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8. LOGISTICS EDUCATION IN POLAND - STUDY OF LEGAL, ORGANIZATIONAL AND FUNCTIONAL CONDITIONS

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Abstract This article discusses the legal framework for the vocational training of logistics professionals in the logistics education chain, from the industry's first level schools to the university studies of the first and second degree and also post-graduate studies. The dimensions of logistics education in particular types of schools are also presented, illustrated by tables and graphs.

Keywords: *logistics education in Poland, comparison of education systems, VET*

1. INTRODUCTION

In 1961, the Sejm adopted a school reform which resulted in the establishment of an eight-year primary school, two and three-year basic vocational schools, four-year general secondary schools, four- or five-year technical secondary schools and vocational secondary schools, and two or three-year technical secondary schools and vocational secondary schools based on the basic vocational school (Act of 15 July 1961, No. 32 item 160). It was the first such far-reaching change in the school system after the end of the Second World War.

In 1966, graduates of the seventh year of primary school could choose to continue their education in the eighth year of primary school or, if they were born in the first half of the year, to continue their education in the five-year vocational secondary school. General secondary schools for one year stopped recruitment to the first grades. In the following years, the graduates left primary school after graduating from the eighth grade.

A further reform in 1998 divided the eight-grade primary school into a six-grade primary school and a three-year middle school. It also had an impact on the shape of vocational education, as it shortened vocational education to four years. The next reform of 2017, by eliminating the middle school, restored the eight-grade primary school and the fifth year of vocational schooling. However, this was not a full return to the school system of 1961, as the basic vocational school was replaced by a first-level three-year industry vocational school, and a two or three year vocational school on the foundations of the basic vocational school was replaced by a second-level industry vocational school. Each of these reforms of the school system had a greater or lesser impact on vocational education, as discussed in this publication, which also analyses the vocational training of logistics professionals in higher education.

2. LEGAL FRAMEWORK FOR LOGISTIC EDUCATION IN THE NATIONAL EDUCATION SYSTEM

The subject of the logistic education permeates two education systems in Poland: the education system, whose legal basis defines the principles of education in primary and secondary education (secondary schools are also understood as upper secondary and post-secondary schools), and the higher education system, which has similar legal regulations relating to higher education.

In the education system, three legal acts are essential for the subject of this publication:

- Act of 7 September 1991 on the Education System, Journal of Laws of 1991 No. 95, item 425,
- Act of 8 January 1999, Introductory Provisions to the Reform of the School System, Journal of Laws of 1999, No. 12, item 96,
- Act of 14 December 2016 on the Educational Law Journal of Laws 2017, item 59.

Vocational training takes place within a legal framework which lists the professions and the educational methods for professions qualified for secondary vocational education. The first legal act (In this publication, the analysis of the legal status of vocational education was limited to the period after the political transformation in 1989) in which one can find a profession related to logistics in a broad sense is the Regulation of the Minister of Labour and Social Policy of 20 April 1995, which indicates the sources of the full classification of professions and specialisations in the form of five volumes published separately in the form of a book (Regulation of the Minister of Labour and Social Policy of 20 April 1995, No. 48, item 253). In volume II concerning the full classification of occupations, the occupation of rail transport technician has been listed.

The first legal act issued by the Minister of National Education, in which the profession related to logistics was indicated, was published in 1997 and concerned the classification of occupations of vocational education (Regulation of the Minister of National Education of 18 December 1997. Journal of Laws of 1998 No. 4 item 9). It lists the profession of transport technician.

The next legal act of the Minister of National Education was a regulation of 29 March 2001, in which the profession of forwarding technician appeared (Regulation of the Minister of National Education of 29 March 2001 amending the Regulation on the classification of professions in vocational education. No. 434, item 405) .

Another legal act in which specific names of occupations were listed was the Regulation of the Minister of National Education and Sport of 18 April 2002 (Regulation of the Minister of Labour and Social Policy of 18 April 2002 on the classification of occupations and specialisations for the needs of the labour market and the scope of its application. Journal of Laws of 2002 No. 63 item 571), in which the following occupations related to logistics were listed:

- rail transport technician,
- forwarding technician.

