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Problems of Education and Preparation of Human Resources for Print and Publish Complex in the Conditions of the Central European Region

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PROBLEMSOFEDUCATIONANDPREPARATIONOFHUMANRESOURCESFORPRINTANDPUBLISHCOMPLEXINTHECONDITIONSOFTHECENTRALEUROPEANREGION

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Roman Šíp

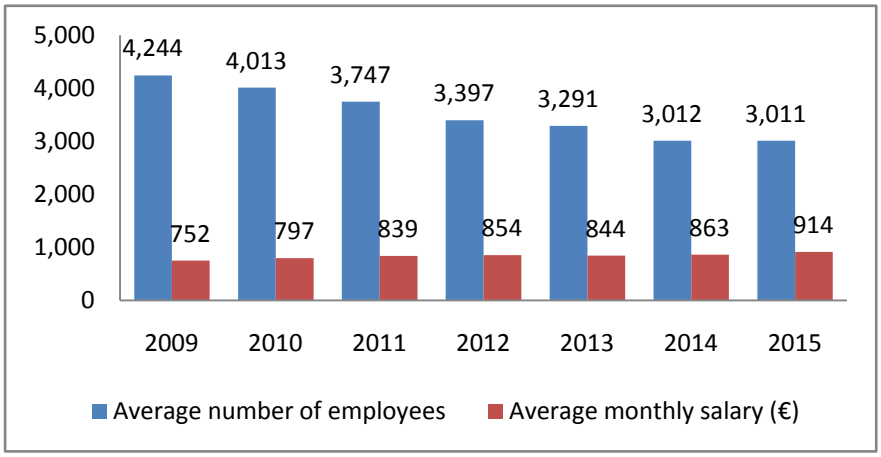
I. Present State of the Problem at Home and Abroad Theoretical Definition of the Problem

Labor market development in the printing industry reflects the errors that have occurred in education in 90´s of the last century. The education system based on the needs of print and publish complex, where students are bound by contract with a future employer is liberalized. Employers stopped promoting education, headquarters of industry disappeared, the Ministry was reoriented to knowledge-based society, where school leaving examination should be fully accessible and preparation of blue collar workers ceased to be attractive. So called, informative values were not required and the breakdown in education, which occurred in its whole nature manifested after twenty years. Centralized nationwide education in Bratislava started to have problems. Meantime the functioning system of education, providing qualified workforce began to shake in its existence. Dominant printing company in Slovakia prefers local education at the nearest high school, with students without any long-term perspective, backgrounds or insufficient educational qualifications.

Table 1: Printing industry in Slovakia

	2009	2010	2011	2012	2013	2014	2015	2016
Profit (million €)	279	297	298	263	263	255	247	248
Added value (million €)	78	79	77	71	63	62	70	65
After-tax profit (million €)	1	2	5	5	–5	–2	3	10
Average number of employees	4 244	4 013	3 747	3 397	3 291	3 012	3 045	2 882
Average monthly salary (€)	752	797	839	854	844	863	910	902

Resource: Statistical office of the Slovak Republic, https://slovak.statistics.sk/



Graph 1: Correlation between the number of employees and wages

Resource: Statistical office of the Slovak Republic, https://slovak.statistics.sk/

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It is noticeable nowadays that two generations of the professionals needed for natural reproduction of the print and publish complex are missing. There is a lack of skilled workforce at all job positions. This deficiency can´t be filled from day to day. The process of systematic preparation of the future qualified graduate takes at least four years.

