MODERNIZATION OF SECONDARY VOCATIONAL EDUCATION AT THE GRAPHIC SECTOR IN MACEDONIA

Filip Popovski[1], Gorica Popovska Nalevska[2], Mile Atanasoski[3], Svetlana Mijakovska[4]

Abstract: *Education is the most important segment that meets the needs of the new architecture in the labor market caused by the rapid development of technique and technology. When we taking in our mind the large population of the workforce with secondary education, it can be concluded that secondary education is a subsystem that generates a large number of people as a workforce and this system should have a key place in the society. Creating a flexible and competitive education system can provide staff compatible with labor requirements. Identifying opportunities for advancement and the usual career development paths in the graphic sector, help to understand the way in which an employee develops and specializes in a particular area or work, and how individual workers move from one level to another within a sector that depend on many factors such as company size, company development in terms of modernization and personal ambition of employees.*

Key words: *Education system, labor force, graphic industry, opportunities for career advancement, employers in the graphic industry.*

1. INTRODUCTION

Secondary education is a subsystem that generates a large number of personnel as a workforce and this system should have a key place in the society. The results of the research CEDEFOP (2009) show that the need for staff with more knowledge, skills and competencies is increasing. The projections by 2020 indicate that the future need for staff with secondary vocational education is still high and their participation in the employee structure still remains approximately 50% of the total number of employees.

Creating a flexible and competitive education system can provide staff compatible with the requirements of labor and create a society of knowledge. The vocational education reform is aimed at building an educational system that will provide equal rights to education, reveal students' potentials, introduce European standards and continue education in flexible systems that will provide to students vertical and horizontal mobility.

[1] Filip Popovski, PhD, Faculty of Technical Sciences, Bitola, Macedonia, fillip.popovski@tfb.uklo.edu.mk,

[2] Gorica Popovska Nalevska, PhD, International Slavic University, Bitola, Macedonia,

[3] Mile Atanasoski, Msc, Taki Daskalo, Bitola, Macedonia,

[4] Svetlana Mijakovska, PhD, Faculty of Technical Sciences, Bitola, Macedonia.

2. METHODOLOGY OF THE RESEARCH
2.1. Analysis of the labor force in graphic industry

Workers in printing industry set up and arrange printing bases and copies manually or with electronic keyboard or other machines, produce printing plates, engraved lithographic stones, printing plates and rollers, produce and print silk bases, produce paper and print on it and finish books gluing and sewing. Graphic designers apply art ntechniques in the design, decoration, specification and advertising of electronic and digital forms of various media. They create special content of animated effects with images for use in computer games, movies, music videos and advertisements. Macedonian printing companies have achieved a high level of personnel and technical-technological equipment in their long tradition of working. This is a consequence of the number of active printing companies in Macedonia that has been quite extensive in recent years. According to the statistics for 2013, the number of active business companies for production of paper and paper products is 231, while active business entities for printing and reproduction of recorded media amount to 443. In 2014 and 2015, the number of active companies is slightly decreased and it is 224 business entities for producing paper and 406 business companies for printing and reproduction of recorded media.
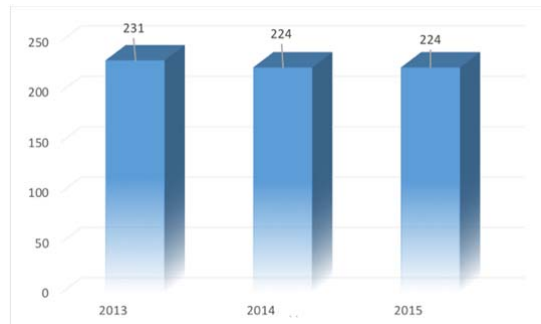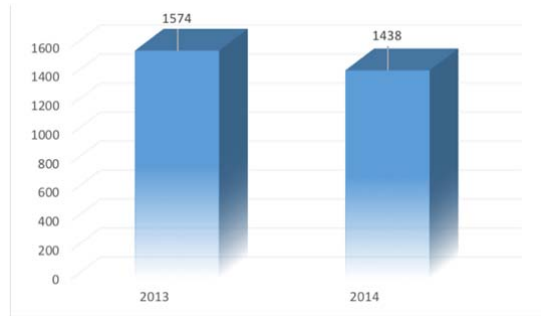

Figure 1. Number of active business companies for production of paper products from 2013-2015
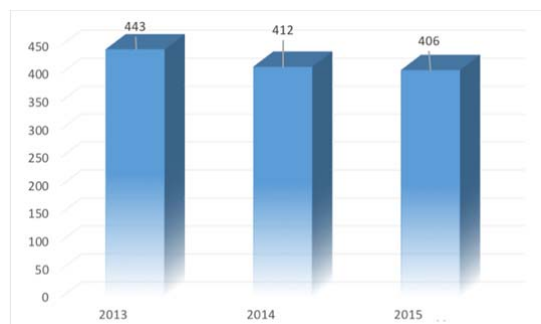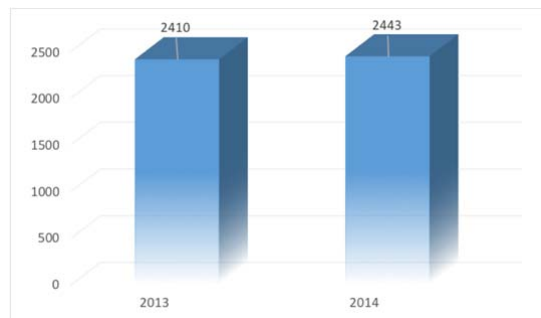

Figure 2. Number of active business companies for printing and design from 2013-2015

According to the statistics on the employment in the graphics industry, the number of employees in the last years is equalized, amounting to 1574 employees in 2013 and 1438 employees in paper and paper production companies.