In turn, the Minister of Labour and Social Policy, in the regulation of 10 December 2002 (Regulation of the Minister of Labour and Social Policy of 10 December 2002 on the classification of occupations and specialisations for the needs of the labour market and the scope of its application. Journal of Laws of 2002 No 222, item 1868) , supplemented this list by adding the profession of logistics technician. The existence of this profession was confirmed in the Regulation of the Minister of National Education and Sport of 8 May 2004 (Regulation of the Minister of National Education and Sport of 8 May 2004 on the classification of professions in vocational education (Journal of Laws 2004, No. 114, item 1195). It also included the profession of port and terminal operating technician. Also the Minister of Economy and Labour in the next regulation of 8 December 2004 (Regulation of the Minister of Economy and Labour of 8 December 2004 on the classification of occupations and specialisations for the needs of the labour market and the scope of its application. Journal of Laws of 2004 No 265 item 2644) added the profession of port and terminal operating technician to the 2002 list of occupations.

The current in 2018 list of occupations at the technician level was supplemented by the occupation of road transport technician (Regulation of the Minister of National Education of 26 June 2007 on the classification of occupations of vocational education. Journal of Laws) by the Minister of National Education in 2007.

The translation of the decisions of both ministers into the practice of training in logistics professions was a series of regulations of the Minister of National Education on the basis of curricula for training in occupations containing detailed guidelines for the implementation of the teaching process and the content of education:

- Ordinance of the Minister of National Education of 4 July 2001 on the basic curricula for training in the following occupations: avionics technician, shipbuilding technician, port and terminal operating technician, logistics technician, aircraft mechanic technician, ship mechanic, sea navigator technician, forwarding technician and inland navigation technician. Journal of Laws of 2011 No. 167 item 998.
- Regulation of the Minister of National Education of 7 February 2012 on the basis of curriculum of vocational education (Journal of Laws 2012, item 184),
- Regulation of the Minister of National Education of 13 December 2016 on the classification of vocational education occupations (Journal of Laws 2016, item 2094),

- Regulation of the Minister of National Education of 31 March 2017 on the basis of curriculum of education in occupations (Journal of Laws 2017, item 860).

The legal situation evolved with the changes in the school system, which was reflected in a number of regulations amending some of the above mentioned acts.

After such a long legislative process, the current collection of logistic professions in secondary schools has developed:

- forwarding technician,
- logistics technician,
- port and terminal operating technician,
- rail transport technician
- road transport technician.

The profession of logistics storekeeper has appeared on the list of professions for the first-degree vocational schools, which makes it possible to obtain AU qualifications.²² Warehouse management.

In the higher education system, the most important legal acts regulating higher education from the point of view of this publication are as follows: Act on Higher Education of 27 July 2005, Journal of Laws of 2005 No. 164, item 1365, as amended, and Regulation of the Minister of Science and Higher Education of 13 June 2006 on the names of fields of study. Journal of Laws No. 121, item 838, in which a faculty of logistics studies appeared in the list of fields of study. Thus, logistics education in higher education institutions was formalised.

The link between the two systems of secondary and higher education in terms of the quality of education in terms of knowledge, required skills and relevant social competences is the Integrated Qualification System (Act of 22 December 2015 on Integrated Qualification System Journal of Laws 2016, item 64) and the Polish Qualification Framework established within it.

The analysis of the above mentioned legal acts shows that from a formal point of view seniority in logistics education should be attributed to secondary education, for which the first legal regulations were prepared in the 1990s. It is worth noting, however, that although it was not until 2006 that logistics education was formalised into a field of logistics, logistics education was previously provided as a speciality and specialisation in the various fields of study existing at that time.

3. LOGISTIC EDUCATION IN SECONDARY SCHOOLS

The educational system has changed three times after 1989 and had an impact on the shape of vocational education after graduating from primary school. Until 1999, the first stage of school education was the eight-grade primary school. As a result of the reform of the education system, in 1999 the cycle of education preceding secondary school was extended by one year (six-year primary school plus three-year middle school), after which in the school year 2017/2018 there was a return to eight-year primary school and the middle school was liquidated.