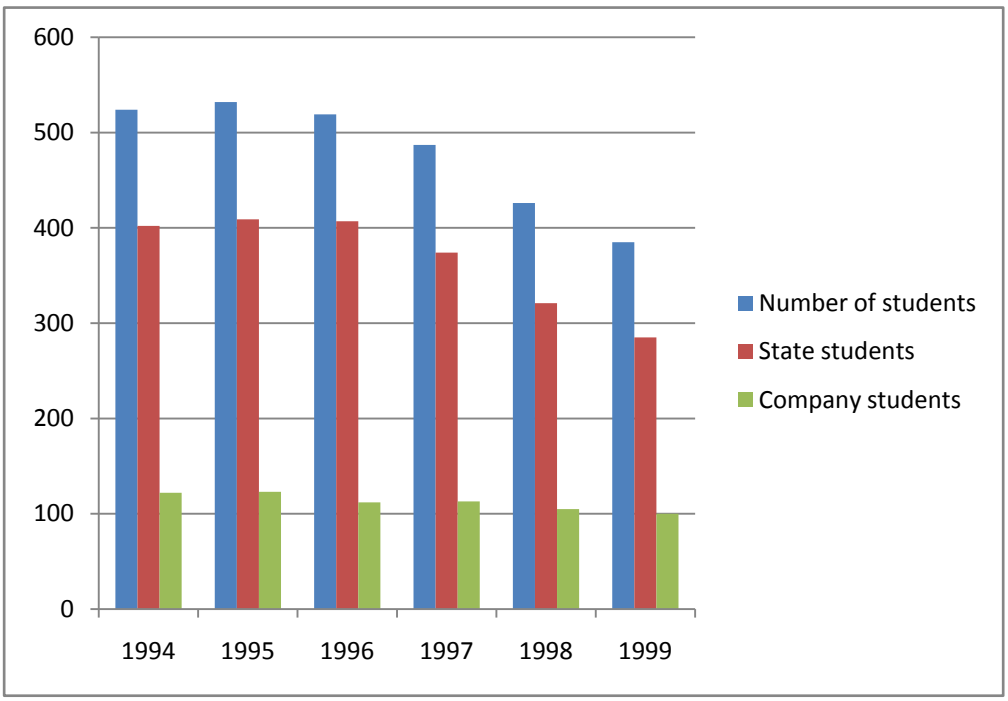
The planned system of education and preparation of the workforce in collaboration with personnel department of the employer is unknown. The priority of the human resources nowadays is to contract unskilled workforce and temporary workers for afternoon and night shifts. It was caused by all those who did not accept the importance of education for the needs of printing industry as the significant investment for the future. While education was and still is the foundation for growth of the prosperity and creation of opportunities.

Table 2: Number of students preparing for the print and publish complex before 2000

Year	1994	1995	1996	1997	1998	1999
Number of students	524	532	519	487	426	385
Company students	122	123	112	113	105	100

Resource: Kováč, L.: The Secondary Vocational Print and Publishing School, Bratislava.

Managers at all levels of print and publish complex were aware that investment into poor local communities with denial for the value of education did not have long-term rational basis. At the end of their productive age, employees of printing companies often became teachers of students. Machinery equipment was limited to the printing machine, which was eliminated in production destined for scrapping. This development went even further, in the form of severe degradation of education. Slovakia has currently around 30 schools offering education in the field of study 3447 digital media graphic designer. Leaders in printing industry are responsible for poor state of education of the workforce in the printing industry.



Graph 2: Development of the number of students in 1994 – 1999

Resource: Kováč, L: The Secondary Vocational Print and Publishing School, Bratislava.

Decisions of management control of employers in the field of human resources were wrong in the early 90´s. Decisions did not take into consideration the needs in terms of filling short term performance of companies and it led to an alarming shortage of skilled labour in terms of long term needs. In the short term the lack of workforce at labour market were solved with higher wage by the employers. Because of this it comes to migration of employees in 2000. An absence in the structure of the training and education of employees and discord between the future need and reserves in personnel policy has appeared.

Overall the planning of human resources in line with the fulfillment of production targets has failed. It

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lacks any planning for needs or eventually for surplus of workforce that would achieve the necessary labour potential. In this case the control of requirements and basic planning of human resources in print and publish complex failed.

The absence of planning of human resources and determining the needs of employers do not reflect changes in the transition from analog to digital technology. Company headquarters failed to predict the requirements for the future reproduction of the workforce in accordance with the organization of work and introduction of new technologies. The amount of performed work was not enough oriented on qualification of employees.

There is no planning of the needs of human resources for this field because of the dissolution of the directorate – General VHJ of Slovak printing in the early 90´s without existence of any full-value successional organization within the printing industry. Today, after 25 years we reveal that market did not solve the problem of qualified workforce. Employers were neither willing nor forced to solve the problem of qualified workforce for positions of offset printing machine operator (printer), bookbinder, process engineer, cost clerk and marketing employee. The lack of company students in the last twenty years is the consequence (*Table 7*).

