international operations. Although Silva and Castillo (2018) highlight the growing inclusion of these topics in military curricula, there is a shortage of studies evaluating the results of these programs in terms of ethical behavior and decision-making in real conflict situations.

This study aimed to contribute to these areas by examining how the ESPE Armed Forces University has implemented and managed changes in its curriculum and teaching methods to address contemporary challenges in military training. It will also contribute to the understanding of the pedagogical approaches and management strategies adopted at the ESPE Armed Forces University, providing empirical evidence on their impact on the training of competent and ethically prepared officers.

Methodology

This study adopted a comparative approach, which, according to Latorre (2005), cited in Caballero (2016), aims to describe, understand, and explain reality. In addition, it adhered to the structure corresponding to the methodological design by defining the problem, the working hypothesis, and the units of analysis. After that, the research was developed by applying the descriptive, interpretive, juxtaposition, comparative, or explanatory phase and the prospective phase.

The sources of information used include primary data obtained from the BANNER institutional database, a system that centralizes official academic records and allows for the structured collection of data for educational management studies. According to González (2023), these types of databases constitute a primary source when they provide information directly from administrative records without prior analytical intermediation. The study adopted a mixed approach (Creswell, 2014), combining quantitative analysis to examine data extracted from the BANNER institutional database and qualitative analysis through document analysis and the construction of a conceptual map. The methodology followed the analytical-synthetic method, in which the key elements of academic management are broken down for subsequent synthesis and overall understanding (Sampieri et al., 2006). In addition, the comparative method was applied, which allows for the comparison of different academic management practices within the 25 degree programs at the ESPE Armed Forces University, since, according to Sartori (1994), comparison is essential for identifying patterns, establishing causal relationships, and understanding the evolution of educational models in military institutions.

Table 1

Areas of Knowledge and On-Campus Degree Programs at the ESPE Armed Forces University.

Área de Conocimiento (Departamento)	Carrera
Energía y Mecánica	Petroquímica
	Mecatrónica
	Ingeniería Automotriz
	Mecánica
Ciencias de la Computación	Ingeniería en Software
	Tecnologías de la Información
Eléctrica, Electrónica y Telecomunicaciones	Telecomunicaciones
	Electrónica y Automatización
	Electromecánica
Ciencias de la Vida y de la Agricultura	Agropecuaria
	Biotecnología
Ciencias Administrativas, Económicas y del Comercio	Administración de Empresas
	Comercio Exterior
	Contabilidad y Auditoría
	Mercadotecnia
	Turismo
Ciencias de la Tierra y la Construcción	Ingeniería Civil
	Ingeniería en Tecnología Geoespaciales
Área de Conocimiento (Departamento)	Carrera
Ciencias Médicas	Medicina
Ciencias Humanas y Sociales	Pedagogía de la Actividad Física y Deporte
	Educación Inicial
Seguridad y Defensa	Ciencias Militares
	Ciencias Navales
	Ciencias Militares Aeronáuticas
	Ciencias Náuticas

The sampling method used was non-probabilistic, as it was based on the criteria of seniority and tradition of the degree program by area of knowledge. Therefore, only one degree program per area of knowledge was considered, as follows:

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

Table 2

Sample of face-to-face courses at the ESPE Armed Forces University, subject of study.

Área de Conocimiento (Departamento)	Carrera
Energía y Mecánica	Mecánica
Ciencias de la Computación Eléctrica, Electrónica y Telecomunicaciones	Ingeniería en Software
Ciencias de la Vida y de la Agricultura	Telecomunicaciones
	Agropecuaria
Ciencias Administrativas, Económicas y del Comercio	Administración de Empresas
Ciencias de la Tierra y la Construcción	Ingeniería Civil
Ciencias Humanas y Sociales Seguridad y Defensa	Pedagogía de la Actividad Física y Deporte

Regarding the operationalization of variables, for the analysis of the independent variable, University Educational Management of the degree program, we used what Brunner (2006) describes as levels and sectors. In terms of data organization, in the comparative exercise of the degree programs offered by the university, we considered Birnbaum's (1983) seven forms of diversity in higher education, according to the following differentiation variables and their corresponding indicators, which are displayed in the following table:

Table 3

Variables and Indicators.