3.1. Before the 1998 reform

The Act of 7 September 1991 on the education system (Act of 7 September 1991 on the education system. Journal of Laws No. 95 item 425) gave the following structure to vocational training:

Public and non-public vocational schools qualified as public schools (ibid. Article 9.1.):

1. primary schools
2. vocational secondary schools:
 - vocational secondary schools giving general secondary education with the possibility of obtaining Matura certificate and basic vocational education
 - secondary technical and equivalent schools providing general and vocational education with the possibility of obtaining Matura certificates,
 - post-secondary schools providing opportunities to complete general education with elementary vocational or secondary vocational education

Fig. 1 shows a diagram of the education system in Poland from primary school to university, valid until the school year 1998/1999.

- two-year supplementary schools, enabling graduates of the schools referred to in point (b) to obtain a certificate of secondary education after passing the examination referred to in point (a),
- post-secondary schools, providing the opportunity to complete vocational education, which may result in a vocational examination,

The Act of 25 July 1998 does not mention secondary technical schools in the breakdown presented.

The Act of 23 August 2001 introduced a modification to the division of schools by changing the description of post-middle schools. According to this Act, schools were divided as follows (Act of 23 August 2001 amending the Act on the Education System - Provisions introducing the reform of the school system, Teacher Card Act and some other acts. Journal of Laws of 2001, No. 111, item 1194) :

1. six-year primary school,
2. three-year middle school,
3. secondary schools:
 - three-year profiled secondary schools, the completion of which enables obtaining the certificate of secondary education after passing the Matura exam,
 - vocational schools of a total duration of not less than two years and not more than three years, the completion of which gives access to further education at a school referred to in point c), and which, after passing an examination, makes it possible to obtain a certificate of professional competence,
 - two-year supplementary secondary schools, the completion of which enables the holder to obtain a certificate of secondary education after passing the examination referred to in point a),
 - post-secondary schools with a maximum period of education of 2 years, and in the case of post-secondary schools providing the vocational training for a social worker - a maximum of 2.5 years, the completion of which enables graduates of the schools referred to in a) and c) to obtain a certificate of professional competence, after passing an examination.

The correction made has still not taken into account the lack of technical schools in the breakdown of schools.

The above lack was corrected by the Act of 27 June 2003, which supplemented the division of schools not only with the missing vocational technical schools, but also with post-secondary schools (Act of 27 June 2003 amending the Act on the

Education System and certain other acts. Journal of Laws of 2003 No 137, item 1304). Article 9.1 divides public and non-public schools into the following types:

1. a six-year primary school at which a test is conducted during the final year of study,

2. a three-year middle school in which an examination is conducted in the final year of study, providing the possibility of further education in the schools referred to in points 3 a) to d) and 3 h),

3. secondary schools:

- basic vocational schools which have a total duration of not less than 2 years and not more than 3 years and whose completion makes it possible to obtain a diploma certifying professional competence on passing an examination, and further education in the schools referred to in points e) and f),
- three-year general secondary schools, the completion of which makes it possible to obtain the certificate of secondary education after passing the Matura exam,
- three-year specialised secondary schools providing general vocational education, the completion of which enables the holder to obtain a final certificate of secondary education after passing the Matura exam,
- a four-year technical secondary schools, the completion of which enables the holder to obtain a diploma certifying professional competence after passing the examination, as well as a certificate of secondary education after passing the Matura exam,
- two-year supplementary general secondary schools for graduates of the schools referred to in point a), the completion of which enables them to obtain a certificate of secondary education after passing the Matura exam,
- a three-year supplementary technical secondary schools for graduates of the schools referred to in point a), whose completion enables them to obtain a diploma certifying their professional competence after passing the examination, as well as to obtain a certificate of secondary education after passing the Matura exam,
- post-secondary schools of a maximum duration of 2,5 years, the completion of which enables holders of secondary education to obtain a diploma certifying their professional competence after passing an examination,
- three-year special schools for students with moderate or severe mental disabilities and for students with multiple disabilities, the completion of which enables them to obtain a certificate of suitability for work.

