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The Schools of Arts and Crafts of New Spain as predecessors of current technical professional education

Szkoły Sztuki i Rzemiosła Nowej Hiszpanii jako poprzedniczki współczesnego technicznego kształcenia zawodowego

Introduction

Today in Mexico the development of technical professional education obtains a special boost, based on the recommendations of the *Diagnostic*

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Report on Higher Education and Science post-COVID19 in Ibero-America of the Organization of Ibero-American States for Education, Science and Culture (OEI) which was promoted within the framework of the *World Higher Education Conference WHEC2022 Reinventing Higher Education for a Sustainable Future* of UNESCO and its *Ibero-American University 2030* program, in May 2022, in Barcelona, Spain.

In general, the *Report* concludes that there is a need to re-imagine and re-invent higher education and design an *Agenda for higher education and science in Ibero-America 2030*. Likewise, one of the fundamental premises of this restructuring is the promotion of short professional training programs. It is recommended that HEIs, governments and companies stimulate, through the expansion and diversification of technical professional education programs (lasting 2–3 years), an academic offer with greater flexibility and attention to the personal characteristics of the students, which promotes skills and competencies, recognizes the changing physiognomy of the world of economy and employment. This will allow students their future entry into professional activity, which is developed through the use of models of real work situations (contextual teaching) in the teaching process (OEI, 2022).

In this context of new challenges that arise before the Mexican technical professional education system, it is important to know the preludes to its appearance and determine the patterns of its emergence and development, studying the case of the Schools of Arts and Crafts of the New Spain (16th–18th centuries).

In general, the historical aspects of Mexican professional technical education addressed Álvarez, Bazant, Bolaños, Bracamonte, Cardiel-Reyes, Díaz-Covarrubias, Escalante-Gonzalbo, Gonzalbo, Greaves, Hernández, Hernández-Camargo, Labastida, Lecoin, Loyo, Mejía-Zúñiga, Meneses-Morales, Novo, Ornelas, Palacios, Ríos-Zuñiga, Sánchez-Flores, Solana, Staples, Tanck-de-Estrada, Tena, Torres-Septién, Vázquez, Zebadúa, among others. However, these authors present isolated data relating to this or that aspect of technical professional education in different periods of Mexican history.

The objective of this work was to establish the premises for the development of the Schools of Arts and Crafts of New Spain as predecessors of current Mexican technical professional education, through a documentary-bibliographic study and support in the historical-pedagogical approach.

The historical-pedagogical approach is based on the idea that considering different moments in the historical existence of the object of study, following the stages of its development, observing and recording its behaviour during a certain period of time, helps to better understand and solve problems that are inherent to it today. Thus, it is important to identify the socioeconomic, political and cultural contexts, in which the object of study was developed and the subjects of education acted in a certain historical stage, to reveal the moral and ethical values and the concepts they used to define the educational ideals of this historical period, the content, forms, principles of the organization of education.

Socioeconomic and political contexts of New Spain (16th–18th centuries)

During the viceregal era, the economy and politics of New Spain experienced the moments of growth and stability, but also of crisis and calamity, and with them, of course, education. In the 16th century, the period of the conquest of the New World, the ruling house of Spain was the Habsburgs. Likewise, the period from the second half of the 16th century to the end of the 17th century in the history of New Spain is known as the “golden century”: the riches of the new continent allowed many Spaniards and other Europeans to make their fortunes; they allowed the Spanish crown to sustain costly wars, enriching the clergy and nobles. In turn, the Spanish introduced to the new continent new agricultural technologies, textiles, construction, mining extraction, new crops (citrus fruits, wheat, sugar cane, olive trees, etc.), livestock (cattle, swine, goats, poultry), began the systematic development of the earth’s subsoils, creating large mining centres (Zhizhko, Beltrán, 2023, p.108).

Nevertheless, at the beginning of the 18th century, a brutal crisis began in Spain related to several factors: decline of agriculture; accumulation of land in few hands (*latifundios* and *mayorazgo*); rejection by the Spanish of manual labour; clergy growth and abuses; large number of holidays; many homeless people. At the same time, the Habsburg dynasty came to an end with the death of Charles II, who in his will named his French grandson Philip of Anjou (Bourbon dynasty) as his successor. This provokes the war of Spanish succession, in which the supporters of Philip of Anjou (the Catholic) win against the representatives of the German Archduke Charles (the Protestant).