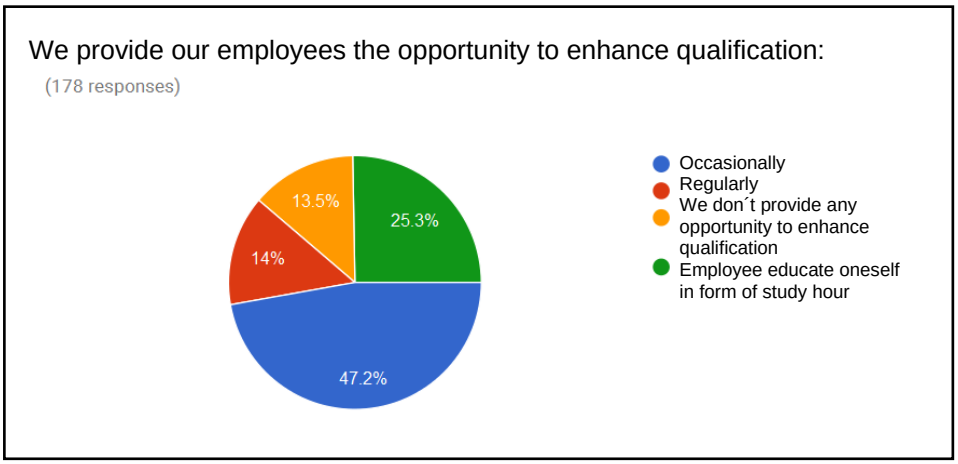
Analysis of the age structure of employees warns us about the employment of older generation with the expectation of retirement. We observe this state in the field of vocational education as well. The professional teaching employee needs to have a certificate of apprenticeship in a relevant field, university degree and must have a supplementary pedagogical study to fulfill the qualification requirements. There was always lack of people willing to undergo this process of self-long education within the fields of No.34 Printing Arts & Media. The current age limit of teachers is fifty without succession of the younger generation. The teachers qualified to teach are retiring and there is no replacement for them in teaching staff. The missing personnel policy of employees in the field of print and publish complex causes following consequences:

The missing personnel policy of employees in the field of print and publish complex causes following consequences:

- The lack of systemic management approach,
- Failure to take account of the transformation process of change of inputs and outputs,
- Downfall of control of all activities taking place in the organization,
- Lack of personnel policy which causes the failure of two generations of professionals who would be able for the vacant jobs,
- The reluctance of employers to participate in vocational education and to consider educated workforce to be a competitive advantage,
- Accept the dual system of education as an alternative to long-term solution of reproduction of the workforce.

We reveal in accordance with the results of research (*Graph 3*), that employers don´t provide their employees with sufficient opportunities to:

- Upgrading skills,
- Retraining,
- Acquisition of new technologies.



Graph 3: Attitude of employers to the education of workforce in print and publish complex

Resource: Own research.

This implies that in the field of development of the workforce there isn't sufficient emphasis on developing knowledge and skills that would lead to systematic education. Employers don´t provide their employees the career growth, which would lead to future decrease of work performance in the company´s potential. Some companies will have to reduce production capacity and reject the orders due to labour shortage. The employers will face a shortage of skilled workforce in the near future. If the employers will not fulfil the need for radical changes in the system of work of personnel department in the short period, jeopardize the

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fulfillment of their manufacturing objectives. The plan of educational activities must reflect the real long-term needs and not to be limited to compulsory training only (Graph 3). Research reveals that the 14% of respondents don´t provide their employees any training and 25% of employers leave the up skilling in the hands of their employees. Only 14% respondents of research claim that they provide regular training for their employees. It is assumed that these trainings are systematic and planned.

II. Research Results and Their Interpretation

The problems associated with systemic management of human resources within the print and publish complex is not possible to describe only by one basic method. Issues related to workforce together with the results of the research give enough space for opportunity of reflection and training of new employees. The requirements of employers in the print and publish complex for human resources forced top management to formulate hypotheses of urgent solution of their shortage.

a) Implementation and methodology of research

The research was conducted through a questionnaire with a focus on finding facts influencing human resources, preferences of management behavior and process management in the print and publish complex (178 print and publishing organizations, 2 750 e-mail address).

The questionnaire contains 11 questions.[1] The respondent fills the field of business, number of employees according to the classification of European Union, head office by the regions in Slovakia. Likert scale was used according to themes for drawing up the scales of the questionnaire.[2]

To obtain the greatest number of employers, questionnaire was conducted using the Google Form. The questionnaire was sent out in the between July and December 2016. Pivot tables, frequency tables and graphs were used for the processing of all responses in our questionnaire. Quantitative analysis is done in order to acquaint employers with current issues. Solution to reduce labour shortage for the next 10 years is drawn as well.