VARIABLE DIFERENCIACIÓN	INDICADOR
Tamaño	Tamaño de la matrícula
Admisión	Condiciones y requisitos
Duración de los programas	Duración en horas
Certificados	Grados y títulos
Contenidos académicos vs. Vocacionales	Contenidos tipo 5ª (teóricos) y 5B (prácticos profesionalizantes)
Cooperación	Cooperación con otros organismos
Financiamiento	Tipo de financiamiento
Gastos por alumno	Relación teórico-práctico
Legislación	Normativa aplicable a las carreras
Personal académico	Tipo de docente
Aseguramiento de la calidad	Modelo de acreditación
Mercado laboral	Remuneraciones previstas
Transferencia	Movilidad estudiantil

Nota: Brunner, 2006.

Results

After applying the data collection instruments, the results were presented, classified by indicators with the respective characteristics and supporting information. The data presented is derived from the process of comparing the on-campus degree programs offered by the University of the Armed Forces ESPE to society.

3.1 Type, location, and control of the program

Because they belong to a public institution, all the programs under study are characterized as university-level programs under the control of the public sector with a single system of governance. However, it should be noted that the Military Sciences program has a dual system of governance and control due to its dual nature. In other words, the program is administered by a coordinator from the university and by the director of the military training school, who is part of the dual modality as a training body. This is one of the characteristics that makes it a specialized program due to its mission as an entity that professionalizes the military sector as part of the civil service.

In terms of geographical location, degree programs that are not part of the military are located on the grounds of the ESPE Armed Forces University in Sangolquí, while the Military Sciences degree program is located on the grounds of the Eloy Alfaro Military Academy in Parcayacu, Quito.

Table 4

Description of Variable Type-Location-Control.

Carreras	Tipo-localización-control
Sist. Inform.	Tipo- nivel: universitario – no focalizadas control: público/ Localización: matríz en Sangolquí
Mecánica	
Telecomunicaciones	
Administración de empresas	
Civil	
Pedagogía de la actividad	
Física	
Agropecuaria	
Ciencias militares	Tipo- nivel: universitario- focalizada control: público Localización: matríz en Sangolquí

3.2 Size (enrollment)

During 2021, the programs had an enrollment ranging between 557 and 639 registered students. On average, there were 597 students enrolled, with a narrow dispersion of students with respect to the average of 31 people. In terms of student enrollment, the Military Sciences program has the lowest number of female students (7%) and the highest number of male students (93%), while the Administrative Sciences program has a balanced proportion of female and male students (55.6%

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

female and 44.4% male). In this regard, the Agricultural program stands out because it has more female students than male students (60.2% and 39.8%), which is unusual.

Table 5

Distribution of Student Enrollment by Gender and Program.

Carreras	Total	Femenino	Porcentaje	Masculino	Porcentaje
Sist. Inform.	557	140	25,1	417	74,9
Mecanica	561	43	7,7	518	92,3
Telecomunicaciones	568	136	23,9	432	76,1
Adm. Empresas	601	334	55,6	267	44,4
Ciencias militares	613	43	7,0	570	93,0
Ped. Act. Fisica	617	165	26,7	452	73,3
Agropecuaria	623	375	60,2	248	39,8
Civil	639	208	32,6	431	67,4
Promedio	597				
Desviación est.	31,3				

3.3 Admission

In the case of “non-targeted” degree programs, applicants must follow the guidelines required by the LOES (National Assembly, 2010), i.e., submit: identity card and voting certificate; high school diploma or degree certificate duly endorsed by the Ministry of Education (District Directorate); personal data sheet with a color passport-size photograph; proof of the score obtained in the admission exam; medical certification; if applicable, CONADIS disability card. It was determined that residents abroad and persons deprived of liberty (PPL) do not require an admission exam score. However, for dual-mode degree programs, in addition to complying with the guidelines established in the LOES (National Assembly, 2010), the following additional requirements determined by the Armed Forces Personnel Law are requested for dual-mode programs: no criminal record, medical, dental, and mental health evaluation, academic tests, physical tests, and personal interviews.

Table 6

Admission Conditions and Requirements.

Carreras	Condiciones y requisitos de admisión
Sist. Inform.	Se ciñen a los lineamientos exigidos por la loes
Mecanica	
Telecomunicaciones	
Administración de	
Empresas	
Civil	
Pedagogía de la	
Actividad fisica	
_Agropecuaria	
CIENCIAS MILITARES	Se ciñen a los lineamientos exigidos por la LOES y a las directrices emitidas por la Ley de Personal de las Fuerzas Armadas. Estas emiten criterios adicionales relacionados con los aspectos físicos, Médicos, psicológicos y académicos.