On the other hand, in the 18th century, the Enlightenment movement was born in Europe, which defended liberalism, reason and patriotism, expressed itself against superstitions, ensured the renewal of Christian ideas and became aware of economical decadence. This movement had a great influence on the decisions of European monarchs. Thus, Charles III (1759–1788), son of Philip of Anjou, began the Bourbon Reforms in Spain and the colonies, an event that radically transformed novohispanic life: it was called “the second conquest”, and later caused the independence movement (Zhizhko, Beltrán, 2023, p.107).

The Bourbon Reforms came to put an end to the administrative and economic regime established in New Spain since the conquest: they eliminated the *repartimiento* system (which consisted in assignment by the colonial government to the indigenous people of labor for the benefit of the Spanish colonists); they delimited the power of the viceroy and established royal control (centralization); they introduced the French system of *intendencias* (1786) suppressing the mayorships, the townships, etc.; they established new monopolies (for example, tobacco, etc.); they instituted fixed military troops (1765); they reformed the church (limit privileges of the clergy, limit the power of the Pope, expel the Jesuits (1767)); they expropriate the payments of various types to Church (*regalism*), chaplaincies and brotherhoods; they reform common life (Pietschmann, 1966).

Regarding the rights of the conquered Amerindian peoples, a prolonged discourse originated in New Spain between the jurists who legislated the life of the colonies (it is about legislative or natural human law) and the ecclesiastics (it is about divine right: “what is and what is not fair”). Thus, the Church dictated the just laws and from there the legal laws were formulated. If a new legal law was proposed, the ecclesiastical authorities decided whether they were applicable or not. It is important to note that this discourse covered not only the New World, but was transcontinental: it involved both the Americas and European countries. Therefore, this fact is considered the birth of international law.

In this historical development, what was the role of local ethical groups, those who belonged to these lands for centuries? What new knowledge did they require? Who and how provided them with this knowledge, skills, and abilities? Firstly, the use of the labour of the Amerindian peoples subjugated by the Spanish ensured the economic, political and sociocultural development of the conquered lands. The Indians cultivated the land, worked in the mines, constructions, etc. Likewise, the proper handling of the new technologies introduced by the Spanish required certain instruction and teaching that the

conquistadors provided along with the evangelization and Castilianization of the native peoples of the Americas. The main political, economic and cultural force in the colonies – the Catholic Church – justified the Spanish monarchy in granting the western territories in exchange for teaching the locals religion and “good customs”. This concession, which obliged Spain to evangelize the natives of the New World, was known as the “just titles.” Thus, indigenous education was linked to Spain’s right to dominate the new lands, because due to this evangelizing task they held the “just titles” to the American possessions, and important attention was paid to the education of the Indians (Gonzalbo-Aizpuru, 1990).

Education and evangelization of indigenous people in the viceroyalty

The results of the historical-pedagogical study allow us (in the context of similarities and differences in comparison with the results of other authors) to state that the prerequisites of the appearance of the Mexican technical professional education system were created since the 16th century, and the novohispanic Schools of Arts and Crafts were the grounds for its development.

The research carried out showed, that the trades and crafts began to be taught to the Indians along with the catechism from the first years of the conquest. Thus, the friars “taught classes” to the children of Indians of plebeian origin (*Macehuales*) in the church courtyards.

Since dawn they gathered the sons and daughters of *Macehuales* in the church patios and later they listened to the mass. Then they were divided, for example, beginners who learned the *Per signum*, others who were more advanced – the *Pater noster*, and others (the *Commandments*) were examined in order to advance in grade. At the end of learning the Doctrine, they learn trades or tasks attributed to their sex (García-Icazbalceta, 1889, pp. 62-65).

