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Historical review of the Superior Technician in Citohistotanatology (1959-2024)

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ABSTRACT

Introduction: the use of modern diagnostic methods in Pathological Anatomy laboratories demands highly qualified technical personnel capable of mastering technology and addressing professional challenges encountered in workplace practice.
Objective: to describe key developments in technical and vocational training in Cuba, specifically regarding the Superior Technician in Citohistotanatology.
Methods: a historical account of events in the evolution of Citohistotanatology training in Cuba was conducted, structured into three stages marking the inception of technical and professional training for relevant occupational profiles.
Results: the study revealed a gradual improvement in the quality of technical and professional education in response to workforce needs and period-specific conditions, leading to the consolidation of training for the Superior Technician in Citohistotanatology.
Conclusions: training for the Superior Technician in Citohistotanatology was discontinued, and the reasons—insufficiently studied—appear linked to limitations in graduate performance. Technical and vocational education has since been integrated into Cuba's Short-Cycle Higher Education Subsystem. The current Intermediate Technician in Thanatology does not meet national human resource demands. The authors recommend investigating performance limitations as a basis for future research in Medical Education.

Kreywords: Professional Training; Education, Continuing; Education, Professional.

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INTRODUCTION

Modern diagnostic methods used in Pathological Anatomy laboratories—driven by advances in biochemistry, immunology, hematology, genetics, microbiology, among others—require highly qualified technical personnel capable of mastering these techniques and solving professional problems arising in practice. Consequently, the Cuban education system has had to refine curricula to train human resources aligned with scientific-technical progress.[1,2,3]

Pathological Anatomy is a diagnostic specialty within secondary and tertiary health care, with links to primary care, carrying out clinical, teaching, research, and administrative functions. It is the branch of pathology responsible for studying cell, tissue, and organ samples obtained from living or deceased individuals to detect morpho-physiological alterations related to disease, death, or preventive health actions. It relies on various study methods, especially cytology, biopsy, and autopsy. [4]

Pathological Anatomy integrates technological activities performed by personnel responsible for sample processing and, in certain cases, sample collection and/or result interpretation. It is also linked to Forensic Medicine and technicians handling cadavers or involved in sample collection and processing. Three main areas are identified: cytodiagnostics, histopathology, and postmortem pathology.[4]

Training for technical personnel in these areas has evolved through different stages, reflecting Cuba's specific historical conditions and transformations in technical and vocational education. The consistent goal has been to supply qualified labor aligned with national production and service needs, ensuring strong political-ideological preparation and close engagement with social challenges as genuine agents of change. [3,5,6,7]

Thus, in 2011, the Superior Technician in Citohistotanatology emerged—an integrated program designed to produce a higher-level technician capable of meeting needs in cytodiagnostics, histopathology, and postmortem pathology, aligned with the demands of Pathological Anatomy and Forensic Medicine. [4,8]

This training model achieved international equivalencies in professional practice, with similarities—though differing in nomenclature and educational policy specifics—to technical training in countries like Spain, Mexico, and the United States, reflecting their respective health service developments. [5,8,9]

However, this Superior Technician in Citohistotanatology program is no longer active in Cuba. The authors have observed theoretical and practical weaknesses in both training and graduate performance, primarily in clinical and forensic morgues. In response, this study aims to describe key events in the historical development of technical and professional training in Pathological Anatomy in Cuba that preceded and followed the Citohistotanatology program, organized chronologically into three stages marking the inception of each health technology profile.

METHODS

This is a historical research study with a qualitative approach and a narrative topical design, following Sampieri's criteria. [10] Theoretical and empirical methods were employed, including historical-logical, analytical-synthetic, and inductive-deductive reasoning. Data and sources were used to triangulate and complement information.

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Non-participant observation and unstructured interviews were conducted with graduates, tutors, administrators, faculty, bachelor's-level professionals, technicians, pathologists, and forensic physicians linked to the field, selected via convenience sampling from institutions where graduates were employed. Additionally, curricula and governing documents from the Citohistotanatology training period were reviewed. Vancouver bibliographic referencing standards were followed. The study falls within the field of Educational Sciences, specifically Higher Medical Education.