A further and last amendment was introduced by the Act of 19 August 2001. The division removed profiled secondary schools, changed the description of primary schools and added a new type of schools - a special school adapting to work. According to the Act, public and non-public schools were divided into the following types (Act of 19 August 2011 on the change of the education system and some other acts. Journal of Laws of 2011 No 205, item 1206):

1. a six-year primary school,
2. a three-year junior high school,
3. secondary schools:
 - a three-year general vocational school,
 - a three-year general secondary school,
 - a four-year technical secondary school,
 - a post-secondary school for persons having completed secondary education, of a duration not exceeding 2,5 years, which permits the award of a diploma certifying professional competence
 - a three-year special school for students with moderate or severe mental disabilities and for students with multiple disabilities, the completion of which enables them to obtain a certificate of suitability for work.

Fig. 2 shows a diagram of the education system in Poland from primary school to university, in force since the school year 1999/2000.

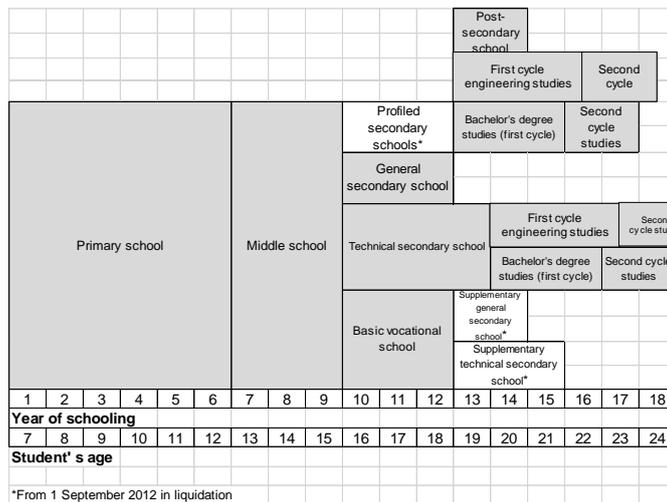


Fig. 8.2. Diagram of the education system in Poland in the school years 1999/2000 - 2016/2017

Source: Own elaboration

Pursuant to the letter of the aforementioned Act, the existing types of schools which have not been included in the new educational system shall be discontinued at the moment of graduation of the students from the recruitment preceding the introduced changes.

4. QUANTITATIVE ASSESSMENT OF LOGISTIC EDUCATION IN SECONDARY SCHOOLS

Logistics professions among students of vocational schools are of various interest. The largest interests are related to logistics technicians, followed by forwarding technicians and port and terminal operating technicians, which is reflected in the number of schools offering such curricula (Table 1). In 2017, 557 secondary schools offered teaching in the profession of logistics technician and forwarding technician, whereas in 2004 there were only 40 (Logistics in Poland. 2009 Report. Poznań Logistics Library 2010.). The number of schools where logistics technicians are educated is three times higher. The main reason is the long-standing media interest in logistics as a profession presented in various economic and social aspects. It overshadows forwarding which has no media impact at all, despite its very important link with transport activities, which are predominant in terms of both the number of companies and the number of employees in the logistics sector.

Table 8.1. Logistic professions in secondary school programmes

Profession	2015	2016	2017
Forwarding technician	118	129	138
Logistics technician	364	395	409
Port and terminal operating technician	115	123	106
Road transport technician	16	9	8
Rail transport technician	17	28	33
Total	630	684	694

Source: Own elaboration based on data from the Centre for Implementation of IT Solutions in Education 2017.

Rail transport technician, the oldest profession in the group of logistics professions, is of limited interest to young people. The profession of road transport technician is followed by a minimum of interest. According to the author, the main reason is the lack of any promotion of these professions, which would increase their attractiveness in the eyes of young people.

Public schools predominate in secondary education (Table 2). an analysis of the two most popular professions - logistics technician and forwarding technician - shows that schools are increasingly interested in launching corresponding curricula. A characteristic feature is the gradual disappearance of teaching these professions in post-secondary schools and adult technical secondary schools since 2009. In 2009, 362 schools offered logistic training in post-secondary schools, while the number of technical secondary schools with a similar offer was 276. The competition for post-secondary schools has become three-year first cycle studies, in which the education lasts one year longer and the educational status is incomparable.

