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Published in the USA

European Journal of Contemporary Education
E-ISSN 2305-6746
2025. 14(1): 107-118
DOI: 10.13187/ejced.2025.1.107
https://ejce.cherkasgu.press

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# Organization of Educational Process in Trade Schools in the second half of the 19th – beginning of the 20th centuries: on the Materials of Kherson Gubernia

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**Abstract**

The research paper is devoted to studying the organization of the educational process in trade schools of Kherson gubernia, which was aimed at training skilled workers and foremen in various branches of industry and agriculture. Those educational institutions were established to meet the needs of the economy and industry, which were rapidly developing in the second half of the 19th – beginning of the 20th centuries.

The main types of vocational educational institutions in the region were ordinary trade schools, which were intended to train workers in various trade specialties, such as blacksmithing, metalworking, carpentry, turning, etc., and trade schools with a prolonged term of study – a more complex type of educational institution, where training was more extensive, and the study program included both practical mastering of trades and theoretical disciplines.

Training in vocational educational institutions usually lasted 3-4 years. The study program included both general education subjects and special disciplines related to a specific profession. Much attention was paid to practical classes in training workshops. Thus, a dual education system was used – a combination of theory and practice. As a rule, practical subjects were taught by practitioners – blacksmiths, carpenters, stonemasons, mechanics, builders, technologists, etc., which contributed to the sufficient quality of training.

At the same time, despite positive changes, the vocational education system faced a number of problems, in particular, insufficient funding, a shortage of qualified educators, and limited access to education for the lower strata of the population.

**Keywords:** Ukraine, Kherson gubernia, Russian Empire, education, vocational education, trade schools, organization of training, educational process, study programs.

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## 1. Introduction

The development of capitalist relations in the Russian Empire as a result of the reforms of the second half of the 19th century gave impetus not only to the economy but also to other social sectors, including education. The Industrial Revolution required professional workers with qualitatively new knowledge and skills obtained in renovated educational institutions of a trade profile. As a result, a network of trade schools began to be formed in all gubernias of the Empire, oriented towards the needs of local sectors of the economy.

In Kherson gubernia, by the beginning of World War I, a small network of lower trade educational institutions of a professional nature had been formed (see: Trygub et al., 2024). They were established mainly during the last quarter of the 19th – early 20th centuries and relied in their activities on a number of legislative acts of the 1880s – 1900s (for detailed, see: Trygub et al., 2023a; Trygub et al., 2023b). Each educational institution organized the educational process in accordance with its own goals and capabilities. Studying this historical experience plays an important role in organizing the modern educational process in vocational educational institutions, providing valuable lessons and models for today's education.

## 2. Materials and methods

The source basis for the current study has become the materials on Kherson gubernia vocational educational institutions, which were issued in printed form – statutes, regulations, curricula, and reports (Izvlechenie..., 1890; Programmy, 1902; Ustav..., 1904; Ustav..., 1909; Ustav..., 1912). These documents were published as separate brochures and as part of various collections: 'Sbornik Rasporiazhenii po Ministerstvu Narodnogo Prosveshcheniia (Collection of Orders for the Ministry of Public Education), 'Lower Trade Schools'. An important source for analyzing state policy in the field of regulating the content-related characteristics of education are the legislative acts published in the collection 'Polnoie Sobranie Zakonov Rossiiskoi Imperii' (Full Collection of Laws of the Russian Empire) (PSZRI-3).

The study of the organization of the educational process in trade schools of the second half of the 19th century – the beginning of the 20th century is provided with the help of a number of methods that allow an understanding of the peculiarities of the development and functioning of those institutions, as well as the role of vocational education in the context of the social changes of that time. In particular, a historical analysis of teaching and upbringing methods in trade schools is applied to prepare this manuscript. Studying sources of that time, such as curricula, study programs, instructions, and other official documents, allows us to uncover how the educational process was organized, what subjects were taught, and what teaching methods were used in studied educational institutions.

An analysis of scientific and pedagogical literature and publications by teachers, researchers, and public figures who commented on the situation in the field of education, in particular, vocational education, is also conducted, which makes it possible to understand the social, economic, and cultural prerequisites for changes in educational institutions.

The comparative-historical method has become fundamental for comparing different stages of development of tread schools, as well as comparing the organization of the educational process in them, which allows the identification of general trends and specific education features at that level.