3.4. Program duration

The duration of the programs was evident in the degree programs submitted to the Higher Education Council platform for approval. This element is measured based on the total number of hours planned for the student's professional training. The information shows that, on average, degree programs involve 6,086 hours of training, with a standard deviation of 470 hours from the mean, which is not significant considering the technical and humanistic nature of the degree programs.

The Military Sciences program has a higher curriculum workload than all other programs. It should also be noted that the program includes full-time extracurricular activities under a system known as "internal," which applies to students, with outings only on weekends. However, the total training workload presented in the creation project only quantifies academic hours and not extracurricular activities. Degrees that are not considered non-focused, according to academic regulations, have working hours of six hours per day and up to 35 hours per week.

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

Table 7

Total Workload per Degree.

Carreras	Total horas
Sist. Inform.	5.760
Mecánica	6.480
Telecomunicaciones	6.480
Adm. Empresas	5.760
Ciencias militares	6.928
Ped. Act. Física	5.760
Agropecuaria	5.760
Civil	5.760
Promedio	6.086
Desviación est.	470,3

Nota: Resolución del CES de aprobación de las carreras.

3.5 Certificates

According to the information gathered in the respective creation projects, it can be seen that 100% of the degree programs award third-level university degrees and academic qualifications, in accordance with the provisions of the Regulation on the Harmonization of the Nomenclature of Professional Qualifications and Academic Degrees (2021). In the case of military science programs, the state, through the Ministry of Defense, also awards students the military rank of second lieutenant in the army, in accordance with the Armed Forces Personnel Act (2007).

Table 8

Degrees and Academic Titles by Program.

Carreras	Titulos y grados académicos
Sist. Inform.	Título de ingeniero: ingeniero de software
Mecánica	Título de ingeniero: ingeniero mecánico
Telecomunicaciones	Título de ingeniero: ingeniero en telecomunicaciones
Administración de empresas	Título de licenciado: licenciado en administración de empresas
Ciencias militares	Título de licenciado: licenciado en ciencias militares. Además, se le otorga el grado o jerarquía militar de “subteniente”
Pedagogía de la actividad fisica	Título de licenciado: licenciado en pedagogía de la actividad física y deporte
Agropecuaria	Título de ingeniero: ingeniero agropecuario
Civil	Título de ingeniero: ingeniero civil

Notas: Resolución del CES de aprobación de las carreras.

3.6 Academic vs. Vocational Content (number of hours)

According to the analysis of the planned workloads in the creation projects approved by the CES, the document shows that three training units are considered: basic, professional, and curricular integration and certification. In this context, for analysis purposes, a comparison was made between the workload of the basic unit and the professional unit. It can be seen that the ratio between academic and professional content is 1.8, which means that for every hour of academic content, there is an additional 0.8 hours of professional content. This can be seen by degree program, and it can be seen that the Military Sciences degree program has the lowest ratio, which is a negative aspect for the purposes of professional training.

In contrast, the Administrative Sciences and Mechanics programs showed a higher ratio between academic and professional content, as in the former case, for every academic hour, there is an additional 1.8 hours of professional content, as in Mechanics.

Table 9

Ratio of Academic to Vocational Content.

Carreras	Relación contenidos académicos vs vocacionales		
	Horas	Porcentaje	Relación
	2160	0,38	
Sist. Inform.	3360	0,58	R= 1,6
	1776	0,27	
Mecánica	4128	0,64	R= 2,3
	2160	0,33	
Telecomunicaciones	4080	0,63	R= 1,9
Administración de empresas	1440	0,25	
	4080	0,71	R= 2,8
	2696	0,39	
Ciencias militares	3280	0,47	R= 1,2
Pedagogía de la actividad fisica	2160	0,38	
	3360	0,58	R= 1,6
	2160	0,38	
Agropecuaria	3360	0,58	R= 1,6
	2160	0,38	
Civil	3360	0,58	R= 1,6

Notas: Resolución del CES de aprobación de las carreras.