The complete questionnaire is stored in electronic form on the server: https://docs.google.com/forms/d/ 1PDbwspjw WoGCYpjt Wb4 ot Ls7LXHa 71ZEX9AdsZ3F_rs/prefill

Requirements of employers we investigated to find skilled workforce educated at the secondary school and at the same time its current disposable status through the question focused on the needs of the labour market in the next three years. The result is a finding of lack of human resources preparing for the labour market needs. From demands for workforce in different region of Slovakia Bratislava Region represents more than 1/3 in all professions. The requirement correlates with the distribution of employers in Slovakia. This implies that the largest grouping of employers in the print and publish complex is concentrated exactly in this region. Graph 4 highlights the fact of uneven intensity of allocation of human resources. Almost in all regions is the dominant requirement for the position of printer on the first place.

The requirements of employers for employees in key positions working in Slovakia are the same as in the Czech Republic. This results from the meeting of the executive committee of the Association of printing industry in Slovakia and the Union of Printing Entrepreneurs in Hodonin (Czech Republic) in the autumn of 2016. The advantage of the educational system in the Czech Republic is that the bookbinder of finishing production can be educated in the field of study ended with school leaving examination, on the other hand in Slovakia is possible only the education in the field of study ended with certificate of apprenticeship. Such possibility of the three-years vocational study is in current situation unattractive in Slovakia. To create a class in accordance with § 33 of Act 245/2008, par. 7 point. a) minimum of 17 students is for this field of study impossible.

[1] Richterová, K. a kol. 2013. Úvod do výskumu trhu. Bratislava: Sprint 2 s.r.o. 2013. 316 p. ISBN 978-80-89393-95-4.

[2] Gavora, P. 2012. Tvorba výskumného nástroja. Bratislava: SPN. ISBN 978-80-10-02353-0.

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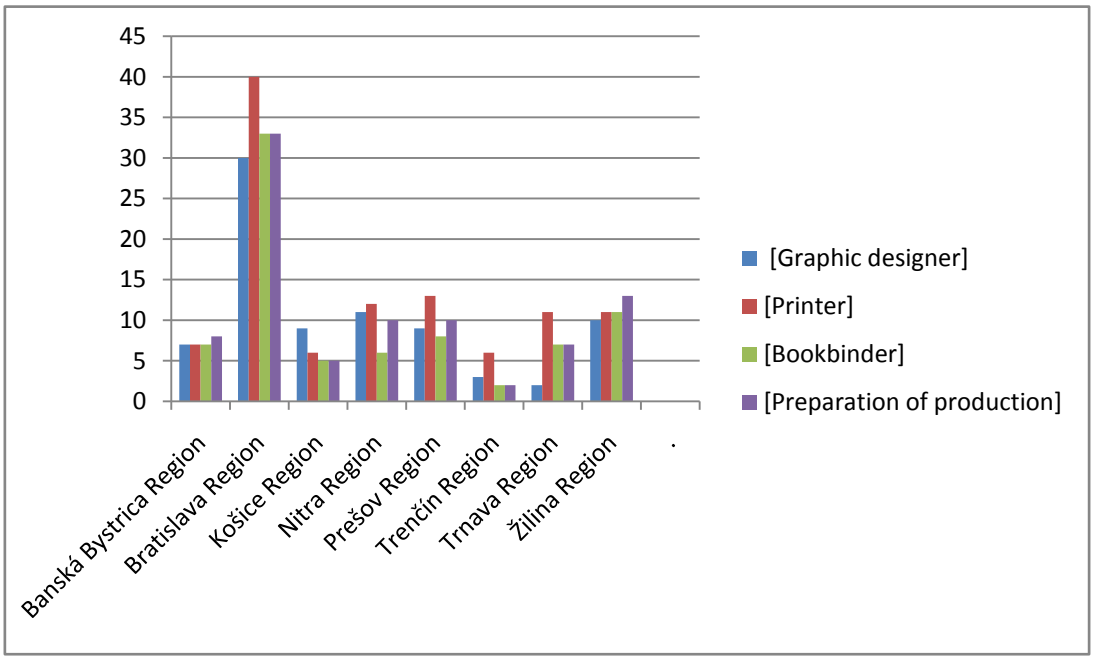

Graph 4: The requirements for skilled workforce in regions of Slovakia in the next 3 years

Resource: Own research.