The case study method makes it possible to study individual educational institutions and study programs, which allows for a detailed analysis of the specifics of the educational process organization.

Using statistical analysis and statistical data makes it possible to assess training effectiveness, the number of students and graduates, and their social composition.

The methods applied allow for a thorough study of the organization of the educational process in trade schools of Kherson gubernia to identify the peculiarities of pedagogical practices of that time and their impact on the professional training of students. These methods allow for a comprehensive approach to studying the development of vocational education in Ukraine, particularly in Kherson gubernia, in the context of social and cultural changes of that time.

## 3. Discussion

The study of the meaningful characteristics of the educational process in vocational educational institutions of the Russian Empire became the object of study for leading educators back in the period of vocational education formation in the second half of the 19th century.

Educators were seeking the best models for the formation of the educational environment, and compared the systems of training professional workers in different countries, paying special attention to Great Britain, France, and Germany. Thus, the first attempts at scientific processing of the problem belong to I. Anopov (Anopov, 1889), A. Nebolsin (Nebolsin, 1903), M. Maksin (Maksin, 1909), and others, who raise the issues of training personnel for specific industries and in whose works the experience accumulated by vocational and technical educational institutions during their existence is summarized.

In the regional aspect, the problem of the vocational training content is studied by some Ukrainian scholars – M. Honchar, A. Vasylevych, and S. Sytniakivska. The most fruitful study of the analyzed direction of youth professional training is performed by S. Sytniakivska, who prepared a number of works both on an all-Ukrainian scale and in the context of the Southern Ukraine gubernias (Sytniakivska, 2009; Sytniakivska, 2010). One of the last quite successful dissertations is the study of M.V. Honchar (Honchar, 2015), dealing with the development of lower vocational training in Southern Ukraine in the second half of the 19th – the beginning of the 20th centuries. A broad subject field – all lower vocational educational institutions and expanded geographical boundaries – Taurida and Kherson gubernias, leave significant gaps for future research. The training of shipbuilders in the trade school of the city of Mykolaiv is studied by A. Vasylevych (Vasylevych, 2012). As we can see, in the regional context, although the issue is partially covered, it is still far from obtaining a holistic picture.

## 4. Results

The formation of vocational education content occurred in the Russian Empire in an utterly unorganized manner. The first such educational institutions in southern cities were formed under local requests, and there were no unified study programs and legally organized curricula. As a result, the organization and content of the educational process in vocational schools and technical schools were quite diverse. As the Ukrainian researcher S. Sytniakivska states, "An analysis of historical and pedagogical sources and archival materials shows that one of the most important problems in organizing the work of vocational educational institutions in Southern Ukraine in the studied period was the lack of a general concept and scientifically based methods of teaching general and special subjects that would take into account the specifics of training in individual specialties, the age characteristics of students, and their social status" (Sytniakivska, 2010: 208). To this, it is necessary to add that the diversity of the educational process in that type of vocational and technical educational institutions also depended on the form of ownership (public or private) and technical orientation (metalworking, carpentry, blacksmithing, flour milling, ship repairing, etc.).

In 1864, when one of the first trade educational institutions was established – the Trade School of Odesa 'Trud' (Labor) Society, there were not even models for the content development of curricula and study programs, and everything depended on the educators' creativity. At the first stage of its development (1864-1871), the mentioned School was primarily oriented on production, namely the trade component of the training process. Students studied Law of God, Russian Grammar, Arithmetic, and Penmanship. To study Drawing and Technical Drawing, students attended a drawing school established in Odesa and received trade training in two workshops – carpentry and metalwork, following the apprentice system. Such a training system was called 'mixed' by the School's historians; the humanitarian subjects were taught systematically, while the practical subjects – in a home workshop, were given unsystematically and depended on the personal aspirations of the foreman and orders. As a result, in 1871, only five students remained at the School, which forced the administration to seek new approaches to training (Izvlechenie..., 1890: 6-8).

In 1874, the School was reorganized into a system-based institution with a four-year term of study, where the educational process was based on the best examples of contemporary pedagogical science of the time. The following subjects were taught: Law of God, the Russian Language, Arithmetic, Algebra, Mechanics, Geometry, Drawing and Technical Drawing, Descriptive Geometry, History, and Geography. A carpentry and metalworking-blacksmithing workshops were established. In the first workshop, students studied during the first year, and the aim was to train manual labor skills, while the latter was used for three years to teach trades. General education and the exact subjects were given in parallel for all four years. In the fifth year, students were assigned to local factories and plants to improve their acquired skills and abilities. The students' successes in manufacturing items were recognized at Odesa Agricultural Exhibition in 1875 with a letter of commendation (Izvlechenie, 1890: 12-14).