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

3.7 Cooperation (institutions that support professional training).

With regard to cooperation strategies for supporting professional training, it can be seen that all of them presented in their creation projects agreements that served as support for students' pre-professional internships, which average 240 hours of professional practice. In the case of the Military Sciences degree program, due to the fact that it opts for a dual training modality, there is a specific agreement with the Army for the purpose of sharing responsibilities with the University of the Armed Forces ESPE in the process of military professional training.

Table 10

Forms of Cooperation.

Carreras	Formas de cooperación
Sist. Inform.	
Mecanica	La cooperación se materializa en base a convenios específicos para la ejecución de pasantías y prácticas pre-
Telecomunicaciones	
Administración de empresas	Profesionales en empresas públicas y privadas.
Civil	
Pedagogía de la actividad física	
Agropecuaria	
Ciencias militares	Se rige exclusivamente al convenio de cooperación entre el ministerio de defensa del Ecuador y la Universidad de las Fuerzas Armadas para la ejecución de las carreras militares bajo la modalidad dual

Notas: Resolución del CES de aprobación de las carreras.

3.8 Funding (public or private)

Funding for the entire degree program comes from public resources. However, in the case of the Military Sciences degree program, funding comes from public resources, both from the higher education system and the Ministry of National Defense.

Table 11

Type of funding for on-campus degree programs.

Carreras	Tipo financiamiento
Sist. Inform.	Público
Mecánica	
Telecomunicaciones	
Administración de empresas	
Civil	
Pedagogía de la actividad fisica	
Agropecuaria	
Ciencias militares	Público/compartido entre dos instituciones públicas

Notas: Resolución del CES de aprobación de las carreras.

3.9 Expenses per student

In terms of expenses per student, it was found that, on average, vocational training generates an expense (investment) of $1.77 per hour of student training, with a variation of $0.66.

It can be seen that the Military Sciences degree program has the lowest expenditure in the training process, while degree programs focused on technological aspects are the most expensive. It should be noted that the information on the Military Sciences degree program only corresponds to academic training expenses related to curricular activities and does not include the expenses involved in extracurricular activities due to the training regime.

Table 12

Expense per Student and Relationship between Hours and Training.

Carreras	Dólares	Horas/carrera	Relación hora/ formación
Sist. Inform.	7.332	5.760	1,27
Mecánica	15.102	6.480	2,33
Telecomunicaciones	15.102	6.480	2,33
Administración de empresas	6.804	5.760	1,18
Ciencias militares	7.460	6.928	1,08
Pedagogía de la actividad fisica	7.440	5.760	1,29
Agropecuaria	13.424	5.760	2,33
Civil	13.424	5.760	2,33
Promedio			1.77

Notas: Resolución ESPE-HCU-RES-2021-005 Cálculo de arancel y matrícula por carrera.

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

3.10 Legislation

With regard to the legislation applied to the management of the on-campus degree programs offered by the University of the Armed Forces ESPE, it is noted that, in terms of academic training, all degree programs apply the legislation related to the Ecuadorian higher education system. In the case of military degree programs, this includes the legislation corresponding to dual training and the regulations related to military training.

Table 13

Legislation Applicable to Training Programs.

Carreras	Tipo
Sist. Inform.	LOES-REGLOES-REGSNNA-RRA-RANT-RECEPA
Mecánica	
Telecomunicaciones	
Administración de empresas	
Civil	
Pedagogía de la actividad física	
Agropecuaria	
Ciencias militares	Además de los mencionados, se incluye el reglamento de la modalidad dual y la legislación relacionada con la formación militar.

Notas: Base de datos de la Secretaría General de la Institución

3.11 Academic staff

It has been demonstrated that the academic staff involved in professional training in non-focused degree programs are teachers who are part of the university's teaching hierarchy, whose regulations are outlined in the Regulations on the Career and Hierarchy of Academic Staff in the Higher Education System, issued by the CES (Higher Education Council, 2021). In the Military Sciences degree program, based on the legislation issued by the CES corresponding to the dual modality (2021), it is verified that military personnel are included as specific tutors in the military field.

Table 14

Legislation Applicable to Training Degree Programs.

Carreras	Tipo
Sist. Inform.	Titulares y no titulares de acuerdo a RECEPA
Mecánica	
Telecomunicaciones	
Administración de empresas	
Civil	
Pedagogía de la actividad física	
Agropecuaria	
Ciencias militares	Ademas de los mencionados, el REDUAL

Notas: Elaboración propia con base en los datos de la Universidad de las Fuerzas Armadas ESPE.