Table 3: Cross table of the labour market needs by region in the next 3 years

Profession	Preparation of production	Graphic designer	Printer	Bookbinder
Banská Bystrica Region	9%	9%	7%	9%
Bratislava Region	38%	37%	38%	42%
Košice Region	6%	11%	6%	6%
Nitra Region	11%	14%	11%	8%
Prešov Region	11%	11%	12%	10%
Trenčín Region	2%	4%	6%	3%
Trnava Region	8%	2%	10%	9%
Žilina Region	15%	12%	10%	14%
Total sum	**100%**	**100%**	**100%**	**100%**

Resource: Own research.

Printing companies will have the biggest shortage of required workforce in the next 3 years (*Graph 5*). The situation is caused by the breakdown of students in the education system who would be prepared for position of bookbinder and printer. The profession is not attractive for pupils and parents. Employers did not have motivation to systematically support the education and to ensure the reproduction of workforce as in the 90´s was relatively sufficient with workforce. The training of young people was for employers expensive item, which was at that time abolished (*Graph 2*) and there was no company student preparing for their future profession at the beginning of the millennium (*Table 7*).

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Table 4: Cross table of requirements of employers for workforce in the print and publish complex in the next 3 years

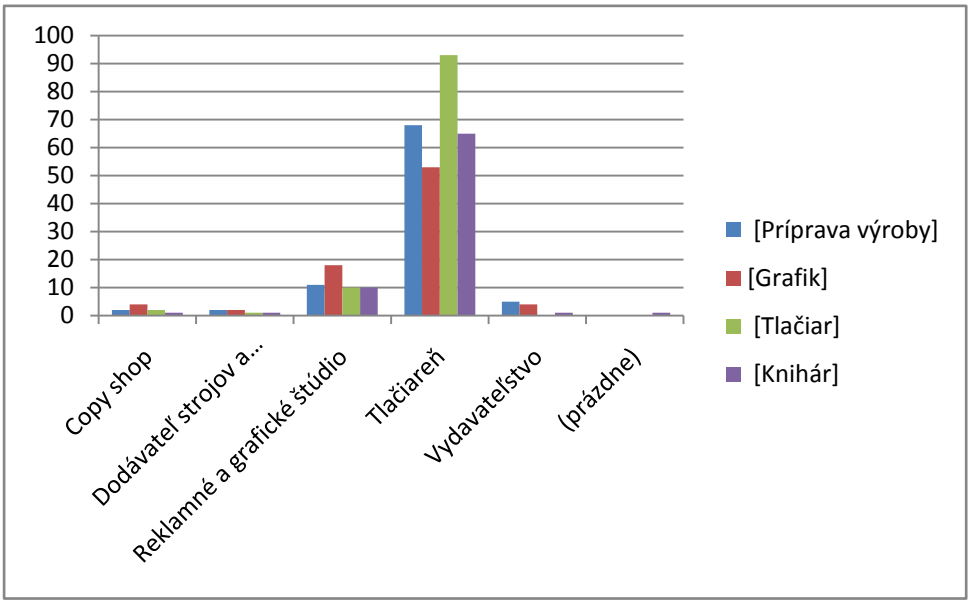
Tag Lines	Preparation of production	Graphic designer	Printer	Bookbinder
Copy shop	2%	5%	2%	1%
Supplier of machinery and materials for the printing industry	2%	2%	1%	1%
Advertising and graphic studio	13%	22%	9%	13%
Printer industry	77%	65%	88%	82%
Publishing company	6%	5%	–	2%
Total sum	100%	100%	100%	100%

Resource: Own research.

There is currently negligible number of students at the secondary vocational schools who are preparing in the field of studies required by the employers or students are not preparing already several following years at all. The state of reproduction of workforce is alarming.

This acute shortage of skilled workforce refers to graduates in the field of study 3457 K offset printing machine operator and 3473 H 08 bookbinder. Both fields were neglected in terms of marketing activities and educational system in collaboration with parents failed to ensure future vacancies for students.

Partial success is the training of students for the preparation of production (marketing staff, cost clerk, technologist, scheduler norm). There has succeeded in the field of study 3431 M 01 printing technology (preparation of production) to preserve the continuity of eighty years and to systematically educate and fill mentioned job positions for the need of labour market (*Graph 5*). Lack of qualified workforce for job positions in the preparation of production is not as significant as in other job positions. It may be caused by technological change in the last twenty years when those positions were filled by graduates of other related fields of study, such as a group 34 printing and media (engineering, informatics).