An exhaustive bibliographic search was conducted using PubMed, SciELO, Scopus, and Google Scholar, covering technical and vocational education in Cuba in Spanish and English, with no time restrictions. Information was organized chronologically from the 1959 Revolutionary triumph to 2024, when the study concluded.

The timeline was structured around pivotal events in technical and vocational education development, particularly those marking the launch of qualitative studies.

Three stages were defined:

Stage I (1959–1989): Initiated with the 1959 Revolution and strategies for organizing and structuring training.

Stage II (1990–2017): Marked by the conceptualization of technical and vocational education in Cuba.

Stage III (2018–2024): Defined by the introduction of the Short-Cycle Higher Education Subsystem.

Within these stages, the following health technology profiles related to Pathological Anatomy and Forensic Medicine were described:

- **Stage I (1959–1989):**
  - Technical Assistant in Pathological Anatomy
  - Technical Assistant in Cytology
  - Technician in Pathological Anatomy
  - Intermediate Technician in Cytohistopathology

- **Stage II (1990–2017):**
  - Bachelor's in Cytohistopathology
  - Bachelor's in Clinical Bioanalysis
  - Superior Technician in Citohistotanatology

- **Stage III (2018–2024):**
  - Short-Cycle Superior Technician in Cytohistopathology.

This periodization was informed by Rodríguez Gallo et al.,[5] ("Development of Health Technician and Technologist Training in Cuba," *Humanidades Médicas*, 2011;11(3)) and complemented by Arencibia Salazar's,[8] work ("A Broad-Profile Technician in Pathological Anatomy," *Órbita Científica*, 2018;102(24)), adjusted to key distinguishing events between periods.

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DEVELOPMENT

Recent societal transformations in Cuba, along with scientific and technological advances, have driven reforms in educational policy and technical-vocational training. The goal has been to produce broadly skilled technicians capable of performing multiple occupations and adapting flexibly to diverse workplaces.[11,12,13]

Accordingly, technical and professional training for Pathological Anatomy and Forensic Medicine services has undergone a transitional process from 1959 to the present, detailed below.

Stage I (1959–1989)

1959–1965: After the Revolutionary triumph, Cuba implemented strategies to organize and structure education at all levels to meet socioeconomic transformations. The National Directorate of Mid-Level Medical Education was created to train auxiliary personnel.[5,13] Between 1962 and 1965, 36 Technical Assistants in Pathological Anatomy were trained—individuals with sixth-grade education completing a six-month program. [14]

1965–1975: Curricula were revised, and the first provincial schools for intermediate and auxiliary technicians were established as part of decentralization efforts.[5,13] In 1966, the Technical Assistant in Cytology program began, graduating 220 technicians by 1972. That same year, the Technician in Pathological Anatomy program trained 26 individuals, followed by 137 more between 1970 and 1972. Training of Technical Assistants in Pathological Anatomy continued until 153 had graduated by 1972, under 18-month curricula requiring ninth-grade entry.[14]

From 1970 onward, teaching quality was deepened. Curricula were aligned with adult general education to raise students' cultural level. Intermediate technician training was opened to secondary school graduates, and auxiliary courses were phased out. Programs were extended to three years.[5,13]Limitations included insufficient laboratory infrastructure, lack of specialized teaching materials, and excessive emphasis on workplace practice over classroom instruction.