3.11.Quality assurance, labor market, and transfer

In this area, it has been verified that all degree programs are undergoing self-evaluation. Thus, after studying their relevance, non-focused face-to-face degree programs have determined that the labor market is identified in the productive and service sectors of Ecuadorian society. The occupational field is defined based on the labor market situation and the political, social, and economic conditions at the time of graduation.

On the contrary, graduates of the Military Sciences degree program, based on the corresponding relevance study, are trained to fill an organic vacancy in the Army. The organic positions to be filled have their own configuration in terms of specific functions and responsibilities. Finally, none of the degree programs show mechanisms or channels for the transfer of credits with other institutions of the same level.

3.12. Discussion

In this research, when describing the variables mentioned in Table 3 that intervene in the academic management of the processes carried out in the professional training programs in face-to-face mode offered by the University of the Armed Forces ESPE, the following results were obtained in the research process: one hundred percent of the programs are university-type, public in nature; the Military Sciences program is subject to double control due to the application of the dual modality and because it is classified as a focused program; in addition, the entire training process is carried out on the premises of the training institution and not on university premises.

The average enrollment size for the programs is 597 students with a standard deviation of 31 students; in the case of the Military Sciences program, this is within the normal range. The programs adhere to the guidelines of the LOES for admission purposes; in the case of the Military Sciences program, the requirements specified in the Armed Forces Personnel Act are included.

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

The average total course load for degree programs is 6,086 hours with a standard deviation of 470 hours. The Military Sciences degree program has the highest total course load, at 6,928 hours. The degree programs award third-level degrees. In the case of Military Science students, they also obtain the military rank of second lieutenant. The relationship between academic and vocational content in the degree programs shows an average of 1.8 with a standard deviation of 0.5, with the Military Science degree program showing the lowest relationship between these contents (1.2).

In terms of cooperation with organizations that support training, all programs have agreements for pre-professional internships, and the Military Sciences program has an agreement for dual training. All programs are publicly funded, and in the case of military programs, funding is public but shared by two institutions: the Ministry of Defense and the university. In terms of average student expenses, the cost is $1.77 per hour of training, with Military Sciences students having the lowest cost ($1.08).

All degree programs comply with national legislation, and in the case of Military Sciences, this includes the regulations governing dual training. The academic staff involved in the training process are part of the university's teaching hierarchy, including specific tutors in the Military Sciences program. In terms of the labor market, the only program that guarantees a job for all students who meet the requirements is Military Sciences. Therefore, the results show that the Military Sciences degree program, in addition to complying with the regulatory guidelines for higher education, is characterized by its difference from the academic management of face-to-face degree programs. This is in line with what Brunner (2006) states when he mentions that, for the purposes of institutional differentiation of higher education systems, analyzed dimensions are considered.

Conclusions

The results obtained in the Military Sciences program are characterized by differentiated academic management compared to face-to-face programs, for the following reasons. In addition to complying with the regulatory guidelines for higher education, the Military Sciences program is regulated by legislation corresponding to the dual modality; for this reason, it requires that professional training processes be consolidated and strengthened through cooperation with the Ministry of National Defense via specific agreements for the application of the dual modality. Additionally, the program was classified as focused in accordance with the regulations governing admission. The training process for students in the Military Sciences degree program is not carried out on university premises, but is centralized on the premises of the training institution.

The program is publicly funded and, in this specific case, shared by two institutions (the Ministry of Defense and the University); for which it is confirmed that the expenses generated by students of $1.08 per hour are lower than the average for other programs. In terms of academic processes, the Military Sciences program has a total workload of 6,928 hours, which is higher than the overall average for programs (6,086 hours).

In addition, in terms of the relationship between academic and vocational content, it was confirmed that the value of 1.2 is the lowest ratio in relation to the average of 1.8. The academic staff is part

of the university's teaching hierarchy, with the participation of specific tutors from the training institution.

Upon completion of the Military Sciences degree program, students are awarded a double degree: a third-level academic degree and the military rank of second lieutenant. Finally, the job market for Military Sciences graduates is the only degree program that guarantees a job for all students who meet the requirements.

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

References

Asamblea Nacional (2010). *Ley Orgánica de Educación Superior*. Registro Oficial.