Since the late 1870s, the administration had been emphasizing increasing students' interest in practical classes by transferring 10 % of the cost of completed works to them, providing personal scholarships to the brightest, and increasing the number of private orders under the guidance of experienced foremen from the local Bellino-Fenderikh factory. As a result, students "joined classes that provided them with financial and intellectual interest… By completing orders under the guidance of an experienced foreman, students more or less earned their living and also improved their trades" (Izvlechenie…, 1890: 16-17).

In fact, the School continued to follow the path of improving the subject system of industrial training, which was introduced back in the 18th century. Its essence was in combining of industrial work with training, and the main result of the training was considered being the produced item itself: a hammer, furniture, bookbinding, etc. Students of the Trade School of Odesa 'Trud' Society manufactured boxes, hangers, sandboxes, etc. In the process of training, the student made the same items as the foreman. Thus, the only method of training in the School was observation. Training a trade, therefore, consisted in progressing from the manufacture of the simplest to the most complex produced items. The advantage of the subject system was that the student, from the first days of studying at a vocational educational institution, began mastering the technological process of manufacturing produced items. Gradually, the subject system improved and became more complicated: teachers and foremen developed personal methods of independent work of students, and the use of technical drawings and available technical documentation in the process of developing the professional skills of a future foreman started (Sytniakivska, 2009: 133-134; Izvlechenie…, 1890: 30).

During the years 1875–1890s, the curricula were adjusted and supplemented. Besides the already mentioned subjects, Physics and Technology were added, but the distribution of teaching hours with a significant bias towards practical training remained unchanged (see Table 1). We see that production training initially took up ¾ of the time, and later it decreased to almost ⅔ of the entire training time, therefore, the essence of training did not change radically, and the main emphasis was on practical training.

**Table 1.** Comparative curriculum of Odesa Jewish School of 'Trud' Society for the academic years of 1894/1895 and 1888

| Subjects | Grades | | | | Total |
|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th | |
| Law of God | 1 (1) | 1 (1) | 1 (1) | 1 (-) | 4 (3) |
| Russian Language | 3 (3) | 3 (3) | 2 (2) | 2 (2) | 10 (10) |
| Arithmetic | 3 (4) | 2 (3) | 2 (2) | - (-) | 7 (9) |
| Geography | 2 (-) | 2 (2) | - (2) | - (-) | 4 (4) |
| Algebra | - (-) | 2 (-) | 1 (-) | - (-) | 3 (-) |
| Physics | - (-) | - (-) | 2 (2) | 1 (-) | 3 (2) |
| Mechanics | - (-) | - (-) | - (-) | 3 (2) | 3 (2) |
| Technology | - (-) | - (-) | - (-) | 3 (2) | 3 (2) |
| Technical Drawing | - (-) | 2 (3) | 5 (3) | 5 (3) | 12 (9) |
| Drawing | 4 (2) | 2 (-) | 2 (-) | - (-) | 8 (2) |
| Penmanship | 2 (-) | 1 (-) | - (-) | - (-) | 3 (-) |
| History | - (-) | - (-) | 2 (1) | 2 (2) | 4 (3) |
| Geometry | - (-) | 3 (2) | 2 (3) | 1 (-) | 6 (5) |
| Total: | *15 (10)* | *18 (14)* | *19 (16)* | *18 (11)* | *70 (51)* |
| Trades | 33 (41) | 30 (37) | 29 (34) | 30 (42) | 122 (154) |
| **Total:** | **48 (51)** | **48 (51)** | **48 (50)** | **48 (53)** | **192 (205)** |

* The hours in brackets are for 1888.
Compiled on: (Anopov, 1889: 127; Svedeniya, 1895: 4)

In order to enter the 1st grade of the School, it was required: according to the Law of God – the ability to read correctly in ancient Hebrew and knowledge of daily prayers; Russian language – fluent and error-free reading with the ability to tell in own words what have been read, writing to dictation without gross spelling errors; Arithmetic – the first four arithmetic operations and doing easy sums (Svedeniya…, 1895: 4).