1975–1989: This period featured reforms to improve mid-level medical education. Curricula were revised, and common foundational trunks were created to group related specialties with distinct exit profiles. Mid-level medical education was formally integrated into Cuba's technical-vocational education system and aligned with university programs sharing basic technician profiles. [5,6,7,8,9]

In 1980, following Fidel Castro's proposal, a nationwide network of Health Polytechnic Institutes was created to train intermediate-level technicians, including the Intermediate Technician in Cytohistopathology—requiring 12th-grade entry and lasting three years. In 1983, the National Center for Technical and Vocational Advancement in Health (CENAPET) was established to provide continuous upgrading for health technicians and pedagogical training for instructors. However, graduates still faced limitations: insufficient practical-professional skills, lack of foreign language proficiency, narrow training profiles, limited pathways to higher education, and a need for universities to better serve economic demands.[5,6,7,8]

Stage II (1990–2017)

In the 1989–1990 academic year, the Bachelor's in Health Technology was launched at the Higher Institute of Medical Sciences of Havana as part of Cuba's Medical Education Subsystem, targeting health technicians with six exit profiles (including Intermediate Technician in Cytohistopathology) over three years. The first cohort graduated in 1994 (45 students), and training continued until 2005–2006.[5,6,7,8]

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The early 1990s brought economic crisis following the collapse of Eastern European socialism, prompting economic reforms and improvements in the National Health System. University universalization led to a national network of educational institutions and expanded territorial program offerings. The Health Technology program was redesigned under the "Battle of Ideas" initiative, enabling enrollment of demobilized youth from National Service and participants in youth comprehensive advancement courses—12th-grade graduates without work experience—to rapidly increase qualified technical staff and enhance health service quality.

Thus, Cuban universities—particularly Higher Medical Education—instituted a new Health Technology pedagogical model in 2003–2004, featuring 21 exit profiles over five years, including the Bachelor's in Cytohistopathology. The curriculum had three levels with intermediate exits (basic technician, intermediate technician, and bachelor's in health technology) and included pathways for experienced intermediate technicians (e.g., in Thanatology) via worker-student modalities. This model enhanced practical skills and professional performance.[5,6,7,8]

Curricular refinements aimed to produce broadly competent graduates capable of solving common professional problems at the base level, integrating academic, labor, and research components. Emphasis was placed on essential professional knowledge and generalizable skills to support lifelong learning, postgraduate advancement, and adaptation to evolving workplace and societal demands. [15]

However, this Health Technology curriculum had limitations: lack of integration across profiles within a single program, failure to achieve a truly broad profile based on foundational training (integration occurred only through general disciplines), high costs due to diverse teaching materials for many profiles, imbalance between centralization and decentralization, and insufficient collaboration between training institutions and employers for graduate placement.[5,13,16]

Consequently, these narrow profiles could not keep pace with technological advances in medical sciences. In 2010–2011, technologist training was redesigned into eight profiles (12th-grade entry), piloted at the Victoria de Girón Institute of Basic and Preclinical Sciences and later expanded nationwide. This new design eliminated tiered training, strengthened the foundational cycle, and introduced the Bachelor's in Clinical Bioanalysis—which grouped four profiles, including Cytohistopathology.[5,13]

During this stage, a broad-profile higher-level technician was consolidated, covering all Pathological Anatomy areas under the name Citohistotanatology, integrating the former Intermediate Technician in Thanatology. Thus, the Superior Technician in Citohistotanatology was launched in the 2011–2012 academic year. [17]

Initially offered for two consecutive years within other technical-professional specialties at the Calixto García Medical Sciences Faculty (an affiliate of the Faculty of Health Technology—FATESA), it was later expanded in 2015–2016 and 2016–2017 to four provinces: Pinar del Río, Havana, Mayabeque, and Villa Clara. After 2016–2017, the program was discontinued.[8,17]

The Superior Technician in Citohistotanatology emerged during a push for stronger integration of work and education. Training shifted from classrooms to productive entities, leveraging their technological resources, materials, and experienced personnel to develop student competencies through "learning by doing." [18]

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The teaching-learning process was designed so that all program activities occurred not only in academic institutions but also in the same health centers where graduates would eventually work. This allowed access to human and material resources for theoretical and laboratory instruction. Additionally, collaboration with faculty and professionals in these settings enabled coverage of advanced techniques, equipment, and technologies, fostering solutions to local socioeconomic, cultural, and environmental challenges and ensuring labor performance aligned with regional service needs. [8,17]

There are few reports on the performance of these graduates. Notably, Arencibia, [8]—as program coordinator—documented resistance from some pathologists and Cytohistopathology bachelor's graduates who considered the two-year timeframe insufficient for such broad training. Others argued the inclusion of thanatological duties in postmortem pathology made the profile overly comprehensive, potentially compromising professional performance.