Later, the Schools of Arts and Crafts were established, where in addition to religion, reading, writing and Latin, there were taught arts and crafts such as painting, sculpture, crafts, the art of embroidery, and stonemasons, blacksmiths, carpenters, bricklayers, tailors, shoemakers were trained. A special place is occupied by the *School of San José de los Naturales* founded by friar Pedro de Gante, which was established adjacent to the convent of San Francisco de México. According to the *Franciscan Codex* of Joaquín García Icazbalceta (1889),

This monastery of S. Francisco, behind the main chapel of the mentioned church, has a school where the children of the main Indians are taught reading and writing and Christian doctrine, and all the other monasteries of other towns have the same; and this school is in charge of friar Pedro de Gante, who came to this land forty-six years before the first twelve invited by the Emperor Our Lord, of perpetual memory, arrived there; and this was the first who taught the Indians to sing and the music that they now play, and he has made them learn painting and other crafts in which they equal and exceed the Spaniards, and he has persevered in instructing them and taking advantage of them until the day of today, he lives to the age of ninety.

In 1531, Don Vasco de Quiroga, the First Bishop of Michoacán, proposed to the Council of the Indies “[...] a plan of social organization for the indigenous people, in order to establish 200 town hospitals, that is, congregations of indigenous people founded in the practice of Christianity, collective work and communal life, and which operation included, among other things, the teaching of craftsmanship” (Sánchez-Flores, 1980, p. 188).

In the 17th-18th centuries, the kings of Spain tried to organize the formal elementary education of the indigenous people. Since 1600, Viceroy Gaspar de Zúñiga y Acevedo dictated the *Ordinances of the Masters of the Most Noble Art of Teaching Reading, Writing and Counting*. In 1693, King Charles II commissioned “[...] the promotion of schools to the local civil authorities (the mayors) because they were the supervisors of the community funds of the Indian towns, from which the teachers were paid” (Solana, Cardiel, Bolaños, 1981, pp. 13–14).

Likewise, royal decrees were issued that ordered the mandatory teaching of the catechism and Castilian language in all the colonies and prohibited the use of any other language other than Castilian. It was ordered to teach the Indians to read and write; it was paid attention to the way the schools were financed; it was ordered to pay teachers with funds “from the community assets of Indian towns” (money collected annually in municipal treasuries); there were established the schools for indigenous girls in the towns with the largest number of inhabitants” (Tanck-de-Estrada, 2000).

In such a way by 1754, there were schools in 281 Indian towns in the archbishopric of Mexico. Most were financed by parents and the others by money from community funds or the subsidy given by the parish priest. In 1808, in the municipality of Mexico, 467 Indian towns (37% of the 1,245 towns) had primary schools; in the municipality of Michoacán – 94 towns

(37% of the 254 towns) and in Guanajuato – 50% of the 39 towns. Throughout the viceroyalty of New Spain, there were 1,015 Indian towns with schools (26% of the 4,088 towns had primary schools). Another important fact is that the Church financed only 3% of these schools, indigenous parents supported 24% of them, and community funds 44%. In 29% of the Indian towns, the teacher's full salary was provided by the communal funds. Furthermore, at the end of the 18th century and beginning of the 19th century, there were schools for indigenous girls called "*amigas*" or "*migas*" in the municipalities of Mexico, Veracruz, Puebla and Durango, and boarding schools for Indian girls in Mexico, Guadalajara and Toluca cities (Tanck-de-Estrada, 2000).

Birth of technical schools for workers in the 18th century

The study carried out showed that although the evangelization and education of the indigenous people were subordinated to the Catholic Church and was under its jurisdiction, they were matters of the State and responded to the interest of the Spanish crown in converting its new subjects to the culture of the metropolis. From the beginning of this process, there were two opposing points of view on the problem: the official one and the opposition one (of some missionaries). The vision of the friars about the evangelization and Castilianization of the native peoples became, at the end of the 18th century – beginning of the 19th century, the foundation for the ideas of Novohispanic Enlightenment⁴ and radical changes in Latin American education.