Graph 5: The application of secondary vocational schools within print and publish complex in the next 3 years

Resource: Own research.

From the perspective of the current preparation of students the expected requirement of employers for vacant place for job positions in the preparation of production in the next 3 years will be filled. Graduates will be effectual ready for publishers, advertising and graphic studios, agencies and copy shops. From references of suppliers of consumables and machines we have information about application of graduates of the field of study 3431 M 01 printing technology (preparation of production) at the positions business man as well.

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Table 5: The requirements of employers for workforce by region in the next 3 years

Profession	Preparation of production	Graphic designer	Printer	Bookbinder
Banská Bystrica Region	85	35	90	105
Bratislava Region	190	210	325	305
Košice Region	30	50	35	25
Nitra Region	50	55	65	30
Prešov Region	55	50	80	55
Trenčín Region	10	15	30	10
Trnava Region	35	15	55	35
Žilina Region	65	55	100	80
Total sum	**520**	**485**	**780**	**645**

Resource: Own research.

Problems of education in relation to the reproduction of the workforce did not avoid the International Bill 12 seminar focusing on screen printing and digital printing at October 8, 2016 inČeský Krumlov (Czech Republic). The contribution of Iveta Ochrankova under the name the teacher´s view of preparation of a student of graphics design[3] described the current state. The question of workforce resonates at international level and is highly actual for professional unions.

Companies operating outside print and publish complex are already limiting investments due to lack of workforce. To fill vacant positions would take ten years.[4] In the Czech Republic 86% of companies have problem to find workers with vocational certificate.

Employers in the Czech Republic want after model of Germany and Austria to introduce system of dual education (SDV) which should adapt the plan of production of schools to labour market´s requirements. Poland has similar problems with qualified workforce.[5] It operatively responded to labour market´s requirements and recruited foreign workers. But this step doesn´t solve reproduction of workforce but commonly saves an acute shortage of workforce which was not solved a long time.

In Slovakia there became an important legislative assumption for adjusting of principled and systematic bases of dual education the Act. 61/2015 about vocational education and training.

[3] Ochránková, I.: The teacher´s view of preparation of a student of graphics design, Medzinárodný seminár Bill 12, 8th October 2016.
[4] Weikert, P.: Ordnung muss sein. Mladá fronta a.s. Euro 50, 12.12.2016.
[5] Weikert, P.: Ukrajinci, vítejte. Mladá fronta a.s. Euro 49, 5.12.2016

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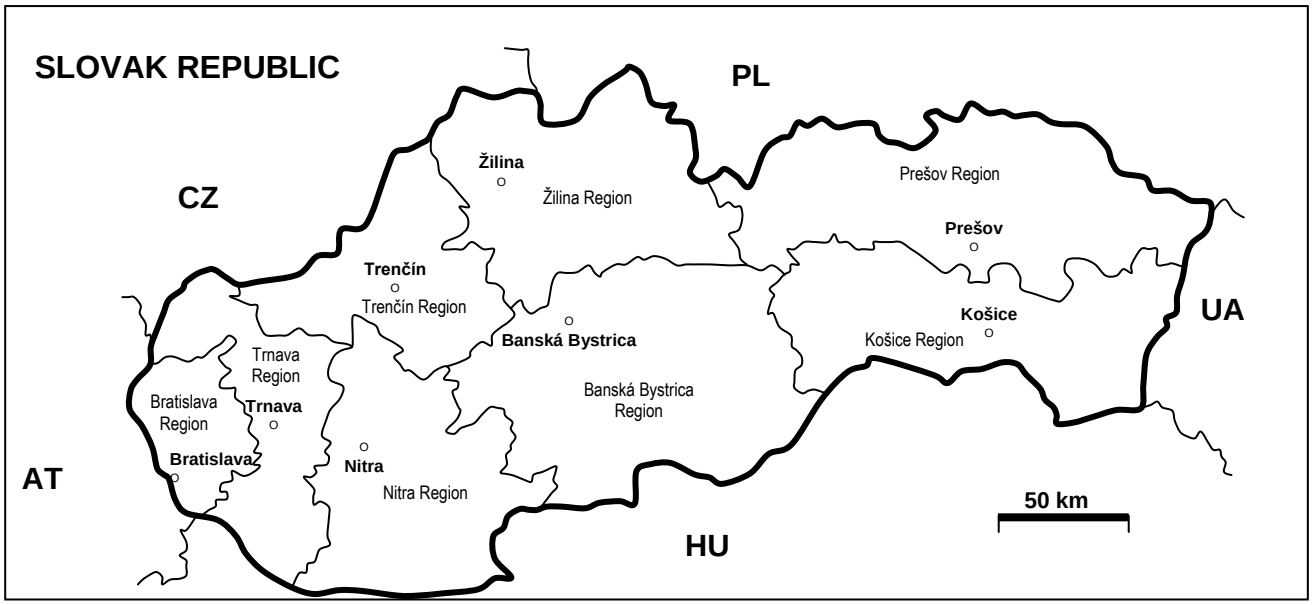