If we compare the curriculum of Odesa Trade School and the typical curriculum for a trade school, approved on March 7, 1888, we can see that in the Trade School of Odesa 'Trud' (Labor) Society, there were 35-50 % more hours for practical mastery of trades than those offered by the Ministry of Public Education. Russian Language, Algebra, Physics, History, and Geography were also added, but the number of hours for special subjects (Technology, Mechanics, and Technical Drawing) was reduced. That was due to the national characteristics of the students, the older age of those entering and their better level of knowledge, and also to the four-year term of study because if the three-year curriculum had a total of 130½ hours for the entire course, Odesa School had 192 hours. In addition, at the beginning of the 20th century, a preparatory course was added to the School for those who did not have sufficient knowledge to enter the 1st grade.

As for the program content of the studied subjects, it briefly looked like this:

*Law of God* was studied in all grades, gradually deepening knowledge of the Old Testament, studying Jewish prayers and the history of the Jewish people.

*Russian Language*. Basic knowledge, reading, retelling, and dictations were given in the preparatory grade. The 1st grade – etymology; the 2nd grade – syntax; the 3rd grade – reading and analysis of read stories, a brief history of literature; the 4th grade – brief information on the history of literature of the 18th and 19th centuries.

*Arithmetic*. In the preparatory grade, the concepts of numbers and calculation were studied; abstract numbers and operations on them (addition, subtraction, multiplication, division); named numbers; doing the simplest sums. The 1st grade – divisibility of numbers; simple, decimal, and periodic fractions and operations with them. The 2nd grade – decimal fractions, the metric system of measures, ratios, and proportions. The 3rd grade – refreshing of what had been learned, triple rules, doing sums on all the rules, consolidation of knowledge.

*Algebra* began in the 2nd grade: the basics of algebra, coefficient, root, formulas, algebraic quantities and operations with them, monomials and polynomials, raising to a power, writing equations; the 3rd grade – extracting roots, extracting square and cube roots, factoring polynomials; the 4th grade – ratios and proportions, equations of different levels.

*Geometry* also began in the 2nd grade, where planimetry was studied. In the 3rd grade, planimetry and stereometry continued to be studied, and in the 4th grade, simple trigonometry, and measuring surfaces and volumes appeared.

*Physics*. The 3rd grade – general affections of bodies, hydrostatics, aerostatics, magnetism, and electrostatics. The 4th grade – elementary knowledge of chemistry, galvanism, heat, optics, and acoustics.

*Mechanics*. The 3rd grade – about motion and force, the simplest mechanisms; the 4th grade – simple and complex mechanisms, the concept of a machine, the resistance of materials, steam, steam boilers and machines, and their control.

*Electrical Engineering* was studied only in the 4th grade and was introduced into the study program at the turn of the century. The theory of electrical engineering, units of measurement, practical applications, and devices; galvanic elements, electric machines, batteries and transformers, wires, electric lighting, electroplating and electrometallurgy, telegraphy and telephony; the use of electricity in medicine were studied.

*Technology*. In the 3rd grade, wood technology was studied, and in the 4th grade – metal technology.

*Geography* was taught according to the general study program and included: the 1st grade – general information on physical geography, meteorology, and a description of the main peoples of the world; the 2nd grade – geography of the Russian Empire.

*History* was taught in the 3rd and 4th grades to "familiarize students with the most prominent historical figures who had an impact on the cultural development of nations". Attention was paid not so much to the political as to the cultural and economic role of facts, "establishing those principles that are common to all peoples of all countries" (Programmy..., 1902: 33). We see a clearly expressed civilizational or cultural approach to the historical process, which was not typical of the generally accepted study program for the subject in the Russian Empire since state or political history when history was represented by the history of states from ancient times to the present, prevailed.

*Geometric Drawing*. The 2nd grade – general information about drawing tools, straight and polygonal lines, line measurements, circles; angles and their measurements; areas. The 3rd grade – geometric bodies in 2 planes; depictions of simple objects in 3 planes.

*Technical Drawing for carpenters*. The 3rd grade – drawing profiles, copying blueprints, drawing from the original. The 4th grade – drawing architectural forms, turning objects, enlarging furniture blueprints.

*Technical Drawing for metalworkers* included drawing machine parts, drawing machines from the original, making draft blueprints, and selective drawing of certain parts of blueprints.