Asamblea Nacional (octubre de 2010). *Ley Orgánica de Educación Superior*. Registro Oficial.

Baxter, E. (2022). Technology and Tactical Training: Bridging the Gap in Military Academies. *Journal of Military Innovation*, *4*(1), 58-76.

Birnbaum, R. (1983). *Maintaining Diversity in Higher Education*. Jossey-Bass Higher Education.

Brunner, J. (2006). *Diversificación y diferenciación de la educación superior en Chile en un marco internacional comparado*. FONDECYT.

Burton, C. (1996). Diversification of higher education: Viability and change. *Higher Education*, 16-25.

Caballero, A., Manso, J., Matarranz, M., y Valle, J. (2016). Investigación en Educación Comparada: Pistas para investigadores noveles. *Revista Latinoamericana de Educación Comparada*, *7*(9), 39-56. https://dialnet.unirioja.es/servlet/articulo?codigo=6559980

Casassus, J. (octubre 2000). *Problemas de la gestión educativa en América Latina (la tensión entre los paradigmas de tipo A y el tipo B).* UNESCO.

Congreso Nacional (2007). *Ley de Personal de Fuerzas Armadas*. Registro Oficial.

Consejo de Educación Superior (27 febrero de 2019). *Reglamento de Régimen Académico*. CES.

Consejo de Educación Superior (25 agosto de 2021). *Reglamento de Armonización de la Nomenclatura de Títulos Profesionales y Grados Académicos que confieren las Instituciones de Educación Superior del Ecuador*. CES.

Consejo de Educación Superior (CES) (2021). *Reglamento para las Carreras y Programas en Modalidad de Formación Dual*. CES.

Consejo de Educación Superior (2021). *Reglamento de Carrera y Escalafón del Personal Académico*. CES.

Consejo de Educación Superior (CES) (2021). *Reglamento de Armonización de la Nomenclatura de Títulos Profesionales y Grados Académicos que confieren las Instituciones de Educación Superior del Ecuador*. CES.

Consejo de Educación Superior (17 septiembre 2021). *Reglamento de Carrera y Escalafón del Personal Académico del Sistema de Educación Superior*. CES.

Creswell, J. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). SAGE Publications.

De la Parte, M., De Sousa, M., Rao, R., y Quiroga, P. (2016). Las Políticas Públicas Educativas en América Latina y su Relación con la revalorización de la profesión docente: Una mirada ética desde Venezuela. *Investigación y postgrado, 31*(2), 9-32. https://dialnet.unirioja.es/servlet/articulo?codigo=6430678

Dettmer, J. (2004). Globalización, Convergencia y Diferenciación de la Educación Superior: Una Revisión Teórico-Conceptual. *Revista de la Educación Superior*, (132), 1-24. http://publicaciones.anuies.mx/revista/132/2/1/es/globalizacion-convergencia-y-diferenciacion-de-la-educacion-superior

Feldfeber, M., y Andrade, D. (2016). Políticas Educativas en América Latina en el siglo XXI. Balance y perspectivas. *Revista del IICE, 39.* https://doi.org/10.34096/riice.n39.3994

Fernández, S. y Álvarez, D. (2018). La educación militar en el siglo XXI: Desafíos y perspectivas. *Revista Iberoamericana de Educación*, *58*(4), 25-42.

González, M. (2023). Information systems and their contribution to Venezuelan educational institutions. *Innovaciones Educativas*, *25*(38), 7–22. https://www.scielo.sa.cr/scielo.php?script=sci_abstract&pid=S2215-41322023000100007&lng=en&nrm=iso

Guy, N. (2000). Diversity, differentiation and the market: the debate we never had but which we ought to have done. *Higher Education Policy*, *3*.

Huisman, J. (1996). Diversity in the Netherlands. En Lynn Meek, et al., *The mockers and mocked: comparative perspectives on differentiation, convergence and diversity in higher education*. Pergamon.

Johnson, L. y Meyer, E. (2019). Problem-Based Learning in Military Academies: A Case Study. *Armed Forces & Society*, *45*(3), 526-543.

Keegan, H. (2020). Innovative Technology in Military Education: An International Perspective. *Journal of Military and Strategic Studies*, 22(1), 34-50.

Lahera, E. (2002). *Introducción a las políticas públicas*. Fondo de Cultura.