Map of Slovak Republic and Regions

b) Suggestion of the solution of the situation and final recommendations

There is 2 935 kindergartens, 2 113 primary schools and 868 secondary schools in Slovakia with cca 89 000 pedagogical employees. Primary schools educate 450 000 pupils which is about 210 pupils per school. 270 000 pupils study at secondary schools which is cca 300 pupils per school. There are about 150 primary schools where study from 10 to 50 pupils and about 50 secondary schools with the number of students under 150. About 500 schools are so called "small classes". There are 36 public universities and high schools in Slovakia as well where study 135 000 students.

Table 6: Allocation of the population in education to the age of 20

	Number of schools	Number of pupils	Average
Nursery school	2 935	–	–
Primary school	2 113	450 000	210
Secondary school	868	270 000	300

Resource: Statistical office of the Slovak Republic, https://slovak.statistics.sk/

If the employers will not approach education of the workforce constructively, they won't be capable of redeveloping the current changes in the labour market. Ageing population is a problem in the European Union. There will be more people retired in the next ten years and there won't be sufficient number of qualified workforce for positions of printer and bookbinder. The soon to be retired employees need to be replaced in a relatively short time. The transmission of knowledge and experiences between the outgoing and incoming generation will be important. More and more employers replace qualified workforce in the production with the unqualified in time bypassing of the actual situation. Unsystematic solution of staff assurance creates situation in which unqualified workforce of production line train future operation of the line. The solution is immediate investment in education.

Even cooperation with primary school in the field of preparation for future perspective employment can be carried out in various informal projects. There is a long-term incentive of employers to have a connection among pupils, parents and employers. It is preferentially necessary to make profession attractive that has future in the field of education for studies 34 printing and media. The result of this collaboration is marketing oriented at pupil and parent which leads to the contract with the employer. It becomes a springboard for study at secondary school.

There are following forms of study available at the secondary school today:

- State,
- Private,
- Dual system of education.

Collective education of staff can be regarded as extension of the whole system. The need of education of employees should be for employers the periodically repeated certainty.

The Secondary Vocational Print and Publishing School/SOŠP/ www.polygraficka.sk as the only school in Slovakia offers specialized comprehensive education in the fields of study 34 printing and media. Graduates

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cover job positions from middle to top management of companies. The school continues in this tradition and provides well secondary education as well as vocational post-secondary studies and lifelong education.

In the creation of school educational programs the school prefers such educational processes where graduates of the fields of study 34 printing and media fulfil standards for versatility in the whole European Union.

Table 7: Number of students preparing for the print and publish complex in the current period at SOŠP