Therefore, the bearers of the ideas of the Novohispanic Enlightenment (Alzate and Ramírez, Bartolache, Eguiara and Eguren, Campoy, Clavijero, Díaz de Gamarra, Hidalgo, Mociño, Sigüenza and Góngora, among others) saw their mission in promoting industry in the colonies, eliminating the primacy of the metropolis industry. They stated that adequate training of indigenous male workers would increase their productivity; furthermore, after some Indian women's instruction, their labour could be used in agriculture and manufacturing. On the other hand, at the end of the colonial period, among enlightened intellectuals emerged a discourse regarding the improvement of the life of the most vulnerable groups by offering them the possibilities of

⁴ Novohispanic Enlightenment is the intellectual movement of renewal that occurred in almost all of New Spain in the second half of the 18th century; a current that was fermented in schools and universities and that tried to modernize, that is, update the scholastic ideas dominant until then (Labastida, 2012).

acquiring a trade (profession). In their opinion, this way, bad habits and crime that are harmful to the well-being of New Spain society could be eradicated (Zhizhko, Beltrán, 2023, p.110).

The enlightened people of New Spain, in order to spread the new ideas, and scientific and technical knowledge of the Enlightenment, founded the *Societies of Friends of the country*, through which they promoted the first schools for workers, which were prototypes of the modern professional technical schools. Some prominent members of these societies saw fit

[...] deliberate on the differentiation of occupations and useful knowledge for the popular sectors, to boost productivity and correct the idleness incurred by the poorly entertained lazy people, the needy and the beggars. Social sectors that, together, accounted for structural problems, such as poverty and unemployment [...] the aim was to establish correction houses that would have manufacturing workshops, in which the marginal groups of society would be trained for work. The promotion of useful occupations and knowledge would occur in schools of arts and crafts [...] that would alleviate poverty, unemployment (Magallanes-Delgado, 2008, p. 216).

The idea of training the poorest people excited the conscious New Spain society; several technical schools were opened for workers, including the famous Royal Academy of San Carlos of the Noble Arts of New Spain (1781), where engraving, painting and sculpture were taught (now is the National School of Plastic Arts), as well as the Royal Mining Seminar (1783) and the School of Spinning and Weaving (1792), “the first experimental establishment for technical and manufacturing education to be instituted in the New Spain at a public level” under new techniques in which the “manual skill of the indigenous people would be taken advantage of, in order to integrate them into a production from which they distanced themselves due to the disgraceful treatment generally received in the workshops” (Sánchez-Flores, 1980, p. 188).

These schools of New Spain were predecessors of the current Mexican professional technical education. Already in the 19th century, arts and crafts, and commercial schools emerged with new characteristics, many of them of French origin, implemented by the brilliant foreign pedagogues, such as Eduardo Turreau de Liniere⁵, German Nicolas Prisette, Federico Wauthier, Carlos Vreniere, Esteban Guénot, Voidet de Beaufort, Federico Wauthier,

⁵ In the private commercial school of Eduardo Turreau de Liniers, known as the Colegio Mexicano de San Felipe de Jesús (1844), “all the branches that a merchant should know” were taught.

among others. Likewise, it is worth remembering the Commercial Institute (1845), today the Higher School of Commerce and Administration (ESCA), the most important among the official Technical Schools in Mexico, which together with others became part of the National Polytechnic Institute in 1936.

After the deposition of the French Monarchy, the Restored Republic (1867-1877) endeavoured, among other things, to implement educational projects: new day schools for children and night schools for adults, schools for workers and craftsmen, as well as courses for telegraphers, accountants and secretaries, were opened. The industrialization and modernization of the country required qualified labour. Builders, engineers, agronomists, etc. were needed. So, the technical professional education of young people and adults acquired an important boost.

At the end of the 19th century, interest in stimulating industrialization reached its peak in Mexico. During the government of Porfirio Díaz (1876-1911), the railway network, the mining industry, manufacturing trade, and corn and coffee farms were developed and modernized, in order to favour the foreign and domestic investment market. However, Porfirian industrialization did not radically modify the economic mechanisms of self-reproduction of traditional rural societies in Mexico. Industrialization needed qualified workers with specialized technical knowledge, and that is why the numerous technical schools were created (for example, the School of Practical Machinists, among others), trade schools, and schools of arts and crafts.