Table 8.2. Schools training logistics and forwarding technicians in the years 2011-2017

Type of school	2011 r.		2013		2015		2017	
	logistics technician	forwarding technician						
Public schools								
Technical secondary school for young people	227	59	284	99	324	115	362	134
Post-secondary school	3	5	5	2	0	0	0	0
Technical secondary school for adults	2	1	3	0	2	0	0	0
Post-secondary school for adults	35	9	30	9	1	0	0	0
Non-public schools qualified as public schools								
Technical secondary school for young people	7	3	22	2	35	3	47	4
Post-secondary school			0	0	0	0	0	0
Technical secondary school for adults	5	2	1	0	0	0	0	0
Post-secondary school for adults	187	49	194	40	0	0	0	0
Total	466	128	539	152	362	118	409	138

Source: Own elaboration based on data from the National Centre for Supporting Vocational and Continuing Education. Search engine. Vocational schools. [www.koweziu.edu.pl/index.php?id=Search engines](http://www.koweziu.edu.pl/index.php?id=Search+engines) (access 03.04.2014 and previous years) and the Education Information Centre 2018.

5. QUANTITATIVE EVALUATION OF LOGISTICS EDUCATION IN UNIVERSITIES

Over the years 2002-2011, a high growth rate of the number of higher education institutions was observed, which initiated logistics studies (Fig. 4). Since 2012, the dynamics has been weakening, which resulted from the progressing demographic decline and the decreasing number of candidates for total university studies, as well as from the limited availability of academic teachers with the required substantive competences and the possibility of classifying them as minimum academic staff complement.

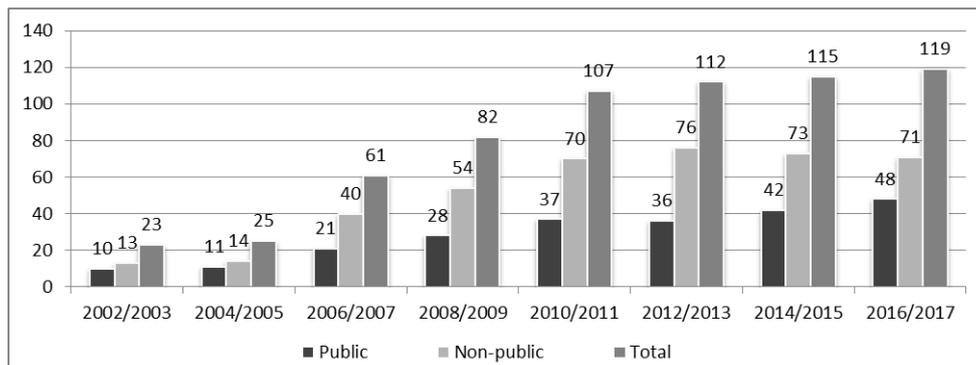


Fig. 8.4. Higher education institutions educating logisticians in various faculties
Source: Own elaboration

The year 2006 was a year of temporary censorship of significance for logistics education, when the faculty of logistics was introduced to the list of faculties of study (Regulation of the Minister of Science and Higher Education of 13 June 2006 on the names of fields of study (Journal of Laws of 2006, No. 121, item 838)). In the academic year 2006/2007, only 9 universities offered logistics studies in this field (Fig. 5). In the following years, the number of higher education institutions increased significantly.

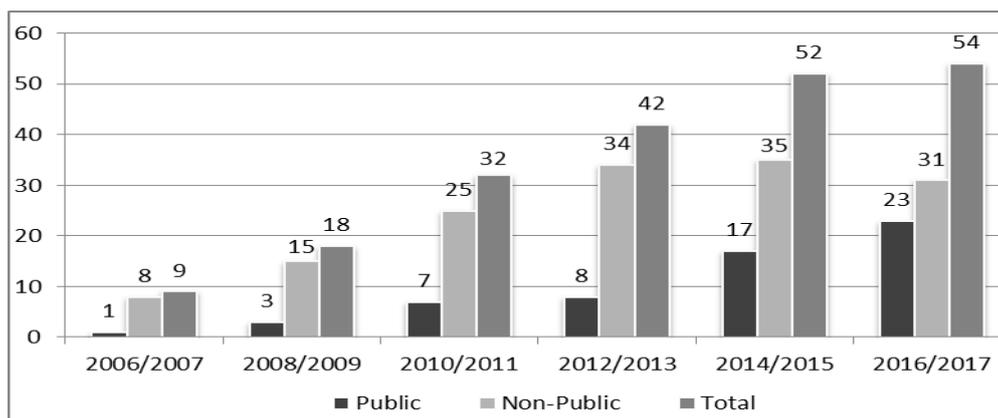


Fig. 8.5. Higher education institutions educating logistics specialists in the field of logistics
Source: Own elaboration

The main reason for the initially small number of universities that created the field of logistics after its inclusion in the list of fields of study was the lack of teaching staff, which could be counted towards the required minimum academic staff complement.