In subsequent articles,[19,20] Arencibia,[8] identified workplace performance deficiencies in Citohistotanatology technicians through curriculum analysis and expert consultation, attributing them to "inadequacies in occupational competency development." To address these gaps, the program coordinator proposed faculty professional development and a technical glossary to improve graduate performance.

Stage III (2018–2024)

During this stage, training of the Superior Technician in Cytohistopathology continued in certain provinces. Meanwhile, Thanatology training remained at the intermediate (mid-level) tier and was not incorporated into Higher Education. This program remained limited in both the number of training centers and enrollment capacity, failing to meet the demand for highly qualified personnel in clinical and forensic morgues.[8,19,20]

In the 2018–2019 academic year, training began for the Short-Cycle Superior Technician in Cytohistopathology, integrated into Cuba's Higher Education Subsystem. This program lasts three years, requires 12th-grade entry, and aligns with UNESCO's International Standard Classification of Education (ISCED) Level 5. [21] This stage marked the formal implementation of tertiary education in Cuba, designed to ensure upward mobility to higher education levels, encompass undergraduate studies, employment preparation, and access to postgraduate education.[22,23]

This level of education is not unique to Cuba. Short-cycle tertiary education was introduced in Europe during the 1960s and 1970s—particularly in France, the United Kingdom, Ireland, Norway, and Cyprus—and expanded in Central and Eastern European countries (e.g., Bulgaria, Hungary, Slovenia) during the 1990s. In Latin America, the first technological universities emerged in Argentina in the 1940s. From their inception, these programs were termed "Short-Cycle Education," producing "University Superior Technicians." Designed as terminal qualifications, they provided accessible pathways for youth at risk of social and labor exclusion, emphasizing practical knowledge, skills, and competencies geared toward specific occupations and rapid labor market integration. [24]

In Cuba, the advantages of adopting this new training model were first studied in 1997 during an analysis of global education trends for the UNESCO World Conference on Education for the 21st century. Later, in 2015, a national working group—including advisors from the central office of the Ministry of Higher Education and faculty from the University of Havana and the José Antonio Echeverría Technological University of Havana—proposed the formal creation of a Short-Cycle Higher Education Subsystem, which was approved and implemented in 2018.[22,23,24,25]

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Implementing this subsystem presented challenges for health professional training, particularly regarding the required linkage between universities and workplaces. This integration was essential to ensure training quality and clearly differentiate the new short-cycle level from both intermediate technician and traditional university programs.[26]

Beginning in 2018, the Short-Cycle Superior Technician in Cytohistopathology was introduced based on territorial workforce needs. The curriculum emphasizes a theoretical-practical approach and includes a mandatory workplace internship in production or service entities, in accordance with Council of Ministers Decree No. 364, [27] ("On the Training and Development of Qualified Workforce") and Ministry of Higher Education Resolution No. 202 of 2019.[28]

This Cuban model was conceived to enable rapid labor market entry in response to current socioeconomic conditions, workforce migration to the private sector or abroad, evolving organizational structures in the productive sector, and the emergence of new occupations. It aims not only to fulfill human resource demands but also to address graduates' economic, social, and personal expectations. Additionally, the rapid obsolescence of technologies necessitates continuous curriculum updating.[29]