*Drawing:* The 1st grade – drawing patterns and simple objects; the 2nd grade – the concept of perspective and drawing geometric bodies with shading; the 3rd grade – drawing complex, sophisticated ornaments with shading; the 4th grade – drawing original items and models of artistic and produced items with pencil, pen, and watercolors.

*Penmanship*. In the preparatory grade, the students were taught correct writing, writing letters and numbers, and spelling words. In the 1st grade, they wrote proverbs, fragments of texts, and verses, and in the 2nd grade, they began writing correctly in the rondo font, using quad-ruled exercise books (Programmy..., 1902).

At the end of the 19th century, the School taught three trades: carpentry and model making, metalworking and mechanics, and foundry work. Each trade was specialized from the first day a student entered the School. During the first two years, students got used to working on so-called program works and then practiced on orders.

The content of the *Carpentry Trade* included: step-by-step processing of a roundwood with cutting tools and a planer till it becomes a square bar, and during the process, the foreman, using one tool after another, explains the method of their holding and using; five primary methods of joining of wood; kitchen table with drawer and kitchen stool.

The content of the *Metalworking Trade* included: cutting cast-iron tile with a chisel; finishing cutting these tiles in a regular square with different chamfers on their surface; cutting and filing of all sides of the cast-iron cube; filing the outer and inner planes of a right and acute angle; filing the semi-cylindrical surface along the marked edges with a blueing test; processing the second program work – a paperweight with a fine turned handle; making of bevel edge squares and adjustable sliding bevel squares; making hand saw blanks.

To familiarize students with forging and manufacturing of the required metalworking tools (chisels, drills, cutting tools, etc.), they attended the smithy in turn, practicing the smithcraft initially as a hammerman, and later as the assistants of the blacksmith foremen, and at last had to manufacture a number of personally forged tools. In addition, the students also learned how to solder and harden steel and gradually became accustomed to running a treadle lathe and using an engraving tool.

Also, in the 1st and 2nd grades, the students of the metalwork workshop were getting used to maintaining the steam engine on the school locomobile, performing the duties of firemen in turn, and in the 3rd grade – the duties of locomotive operators. Besides cleaning the locomotive boiler and machine, the students performed various maintenance activities like rearranging hatches, reseating taps, and checking valves.

*Foundry Trade* involved the production of model sand, pig casting, preparatory work for casting cast iron and molding simple items: furnace bars, grates, plates, wheels, and weights.

At the same time, the study process at the School practically did not stop. During the two summer months, classes were suspended only in the classrooms. Practical classes not only did not stop but, on the contrary, intensified since it was in the summer that the most significant number of orders came in. There were no winter vacations or any long breaks in studies, and classes or workshops were closed only on public holidays and annual Jewish holidays (Tekhnicheskie..., 1895: 20-21).

It should be noted that the School graduated fully trained foremen and not trade apprentices, as was observed in most educational institutions of the type. “Even those students”, noted the famous supporter of vocational education in pre-Soviet Russia I. Anopov, “who did not complete the course, upon being hired by private foremen were accepted not as boys ‘for study’, but as hired workers, with a higher wage rate” (Anopov, 1889: 127; Abdulmutalinova, 1998: 118-119).

In 1909, Kherson Jewish community established an educational institution similar to the Trade School of Odesa ‘Trud’ Society. Kherson Jewish Trade School also had one preparatory grade and a four-year course of study. Among the practical subjects taught there were metalworking, cast iron foundry, copper foundry, and modeling (Ustav..., 1912). Thus, vocational training in that school was primarily focused on working with metals.

The educational process at Odesa Trade School at the Orphanage and Odesa City Trade School was based on the Regulations of 1888 and the standard curriculum of 1889 (see Table 2). They had a three-year course of study but differed in the specialization of trade training.

**Table 2.** The typical curriculum of a trade school, approved on June 26, 1889 (hours per week)

| Subjects | Grades | | | Total |
|---|---|---|---|---|
| | 1st | 2nd | 3rd | |
| **Theoretical Classes:** | | | | |
| Law of God | 1 | 1 | 2 | 4 |
| Russian Language | 2 | 2 | 2 | 6 |
| Arithmetic and Bookkeeping | 3 | 2 | 2 | 7 |
| Geometry | 3 | 3 | - | 6 |
| Basics of Physics | - | 2 | 4 | 6 |
| Metal Technology in Carpentry Trades | - | 2 | 1 | 6 |
| Metal Technology in Metalworking Trades | - | 2 | 1 | |
| Total*:* | *9* | *14* | *12* | *35* |
| Penmanship | 2 | - | - | 2 |
| Drawing | 4 | 2 | 2 | 8 |
| Geometrical Technical Drawing | 3 | 2 | - | 5 |
| Technical Drawing | - | 2 | 5 | 7 |
| Total*:* | *9* | *6* | *7* | *22* |
| **Practical Training:** | | | | |
| in Workshops | 24 | 24 | 24 | 72 |
| Total*:* | *42* | *44* | *43* | *129* |
| Choir Practice | - | - | - | 1½ |
| **Total:** | **42** | **44** | **43** | **130½** |