In 2017, the list of fields of study in which public and non-public higher education institutions provide logistic studies was compiled as follows: logistics, management, transport, economics, finance and accounting, international relations, management and engineering of production and eurologistics. Occasionally, similar education was provided within the framework of other fields of study, e.g. natural sciences.

6. LOGISTICS EDUCATION CHAIN IN POLAND AND ITS CONDITIONS

As a result of the reform of the education system in primary and secondary education introduced by the Act of 4 December 2016 (Ustawa z dnia 14 grudnia 2016 r. Prawo oświatowe. Dz. U. 2017 Poz.59), eight educational paths lead to the logistic labour market, excluding third cycle studies (Fig. 6). One of them provides the opportunity to gain the profession and basic education, three secondary

education and the professional title of technician, another three higher education and the professional title of Bachelor, Engineer or Master and one vocational preparation without a formal professional title on the basis of higher education (post-graduate studies).

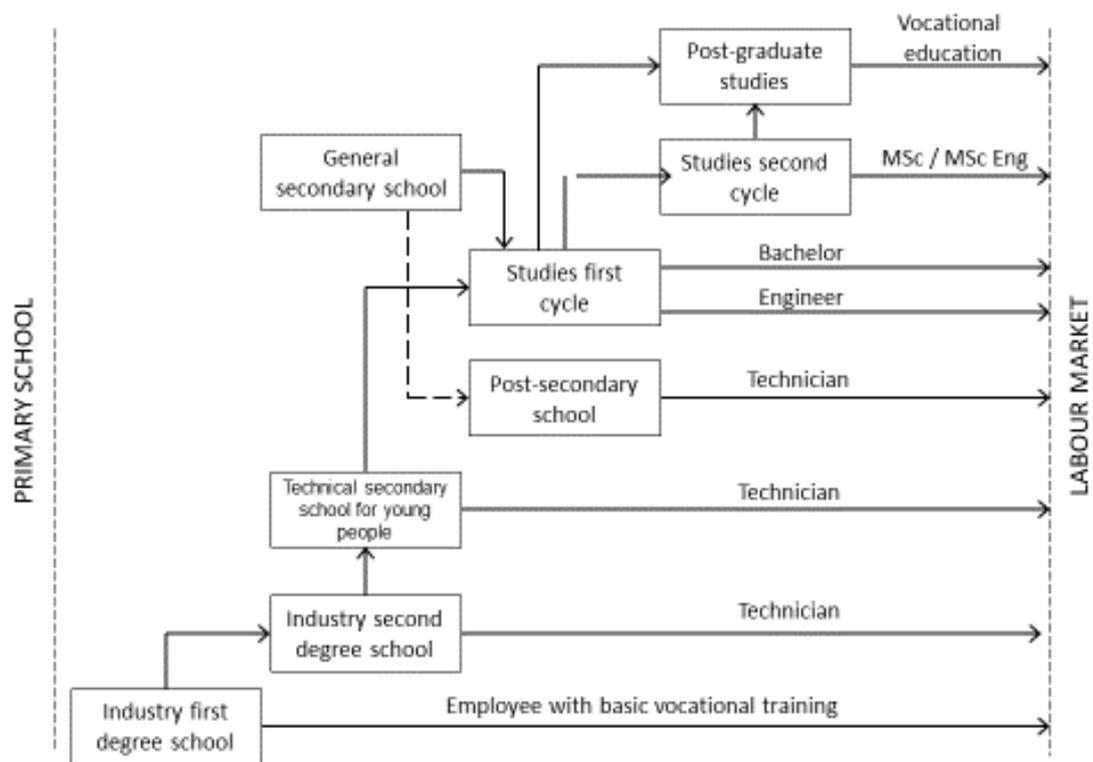


Fig. 8.6. Logistics education chain in Poland in 2018

Source: Own elaboration

In 2018, the educational path leading to the labour market from the industry second level studies is closed due to the necessity of earlier education at the industry first level school, where the first recruitment was launched in the school year 2017/2018, and the first graduates will complete it in 2020. That same year, industry second level schools will be launched.