Evaluations conducted over the past five years have highlighted several strengths: collaboration between professionals and institutions shaping professional practice; ongoing curriculum revision to enhance teaching quality; high-quality workplace internships; and research contributions to solving real-world problems in labor settings. However, persistent weaknesses remain, including difficulties in selecting and certifying enterprise professionals to serve as part-time university instructors and challenges in leveraging enterprise material resources to support training. These issues underscore the need for stronger, coordinated enforcement of institutional agreements to ensure adequate human and material contributions for comprehensive technician training. Other scholars recommend systematic curricular refinement to ensure this training model remains responsive to societal needs and advances in science and technology. [30]

CONCLUSIONS

The historical analysis of Health Technology training in Cuba (1959–2024) reveals a gradual improvement in technical and professional quality shaped by the conditions of each era. However, the Superior Technician in Citohistotanatology program—created to address workforce gaps in Pathological Anatomy and Forensic Medicine—was discontinued due to limitations in graduate performance and insufficient research into its underlying causes. Additionally, international inconsistencies in program nomenclature hinder comparative studies. Meanwhile, technical training has been integrated into the Short-Cycle Higher Education Subsystem under the specialty Cytohistopathology, while intermediate-level Thanatology training continues independently—though with limited coverage and insufficient enrollment to meet the needs of clinical and forensic morgues.

Conflict of interest

The authors declare no conflicts of interest related to this research.

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Authorship contribution
ELRG: Conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, supervision, validation, visualization, original draft writing, and review & editing.
OFL: Conceptualization, formal analysis, methodology, original draft writing, and review & editing.
YPM: Project administration, supervision, visualization, original draft writing, and review & editing.

All authors approved the final version of the manuscript.

BIBLIOGRAPHIC REFERENCES

1. Ramos-Suárez C, Cabello-Daza S, Escalona-Rojas V, Williams-Abelle EC, González-Aquino Y, Ortiz-Roque J. Perspectiva de Tecnología de la Salud, como proceso formativo de la Educación Médica. Rev. Cub. de Tecnol. Salud. [Internet]. 2019 [citado 14/01/2025]; 10(1): 57-69. Disponible en: https://revtecnologia.sld.cu/index.php/tec/article/view/1367

2. Díaz-Canel M, Alarcón R, Saborido JR. Potencial humano, innovación y desarrollo en la planificación estratégica de la educación superior cubana 2012-2020. Revista Cubana de Educación Superior [Internet]. 2020 [Citado 05/12/2024]; 39(3). Disponible en: http://scielo.sld.cu/pdf/rces/v39n3/0257-4314-rces-39-03-e1.pdf

3. Alpízar M, Villavicencio MV. Cuba desde una perspectiva regional sobre el futuro de la Educación Superior. Universidad y Sociedad [Internet]. 2022 [Citado 22/12/2024]; 14(4): 56-68. Disponible en: https://rus.ucf.edu.cu/index.php/rus/article/view/3014

4. Socorro-Castro C, Fumero-Roldán L. Los métodos de estudio anatomopatológicos desde una mirada histórica, social y contextualizada. Medisur [Internet]. 2020 Oct [citado 14/01/2025]; 18(5): 762-771. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1727-897X2020000500762

5. Rodríguez-Gallo MN, García-Linares G, García-González MC, Ortega-González N, Sánchez-Fernández OA. Desarrollo de la formación de técnicos y tecnólogos de la salud en Cuba. Rev Hum Med [Internet]. 2011 Dic [citado 14/01/2025]; 11(3): 489-503. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid0S1727-81202011000300006&Ing=es

6. Morales-Rodríguez I, Cruz Acosta Y. El proceso de formación del profesional en la Educación Superior Cubana. Revista Atlante: Cuaderno de Educación y Desarrollo [Internet]. 2018 [citado 14/01/2025]; 4. Disponible en: https://www.eumed.net/rev/atlante/2018/04/formacion-profesional-cuba.html

7. Pérez-García C, Pérez-García JJ, Rodríguez-Milian IJ. Educación técnica y profesional en Cuba: Desafíos del Socialismo. Trabalho Necessário [Internet]. 2021 [citado 14/01/2025]; 19(39): 15-3. Disponible en: https://periodicos.uff.br/trabalhonecessario/article/view/49417