Compiled on: Vysochajshe..., 1889a: 183

Odesa City Trade School trained craftsmen in three main areas: carpentry, metalwork, and drawing and painting. For each specialty, its own technical drawing was taught: geometric and technical for carpenters and metalworkers, and projection – only for painters and artists. Also, gymnastics and various student games were given for the "physical development of the body and agility". Indoor classes were given from 8 to 12 a.m, and practical training was given after lunch – from 1.30 p.m. to 5.30 p.m. (Tekhnicheskie..., 1895: 2).

Odesa Trade School at the Orphanage specialized in carpentry, metalwork, and bookbinding trades. The first two trades were related to metal and wood turning to the extent necessary for a good metalworker and carpenter-furniture maker. Trades were taught according to study programs developed directly by foremen, the heads of trades. The mentioned study program provided the provision of standard for that time knowledge of carpentry and metalwork trades, while the bookbinding course was divided into the bookbinding part (paper cutting, folding, booklet making, trimming, bookbinding, etc.) and the haberdashery part (manufacturing various items covered with paper and calico, from plush, satin, etc., and leather goods). Studies lasted throughout the year (except for the winter (December 23 – January 7) and summer (June 10 – August 23) holidays). However, practical classes in workshops took place almost all year round, except for the Christmas holidays and two-week summer holidays (Tekhnicheskie..., 1895: 24-27).

The organization and content of training in specialized vocational schools – Odesa School of Foremasters and Odesa Flour Milling School, deserve special attention in the analysis.

Odesa School of Foremasters trained junior technicians in engineering construction. The entire course of study was two years long and was divided into two winter semesters from November 1 to April 15 and two summer semesters – from April 16 to October 31. Theoretical courses were studied during the winter, and practical courses during the summer semesters. Winter classes lasted from 8 a.m. to 6 p.m. with a two-hour lunch break. The subjects taught in two grades were Law of God, Russian Language, History and Geography, Arithmetic, Geometry, Drawing and Penmanship, Technical Drawing, Construction Art, Railway Work, Land Surveying, and Preparing Cost Estimates (Tekhnicheskie..., 1895: 78-79).

An analysis of the curriculum shows that the School of Foremasters had a fairly judicious mix of educational and special cycles. However, the main emphasis was on special subjects (for example, Construction Art). That was because of the fact that boys with some general education were accepted to the School. It should be noted that given the shortness of the course and the large number of subjects taught at the School, future foremasters had to study hard and spend the whole day at School, since in their free time from classes they were engaged in making models, making drawings, and blueprints.

No trades were studied at the School, and practical classes included modeling using plaster and wood, inspecting works and factories, and taking plans. All students were required to work for the summer for practical training and, at the beginning of the following year, present the school inspector with a certificate from the person they worked for (Abdulmutalinova, 1998: 124-126).

Odesa Flour Milling School covered a difficult but rapid path from a lower-level vocational school to a secondary one in 10 years. In the absence of generally accepted study programs, the school teachers themselves developed study programs, study programs and organized the educational process during 1902–1904. The educational course was three years, where the primary attention was paid to theoretical classes in special subjects. Practical training at the mill and workshops took up relatively little time (see Table 3).