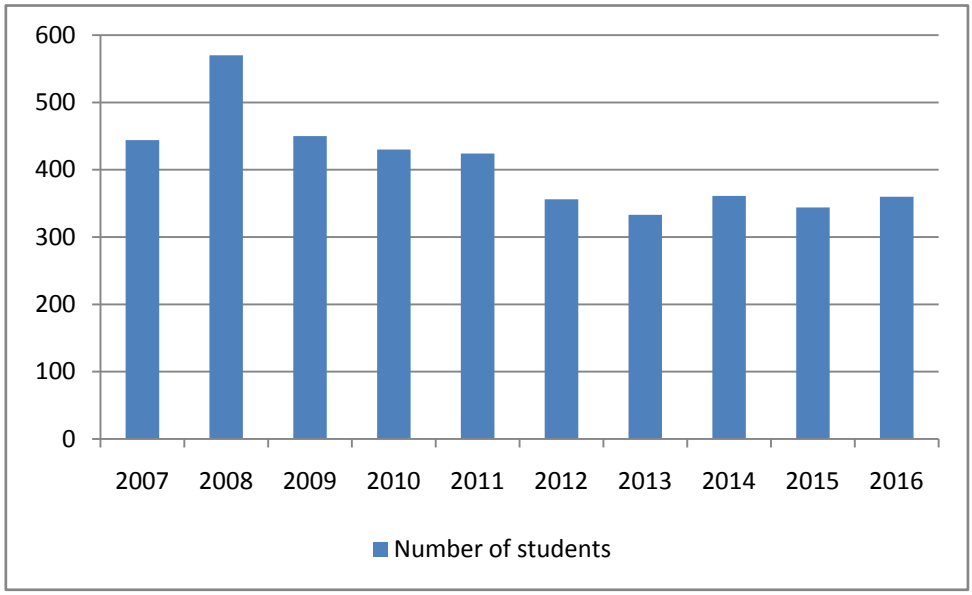
Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total number of students	444	525	570	450	430	424	356	333	361	344	360
Company students	–	–	–	–	–	–	–	–	–	–	–

Resource: Šíp, R.: The Secondary Vocational Print and Publishing School, Bratislava.

The main objective of Secondary Vocational Print and Publishing School for the next period is to insure preparation of vocational staff for all printing occupations and occupations dealing with processing of digital information for media and at the same time to act as a center of vocational education and training in area of print and media. Vocational education and training of students tend to gain such knowledge which will be in conformity with the requirements of labour market and requirements of employers. Constantly increase of qualification of vocational pedagogical employees need to be connect with suppliers of technology and materials.

The tradition of schools to direct vocational education and training of area of printing and media is also reflected in close connection with employers in the field of printing industry.

The school has remained part of the employers' associations of the printing industry and the Association of printing industry in Slovakia, where the school is a member since its establishment to the present day, also after 1991 when the founding function has passed toward the school from print and publishing company on the resort of industry and subsequently on the Bratislava Self-Governing Region. At the same time it is member of the Slovak Chamber of Commerce and the Association Union of Employers of the Slovak Republic. These institutions are the guarantor of expertise by school leaving examinations where they carry out direct supervision.



Graph 6: Development of the number of students in the last six years

Note: For 2017 it is estimated number of graduates

Resource: Šíp, R.: The Secondary Vocational Print and Publishing School, Bratislava.

There are operating other 28 schools in Slovakia in addition to this secondary vocational school whose documentation are based on the state educational program but don´t provide a comprehensive education for all fields of study.

The disadvantage of these schools is that their overall orientation is for other fields of study and don´t educate the students comprehensively for the area 34 printing and media.

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c) *The system of dual education as an alternative for employers*

An effective solution for the future seems to be the introduction of dual education (SDE) in the issue of the lack of human resources in terms of print and publish complex. The legislative requirement for the application of SDE describes Act. 61/2015 Z.z. of vocational education and training and about the change and complement of some laws. Employers and company management have the experience with this system from the past and for many of them was till 1983 a natural source of reproduction of the workforce. In some of the form of the vocational education it is applied in the form of an external experience by an employer for the fields of study 34 printing and media. The advantage is that the student is prepared for the job position under real conditions by the employer. So they obtain work habits and skills during their studies and they are naturally integrate into the team of the future employer.

The advantage of the employer is to have the opportunity to actively enter into the process of training and the creation of school educational programs. Education and development enable to involve students under the guidance of instructors already in the second class into the productive work. At the same time the employer is heading a financial and motivational evaluation for the future qualified workforce already during the education.

With the introduction of SDE occurs a fundamental change in the view of obtaining the students. Employers have to concentrate on cooperation with counselors at primary schools. Activities should be directed to:

– Career counseling,
– Awareness within the regional labour market,
– Importance of technical fields for versatility in the future,
– Engaging the students in technical works.

For the future of the fields of study 34 printing and media is necessary that employers will realize within their scope activities related to the promotion of vocational education. Promotion has to be oriented to the students and parents already in the primary schools. The current request becomes a project of promotion of trade unions and orientation for future employment. The main task of the Association of printing industry in Slovakia, as a professional body, is still the monitoring and creation of a database of vacancies and requirements for human resources in order to clarify the labour market

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