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6651

8. Arencibia-Salazar O, Cardoso-Camejo L, Caballero-Báez JA. Un técnico de perfil amplio en Anatomía Patológica. Órbita Científica [Internet]. 2018 [citado 14/01/2025]; 24(102): 1-11. Disponible en: file:///C:/Users/User/Downloads/490-Texto%20del%20art%C3%ADculo-1948-1-10-20181011.pdf

9. Torres-Prioris A, Rams S, Acebal MC. Análisis de estrategias de estudiantes de Formación Profesional en prácticas de microscopía. Ápice. Revista de Educación Científica [Internet]. 2023 [citado 14/01/2025]; 7(2): 7-16. Disponible en: file:///C:/Users/User/Downloads/juanrivadulla,+Apice+7+[2]+2+_+9588+Agustina+Torres+et+al+07-16.pdf

10. Hernández-Sampieri R, Fernández-Collado C, Baptista Lucio MP. Metodología de la investigación 2010. Quinta Edición. México: Editorial McGraw-Hill; 2010.

11. Pérez-García C. La pedagogía de la Educación Técnica y Profesional en Cuba: Sus antecedentes. Trabalho Necessário [Internet]. 2015 [citado 14/01/2025]; 13(22):5-33. Disponible en: https://periodicos.uff.br/trabalhonecessario/article/view/9592/6713

12. Alarcón-Ortiz R, Pichs-Herrera BM, Iñigo-Bajo E. Seis décadas de Educación Superior cubana en revolución: Una visión desde la calidad. Rev. Cubana Edu. Superior [Internet]. 2023 [citado 14/01/2025]; 42(2). Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0257-43142023000200004

13. Pérez-García C, Pérez-García JJ, Rodríguez Milian IJ. Educación técnica y profesional en Cuba: Desafíos del Socialismo. Trabalho Necessário [Internet]. 2021 [citado 14/01/2025]; 19(39). Disponible en: https://doi.org/10.22409/tn.v19i39.49417

14. Rodríguez-Campanioni O, Rodríguez-Domínguez MC, Peñate-Hernández JL. El proceso de enseñanza-aprendizaje en las universidades desde la autoformación: un acercamiento a sus fundamentos: XIV Taller Internacional de "Pedagogía de la Educación Superior". Congreso Universidad [Internet]. 8 de junio de 2024 [citado 14/01/2025]; 11(2): e26. Disponible en: https://revista.congresouniversidad.cu/congreso/article/view/26

15. Saborido-Liodi JR, Alpízar-Santana M, Villavicencio MV, García-Báez R. Informe de Política de Educación Superior: III Conferencia Mundial de Educación Superior auspiciada por la UNCESCO [Internet]. 2022 [citado 14/01/2025]; 41(3):1-15. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0257-43142022000300001

16. Ministerio de Educación. Plan de Estudio de Tecnología de la Salud, especialidad Citohistotanatología; 2011.

17. Mesa Carpio N, Bravo Mercón N, Salvador Jiménez RL. LA FORMACIÓN DEL PROFESIONAL DE CARRERAS PEDAGÓGICAS EN EL VÍNCULO UNIVERSIDAD- ENTIDAD LABORAL. Revista Varela [Internet]. 2019 Sep. 1 [cited 18/12/2025]; 19(54): 312-26. Available from: https://revistavarela.uclv.edu.cu/index.php/rv/article/view/35

18. Arencibia-Salazar O, Álvarez-Mesa M, Jiménez-Armada J, Neto Joao AJ. La Profesionalización con el empleo de formas no académicas de la Educación Avanzada. Revista Pedagogía Profesional [Internet]. 2019 [Cited 18/12/2025]; 17(2). Disponible en: *http://revistas.ucpejv.edu.cu/index.php/rPProf/article/view/830*