**Table 3.** Curriculum of Odesa Flour Milling School (1902–1905)

| Subjects | Hours per week | | | |
|---|---|---|---|---|
| | Grades | | | Total |
| | 1st | 2nd | 3rd | |
| Law of God | 1 | 1 | 1 | 3 |
| Russian Language | 2 | 2 | 2 | 6 |
| Mathematics | 6 | - | - | 6 |
| Physics | 2 | 2 | - | 4 |
| Electrical Engineering | - | - | 2 | 2 |
| Chemistry | - | - | 2 | 2 |
| Mechanics | 2 | 3 | - | 5 |
| Strength of Materials | - | 3 | - | 3 |
| Technology | 2 | 1 | - | 3 |
| Construction Art | 2 | 2 | - | 4 |
| Flour Milling | 4 | 4 | 3 | 11 |
| Grain Science | 1 | - | - | 1 |
| Course of Machine Structure | - | 2 | 6 | 8 |
| Bookkeeping | - | - | 2 | 2 |
| Basic and Technical Drawing | 6 | - | - | 6 |
| Technical Drawing in Construction Art | - | 2 | - | 2 |
| Technical Drawing in Machine Structure | - | 3 | 2 | 5 |
| Technical Drawing in Flour Milling | - | 4 | 10 | 14 |
| Practical Training at the Mill | 6 | 8 | 8 | 22 |
| Practical Training in Workshops | 7 | 6 | 6 | 19 |
| **Total:** | **41** | **43** | **44** | **128** |

Compiled on: Rejsih, 1912: 11

In 1905, a special charter of the School was approved, as a result of which the term of study increased to four years, and graduates were awarded the title of 'Flour Milling Technician' (lower technical schools at that time awarded their graduates the title of Foreman) (Kananyhina, 2012: 8).

In 1909, the School was reorganized into Odesa Flour Milling Technical School and grew to the level of a secondary vocational and technical school. With the reorganization of the institution, changes were made to the curricula and study programs, educational and methodological work was improved, and the facilities and resources were expanded. The curriculum (see Table 3) began teaching 32 subjects, including Algebra, Grain Science, Flour Milling, Baking and Pasta Production, practical classes in workshops, mills, and milling and technical laboratories.

An innovation in the educational process was the laboratory method of studying the millings and listening to students' reports on summer practical training, which took place in the presence of senior students and was accompanied by a wide-ranging discussion. Under the guidance of teachers, carpentry and metalworking trades were studied in the school workshops, models for drawing and technical drawing, and mock-ups were made (Kananyhina, 2012: 9).

An analysis of the content of the curriculum shows that the School began training not only experts in the production of flour or bakery products but also experts in grain trade, which always occupied a serious niche in the foreign trade of Southern Ukraine.

Analyzing the organization of the educational process in trade schools, it should be noted that according to the 'Regulations on Trade Schools' (1893), their educational purpose was to provide students with the knowledge and skills necessary to study any trade from a private foreman. They were supposed to study the basic techniques of a particular trade practically, and in some cases – depending on local conditions – special techniques of any branch of the trade. The training course had a three-year term and was divided into three grades (Vysochajshe..., 1889b: 673-674).

For example, Ananiiv Trade School trained craftsmen in the carpentry-turning and metalworking-blacksmithing trades necessary "for the needs of agriculture in the southern area of Russia". According to the law of 1893, the training lasted 3 years, but "for greater improvement in the chosen trade, those who wish can stay at the School for another year after the end of the three-year course... for the practical study of the assembly and construction of agricultural machines, tools, and their repair" (Ustav, 1904: 595).

Training at the School was practical in nature, and teaching general education subjects was not supposed to exceed the course of two-year rural schools. The School taught Law of God, Russian Language and Penmanship, National History, Geography, Arithmetic, Geometry, Accounting, Physics, Metal Technology, Drawing, Technical Drafting, Choir Practice, and practical classes (see Table 4).

**Table 4.** Curriculum of Ananiv Trade School (1899)

| Subjects | Hours per week | | | |
|---|---|---|---|---|
| | Grades | | | Total |
| | 1st | 2nd | 3rd | |
| Law of God | 1 | 1 | 1 | 3 |
| Russian Language, Slavic Reading, Penmanship | 3 | 2 | 2 | 7 |
| Basics of National History | - | 2 | - | 2 |
| Basics of Geography | 2 | - | - | 2 |
| Arithmetic | 4 | 3 | 1 | 8 |
| Practical Geometry | 2 | 2 | 2 | 6 |
| Bookkeeping | - | - | 1 | 1 |
| Basics of Physics | - | 2 | 2 | 4 |
| Basics of Metal and Wood Technology | - | - | 3 | 3 |
| *Total:* | *12* | *12* | *12* | *36* |
| Drawing | 4 | 2 | 2 | 8 |
| Technical Drawing | 2 | 4 | 4 | 10 |
| *Total:* | *6* | *6* | *6* | *18* |
| Practical Training | 29 | 34 | 34 | 97 |
| *Total:* | *47* | *52* | *52* | *151* |
| Choir Practice | 1½ | 1½ | 1½ | 4½ |
| **Total:** | **48½** | **53½** | **53½** | **155½** |