It is important to emphasize that in the period from the end of the 19th century to the beginning of the 20th century, there were created the National School of Arts and Crafts for women (1871), the “Miguel Lerdo de Tejada” School for women with commercial education (1901), the “Doctor Mora” Industrial Primary School for boys (1903), Schools of arts and crafts were created in public or social charitable institutions, such as Foundling Children’s Houses or prisons, where, complementary to general education, some craft workshops were taught. One of these – the Industrial School for Orphans (1880) – was established in the Tecpan building (formerly a youth asylum) to instruct and educate the “disinherited class” through printing, weaving, carpentry, tailoring, and shoemaking workshops. Another type of these schools are the Salesian or “Don Bosco” schools, located in Mexico, Puebla, Monterrey and Guadalajara cities, for the education of young workers and peasants with limited resources (Hernández-Camargo, 1996).

It is also important to highlight that in the years of the Mexican Revolution (1910) primary, industrial, rural and technical schools were established throughout the country, and the first Directorate of Technical Education was created. The post-revolutionary era stands out for the opening of numerous night schools for adults, federal industrial technical schools, central agricultural schools, schools for women. The literacy campaigns of the population and their job training started, as well as Cultural Missions were created.

Conclusions

So, the results of the study carried out allow us to say that technical professional education (at least, elementary) was born in New Spain with the introduction of the new agricultural technologies, crops, livestock species, textile technologies, construction, development of mining and its large centres by Europeans throughout the viceroyalty. The basic technical professional instruction of the indigenous people in the conduct of these new technologies occurred together with their evangelization and Castilianization and was ensured through the “just titles.” The missionaries were the first to begin teaching arts and crafts to the Indians in the Schools of Arts and Crafts adjacent to the churches and monasteries. Already in 1531 it emerged the idea of village hospitals for the Indians, organized on the basis of collective work and communal life with schools that provided for the crafts teaching.

Later, in the 18th – early 19th centuries, along with the arrival of the New Spain Enlightenment, including its idea about the need to promote viceregal industry, and – from there – the training of indigenous male workers and the education of women, *Societies of Friends of the country* were established and, with their support, the schools for workers, which were the direct predecessors of the current technical professional schools. Likewise, these new educational institutions were used to correct the idleness incurred by the poorly entertained lazy people, the needy, and the beggars. In them, the marginal groups of society were trained for work. Thus, new Schools of Arts and Crafts were opened in New Spain – those of engraving, painting, mining, spinning, weaving, etc.

Since the middle of the 19th century – beginning of the 20th century, a true outbreak of this type of educational institutions has been observed in Mexico: Commercial Institute, the National School of Arts and Crafts for women, Houses for Foundlings, the Industrial School for Orphans, the Schools for women with commercial education, the Industrial Primary Schools for men, etc.

Despite their different specialization and the educational level, they served from elementary to higher. All of these establishments have their origin in the Schools of Arts and Crafts that the missionary friars created in the 16th century. Likewise, they were directed, for the most part, to the marginalized population.

Abstract: In this article we present the results of the historical-pedagogical research, which objective was to establish the premises for the development of the novohispanic Schools of Arts and Crafts as predecessors of current Mexican technical professional education, through a documentary-bibliographic study. The authors found, that the prerequisites of the appearance of the Mexican technical professional education system were created since the 16th century, and the novohispanic Schools of Arts and Crafts were the grounds for its development. In addition, the premises for the development of the novohispanic Schools of Arts and Crafts were the introduction of new agricultural, textiles, construction, and mining extraction technologies to the new continent by the Spanish, and the request for Amerindian peoples' instruction for its use. This teaching was provided by the conquistadors along with the evangelization and Castilianization of the natives in the Schools of Arts and Crafts. Later, in the 18th – early 19th centuries, there were opened the new Schools of Arts and Crafts (the schools for workers) of engraving, painting, mining, spinning, weaving, etc. – the direct predecessors of the current technical professional schools.

Keywords: Mexican technical professional education; novohispanic Schools of Arts and Crafts; education in the 16th-18th centuries; the schools for workers.