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6651

19. Arencibia-Salazar O, Añorga-Morales J. Glosario de términos de uso frecuente por el Citohistotanatólogo/Glossary of terms of frequent use for the Citohistotanatólogo. Panorama. Cuba y Salud [Internet]. 2020 [citado 14/01/2025];15(2): 26-32. Disponible en: https://www.medigraphic.com/pdfs/cubaysalud/pcs-2020/pcs202e.pdf

20. Velázquez Zaldívar R, Fraga Cedré D, Lau Apó FC. Política Pública del ciclo corto de la educación superior en Cuba. Revista Cubana De Administración Pública Y Empresarial [Internet]. 5 de octubre de 2022 [citado 14/01/2025]; 6(3): e226. Disponible en: https://apye.esceg.cu/index.php/apye/article/view/226

21. Lau F. Implementación y evaluación de un reto: la educación superior de ciclo corto en cuba. Órbita Científica [Internet]. 2018 [citado 14/01/2025]; 24(103). Disponible en: http://revistas.ucpejv.edu.cu/index.php/rOrb/article/view/1380

22. Lau Apó FC, Fraga Cedré D. Vínculo universidad-empresa en la formación de técnicos superiores para sectores estratégicos en Cuba. [Internet]. 2025 [citado 14/01/2025]; 11(4): e40. Disponible en: https://revista.congresouniversidad.cu/congreso/article/view/40

23. Ministerio de Educación Superior. Resolución No. 115. Reglamento Organizativo del proceso docente y de dirección del trabajo docente y metodológico para la educación Superior de Ciclo Corto. La Habana; 2022.

24. Queiruga-Santamaría O, García-Álvarez J, Santos-González MC. Análisis de la eficacia de los planes de formación profesional para el empleo desde el punto de vista del mercado laboral. Revista Fuentes [Internet]. 2025 [citado 14/01/2025]; 24(1):90-103 Disponible en: https://revistascientificas.us.es/index.php/fuentes/article/view/15258

25. Ministerio de justicia [Minjus]. Decreto No. 364. Gaceta Oficial de Cuba; 2020 (10). Disponible en: https://www.mined.god.cu/wp-content/uploads/2020/02/GOC-2020-O10.pdf

26. Ministerio de justicia [Minjus]. Resolución No. 202/2019 Reglamento de la responsabilidad de las entidades en la formación y desarrollo de la fuerza de trabajo calificada en el nivel superior. Gaceta Oficial de Cuba; 2020 (10). Disponible en: https://www.mined.god.cu/wp-content/uploads/2020/02/GOC-2020-O10.pdf

27. Delgado-Brito Y, Iñigo-Bajos ER, Sosa-Vastillo AM. La inserción de graduados de la educación superior cubana: premisas de un seguimiento en desarrollo: XVII Taller Internacional "La Educación Superior y sus Perspectivas". Congreso Universidad [Internet]. 6 de junio de 2024 [citado 14/01/2025]; 11(2): e22. Disponible en: https://revista.congresouniversidad.cu/congreso/article/view/22

28. Lasso-León X, Ferrer-Vicente M, Martínez-Almarales Y. El diseño curricular por competencias profesionales en la formación del Técnico Superior. Universidad, ciencia y tecnología [Internet]. 2022 [citado 14/01/2025]; 26(112): 24-42. Disponible en: https://doi.org/10.47460/uct.v26i112.543

29. Alpízar-Santana M, Velázquez-Zaldívar R, García-Báez R. El desafío de enfrentar desigualdad y calidad en la educación superior en América Latina. Universidad y Sociedad. Revista Científica de la Universidad de Cienfuegos [Internet]. 2023 [citado 14/01/2025]; 15(5): 10-23. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2218-36202023000500010

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6651

30. Lijun S. Shujun T, Lan Y, Na F. Research on Spatial Distribution of Settlements in the Upper Research of the Minjiang River. Open Journal of Applied Sciences [Internet]. 2023 [citado 14/01/2025]; 13(11): 1967-1981. Disponible en: https://www.scirp.org/journal/paperinformation?paperid=129120