7. COMPLETING THE MODEL OF LOGISTICS EDUCATION IN POLAND

The logistics training model is complemented by training and certification systems for logistics professionals. The growing demand for employees and the dynamic changes in the functioning of internal logistics in companies and supply chains require the completion of education through short educational cycles. The market for logistics training in terms of the number of training centres and training programmes is still growing (Figure 7). It only shows independent training centres. Some higher education institutions also provide training.

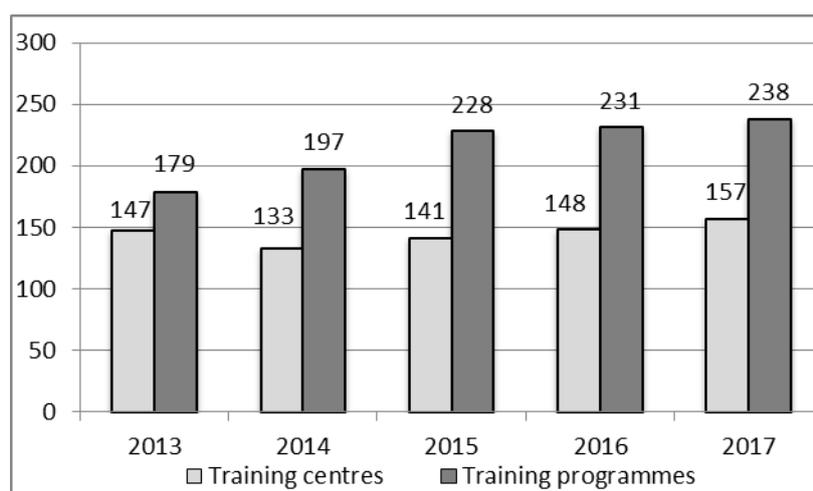


Fig. 8.7. Number of training centres and logistic training programmes in 2013-2017
Source: Logistics in Poland. Report 2017 Logistics Library 2018.

Training is an important complement to logistics education as logistics is constantly and rapidly transformed by the dynamic development of new sales channels inspired by the development of information technology and the progressive digitalisation of supply chains (Logistics in Poland. Report 2017 Logistics Library 2018.).

In the whole European Union, the most recognized is the European system of logistics certification, whose management body is the European Board for

Certification in Logistics (ECBL). The certification system is based on standards formulated by the European Logistics Association (ELA) based in Brussels.

In Poland, the representative of the organizer is the Institute of Logistics and Warehousing, which issued 462 certificates at the European Junior Logistician (EJLog) level and 98 certificates at the European Senior Logistician (ESLog) level to the participants of the certification process in 2013-2017 (Institute of Logistics and Warehousing April 2018.).

8. CONCLUSION

The formal learning of logistics professions has evolved with the subsequent changes in the school system. The current one, constructed in 2017 on the basis of the following act of 14 December 2016 on the education system gave logistics education the form of a multibranch education chain, within which eight training paths ending with a vocational title at various levels were distinguished.

In the course of particular school systems logistics professions and their names were also formed. At present, there is one in the industry first level vocational school - logistics warehouseman, five in the vocational technical school - forwarding technician, logistics technician, port and terminal operation technician, railway transport technician and road transport technician, and three with various specialisations in universities - logistics bachelor, logistics engineer and logistics master's degree. Unlike vocational technical schools, where the five professions are clearly defined in terms of their core curricula, universities offer a wide range of professional specialisations in logistics in various fields of study. From the point of view of the labour market, logistics is the most recognizable field of study by employers which the candidate for a job has completed.

In addition, preparation to work in logistics and to teach vocational subjects at a technical secondary school can be acquired as part of a post-graduate course. The logistics education system is complemented by training courses, which number is extensive and constantly growing.

While the logistics education system in higher education is mature, a similar system in secondary vocational education is undergoing transformations as there are students in the process of learning who have started it in the current school system or in the previous one.

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