Compiled on: Ustav..., 1904: 1753-1754

School lessons in all subjects were one hour long. Three hours were devoted to classroom lessons daily. The school year lasted for a year, except for Sundays and holidays, as well as Christmas (December 23 – January 07), Easter (depending on Easter, since this is a movable Orthodox holiday), and summer (July 15 – August 15) holidays. The school year began on September 1 and continued until May 1. Students studied in workshops during the rest of the school year (May 1 – July 07; August 15 – September 1). On Saturdays, as well as on the eve of

holidays, classes ended at 4 p.m., after which books were issued from the library or choir practice was scheduled.

At the end of the school year, drawings, technical drawings, and other students' works and produced items were exhibited for three days for public viewing. Then there was a solemn reading of the reports, the awards were given to excellent students, and the lists of those transferred to the next class and graduates were announced (Ustav..., 1904: 597-598).

Other schools for craftsmen in Southern Ukraine had a similar organization of the educational process: Odesa Trade School, named after Tsarevich Alexei, and Odesa Jewish Trade School, which also emphasized the training of experts in metalworking and blacksmithing.

In 1895, it was also allowed to establish lower trade schools "for training various kinds of trades". The basic course in such schools lasted three years, but it was allowed to open the 4th grade to improve practical skills. The curriculum was minimized (Table 5). The schools taught trades necessary for the region and trained to repair and manufacture various agricultural tools and machinery in accordance with local conditions. Among the subjects taught were Law of God, Russian Language, Arithmetic, Trades Technology, Accounting, Drawing, and Technical Drawing, depending on the trade of specialization.

Practical classes in lower trade schools lasted all year round, except for the Christmas and Easter holidays. Theoretical education lasted 10 months and was suspended for two summer months. If necessary, students could take turns or go in groups to participate in field work during the summer (Ustav..., 1909: 25-28).

**Table 5.** Curriculum in lower trade schools (1900)

| Subjects | Grades (hours per week) | | | |
|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th |
| Law of God | 2 | 2 | 2 | - |
| Russian Language | 2 | 2 | - | - |
| Arithmetic | 2 | | - | - |
| Trade Technology | - | - | 2 | - |
| Bookkeeping | - | - | 2 | - |
| Drawing or Trade Drawing and Technical Drawing | 6 | 8 | 6 | - |
| *Total:* | *12* | *12* | *12* | - |
| Practical Training | 37½ | 37½ | 37½ | 49½ |
| **Total:** | **49½** | **49½** | **49½** | **49½** |

Compiled on: Ustav..., 1909: 39)

We can see that this type was an elementary vocational school, where the number of general education subjects was minimized as much as possible. It is clear that such type of schools were intended primarily for rural areas and could hardly satisfy employers in urban or large enterprises.

As for the lower trade schools of Kherson gubernia, one school was three-year (Stepanivka) and two were four-year (Berezivska and Bobrynets). The latter two specialized in carpentry, metalworking, and blacksmithing, while Stepanivka School had a separate department for stone processing (stone-cutting) in addition to the mentioned trades. In general, the level and content of training in all three schools was at the same level.

## 5. Conclusion

Appeal to historical experience in organizing the educational process of vocational educational institutions allows not only the preservation of the continuity of traditions but also the introduction of time-tested methods and approaches that contribute to improving the quality of education and training of qualified experts.

An important aspect was the fact that teaching of subjects of the practical cycle was usually provided by practitioners – blacksmiths, carpenters, stonemasons, mechanics, metalworkers, builders, technologists, etc. This contributed to the high quality of training and the acquisition of the necessary manual labor skills, which ensured competitiveness in the labor market and readiness for real work.

At the same time, despite the positive changes, the vocational education system faced several problems, particularly insufficient funding, a shortage of qualified teachers, and limited access to education for the lower strata of the population. However, thanks to the efforts of zemstvos and progressive figures, trade schools continued to develop, making a significant contribution to the training of professional personnel for the economy of the Empire.

Thus, the organization of the educational process in trade schools of Kherson gubernia was based on a combination of theoretical knowledge with practical skills, the active participation of local self-government bodies and the public, as well as compliance with established regulatory and legal standards.

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