Latorre, A., Rincon, D., y Arnal, J. (2005). *Bases metodológicas de la investigación educativa*. Ediciones Experiencia.

Lorenzo, J. (2012). La formación profesional compartida: un modelo de Educación Técnica y Profesional emergente. *Mendive. Revista de Educación*, *10*(4), 293-301.

Meek, L. (2000). Understanding diversity and differentiation in higher education: an overview. *Higher Education Policy*, *3*.

Metz, S. (2021). Redefining Military Education: Preparing Leaders for Modern Challenges. *Journal of Strategic Studies*, *44*(6), 775-792.

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec

Muñoz, G. (2020). El sistema educativo militar del ecuador: un modelo innovador. *Revista Cognosis, 5*(3), 45-56. https://doi.org/10.33936/cognosis.v5i3.2448

Muñoz, G., Muñoz, E., y Muñoz, A. (2023). Factores que influyen en el rendimiento académico en los estudiantes de la carrera en ciencias militares. *Revista Ciencias Pedagógicas E Innovación*, *10*(2), 51-62. https://doi.org/10.26423/rcpi.v10i2.599

Presidencia de la República del Ecuador (2 septiembre 2011). *Reglamento General a la Ley Orgánica de Educación Superior*. Registro Oficial 526.

Presidencia de la República del Ecuador (mayo de 2019). *Reglamento General a la Ley Orgánica de Educación Superior*. Registro Oficial.

Pulido, O. (2017). Política pública y política educativa: una reflexión sobre el contexto. *Educación y ciudad,* (33). https://dialnet.unirioja.es/servlet/articulo?Codigo=6213573

Rama, C. (2015). *La universidad latinoamericana en la encrucijada de sus tendencias*. Universidad Católica Boliviana.

Rama, C. (2009). Macrotendencias y Macrotensiones: Las encrucijadas. *Policy Futures in Education*, *7*(5) 463-472. https://doi.org/10.2304/pfie.2009.7.5.463

Sampieri, R., Collado, C., y Lucio, P. (2006). *Metodología de la investigación*. McGraw-Hill.

Sartori, G. (1994). Comparación y método comparativo.

Secretaría de Educación Superior, Ciencia, Tecnología e Innovación (junio de 2021). *Reglamento del Sistema Nacional de Nivelación y Admisión*. CES.

Siew, D. y Koh, J. (2023). Being and becoming beginning military leaders: Implications for leadership learning. *Military Psychology, 35*(2), 142-156. https://pubmed.ncbi.nlm.nih.gov/37133494/

Silva, E. y Castillo, J. (2018). Human Rights Education in Military Academies: A New Paradigm. *International Review of Armed Forces Education*, *12*(2), 45-62.

Silva, E., Duarte, C., do Nascimento, J., y Nascimento, F. (2022). La dualidad presente en la educación profesional de Brasil y Argentina: un análisis comparado de los decretos y leyes educativas. *Research, Society and Development, 11*(2). https://rsdjournal.org/index.php/rsd/article/view/25653

Thompson, R. (2021). Ethical Leadership in Military Education. *Military Ethics*, *20*(1), 22-37.

Tobón, S. (2012). El enfoque socioformativo y las competencias: Ejes claves para transformar la educación. En S. Tobón & A. Jaik, *Experiencias de aplicación de las competencias en la educación y el mundo organizacional.* Instituto CIFE.

UNESCO. (2019). *Higher Education and the World's Challenges*. UNESCO.

Van Vught, F. (1996). Isomorphism in higher education? Towards a theory of differentiation and diversity in higher education systems. *Higher Education*, 42-60. https://research.utwente.nl/en/publications/isomorphism-in-higher-education-towards-a-theory-of-differentiati

Vásquez, F. (2019). Modalidad Dual: Estrategia Innovadora que permite articular conocimiento y trabajo en las Carreras Militares del Ecuador. *Revista De Ciencias De Seguridad Y Defensa, 4*(1). https://doi.org/10.24133/rcsd.V4N1.2019.05

Zelbo, S. (2024). The Role of the United States Military Academy at West Point in the Formation of America's Engineering Profession (1802 to 1850). *Histoire et Mesure, 38* (2), 217-240. https://www.scopus.com/pages/publications/85189963741?inward=

e-ISSN: 2631 - 2786
rcientifica@uisrael.edu.ec