Streszczenie: W artykule prezentujemy wyniki badań historyczno-pedagogicznych, których celem było ustalenie przesłanek rozwoju nowohiszpańskich szkół artystycznych i rzemieślniczych jako poprzedników obecnego meksykańskiego technicznego kształcenia zawodowego, poprzez analizę treści. Autorzy ustalili, że fundamenty meksykańskiego systemu technicznego kształcenia zawodowego powstawały już w XVI w., a podstawą jego rozwoju były nowohiszpańskie Szkoły Sztuki i Rzemiosła. Ponadto przesłanką do rozwoju nowohiszpańskich szkół artystycznych i rzemieślniczych było wprowadzenie przez Hiszpanów na nowy kontynent nowych technologii rolniczych, tekstylnych, budowlanych, wydobywczych i prośba o instruktaż ludów indiańskich w zakresie ich stosowania. Nauczanie to zapewniło konkwistadorom ewangelizację i kastylicyzację tubylców w szkołach artystycznych i rzemieślniczych. Później, w XVIII – na

początku XIX w., otwarto nowe Szkoły Rzemieślnicze (szkoły robotnicze): rytownicze, malarskie, górnicze, przędzalnicze, tkackie itp., bezpośrednio poprzedniczki obecnych technicznych szkół zawodowych.

Słowa kluczowe: meksykańskie techniczne wykształcenie zawodowe; nowohiszpańskie szkoły sztuki i rzemiosła; edukacja w XVI-XVIII w.; szkoły dla robotników.

References

- García Ayluardo, Clara (2010). *Las Reformas borbónicas (1750–1808)* [The Bourbon Reforms (1750-1808)]. México: FCE.
- García Icazbalceta, Joaquín (1889). Códice Franciscano. Documentos para la Historia de México, México [Codex Franciscanus. Documents for the History of Mexico, Mexico]. *Imprenta de Francisco Dían de León*, v. 2.
- Gonzalbo Aizpuru, Pilar (1990). *Historia de la educación en la época colonial. El mundo indígena* [History of Education in the Colonial Era. The Indigenous World]. México: El Colegio de México.
- Hernández Camargo, E. (1996). *Educación Técnica Superior para la provincia Mexicana*. [Higher Technical Education for the Mexican Province]. Durango: Artes Gráficas la Impresora.
- Labastida, J. (2012). La ilustración novohispana [The New Spanish Enlightenment]. en *Nueva Época*, No. 97, marzo 2012. Retrieved from: <http://www.revista-delauniversidad.unam.mx/9712/labastida/97labastida2.html> (last accessed: 16.03.2023).
- Magallanes Delgado, M. (2008). *Sin oficio, beneficio ni destino. Los vagos y los pobres en Zacatecas, 1786–1862* [Without Occupation, Benefit, or Destiny. Vagrants and the Poor in Zacatecas, 1786–1862]. Zacatecas: Instituto Zacatecano de Cultura.
- OEI (Organización de Estados Iberoamericanos para la Educación, la Ciencia y la Cultura) (2022). *Informe Diagnóstico sobre la educación superior y la ciencia post COVID-19 en Iberoamérica. Perspectivas y desafíos de futuro 2022* [Diagnostic Report on Higher Education and Post-COVID-19 Science in Ibero-America. Perspectives and Future Challenges 2022]. Santo Domingo (República Dominicana): Dirección de Educación Superior y Ciencia, Secretaría General OEI. Retrieved from: <https://oei.int/downloads/disk/> (last accessed: 10.09.2023).
- Pietschmann, Horst (1966). *Las reformas borbónicas y el sistema de intendencias en Nueva España* [The Bourbon Reforms and the Intendant System in New Spain]. México: FCE.

- Sánchez Flores, R. (1980). *Historia de la Tecnología y la Invención en México* [History of Technology and Invention in Mexico]. México: Fomento Cultural Banamex.
- Solana, Fernando, Cardiel Reyes, Raúl, Bolaños, Raúl (coordinadores) (1981). *Historia de la Educación Pública en México* [History of Public Education in Mexico]. México: SEP-Fondo de Cultura Económica.
- Tanck de Estrada, Dorothy (2000). *Pueblos de indios y educación en el México colonial, 1750–1821* (1ª reimp.) [Indigenous Villages and Education in Colonial Mexico, 1750–1821 (1st reprint)]. México: Colmex-CEH.
- Zhizhko, E., Beltrán, G. (2023). The Philosophical Foundations of Education in New Spain. *Journal Research and Educational Studies*, No. 7, 100–113.

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