Figure 3. Number of employees in companies for production of paper products from 2013-2014

The number of employees in companies for printing and design is 2410 in 2013 and 2443 in 2014

Figure 4. Number of employees in business companies for printing and design from 2013-2014

Equal opportunities for men and women by dignity and right means promoting the principle of introducing equal participation of women and men in all areas of the graphic sector, equal status and treatment in all rights and in the development of their individual potentials through which they contribute to social development, and equal benefits from the results derived from that development. However, data show that in the past years the ratio of employed men and women is 2:1.

From the total number of employees in the graphic sector, the number of persons with completed 4 years vocational secondary education is 58%, followed by persons with completed 3 years vocational secondary education, while the number of persons employed with higher education is 11%. The number of people with 2 years of high education is 2%, and the remaining values of persons with completed master's degree and doctorate are negligible.
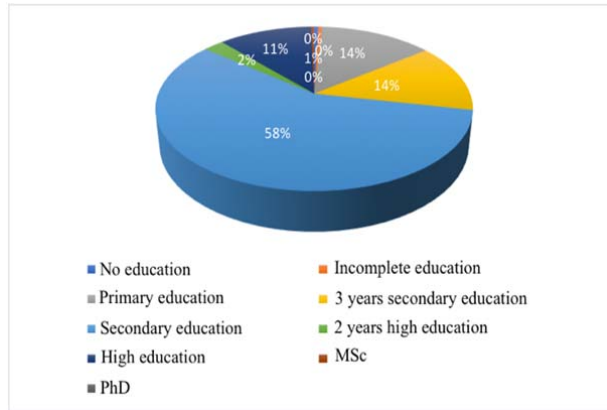
Figure 5. Structure of employees in the graphic industry in 2014 according to the level of education

The data from the Statistical Office in Macedonia shows that the age structure of the persons employed in the graphics industry is uniform. The biggest representation is represented by persons aged 35-39 with 15%, followed by persons aged 30-34 and 40-44 years with 14%, etc.
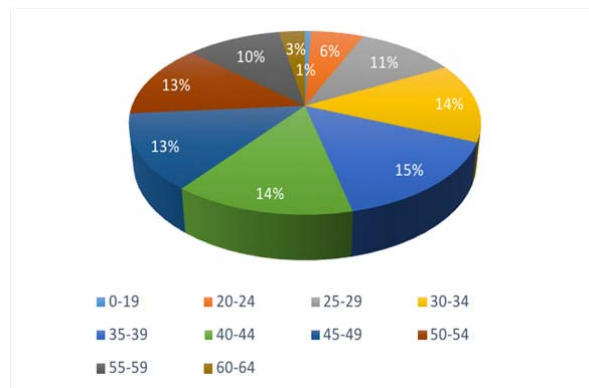
Figure 6. Age structure of the persons employed in the graphic industry in 2014

2.2 Production in the graphic industry

In Republic of Macedonia, the number of graphics companies in the last few years is equal and this contributes to the volume of production in those companies in the past years to move in the equal limits.

Table 1. Production in graphic industry in natural indicators 2013-2015

Product	U	2013	2014	2015
Production				
Corrugated paper and cardboard	T	12047	11816	14987
Boxes and packaging from corrugated paper	T	12099	12781	14939
Boxes and packaging from no corrugated paper	T	45	5134	4798
Other packaging	T	204	187	120
Wipes and diapers	T	112	98	84
Envelopes	KG	/	2755	1508
Registers, accounting books	T	/	4	9
Notebooks, Agendas	T	61	59	54
Business patterns of carbonated paper	T	609	315	316
Self-adhesive labels	T	175	218	413
Non self-adhesive labels	T	190	216	250
Printing				
Printing of newspapers and magazines	T	3903	3502	3268
Printing of commercial catalogs	T	/	16	7
Printing of advertising material	T	794	673	691
Printing of newspapers and magazines that come once a week	T	120	124	120
Printing books and brochures on one side	T	30	10	/
Printing books and brochures on both sides	T	481	540	459
Printing calendars	T	1	/	6
Other printing	T	2651	2819	2694

Through the analysis of the jobs in the graphics industry organizations, there was an attempt to make a map of the occupations for the graphic sector. In the analysis was used systematizations on jobs of several printing companies and one design and multimedia studio.

Table 2. Jobs in printing house

Work place	Education	Description
Manager	High education	Managing with the company
Secretary	Secondary education	Administrative works
The commercialist	High education	Product placement
Marketing manager	High education	Marketing
Technical editor	High education	Working with text, images, graphics
Head of printing process	Secondary education	Working on machines
Technician for preparation of printing	Secondary education	Working on CTP machines
Offset worker	Secondary education	Working on offset machines
Assistant offset worker	Secondary education	Assisting on offset machines
Print finishing worker	Secondary education	Working on cutting, merging and sticking machines
Hygienist	No education	Hygiene
Distributor	No education	Distribution

Table 3. Jobs in design studio

Work place	Education	Description
Manager	High education	Managing with the company
Producer	High education	Producing video projects
Editor	High education	Working with Adobe software
Graphic designer	High education	Working with Adobe Photoshop, Adobe Illustrator, Corel Draw
Tone engineer	High education	Working with Adobe Audition
Light engineer	High education	Working with light effects
Cameraman	Secondary education	Working with cameras
Administrative worker	Secondary education	Administrative works

3. RESULTS

When we analyse jobs in multiple print houses, it is noticeable that job titles for the same workplace may vary. The table below represents the categories of workers according to skill levels.

Table 4. Categories of workers according to skill level

Skill level	Category of worker
Level 1	Unskilled physical worker
Level 2	Low skilled worker
Level 3	Qualified worker - technician
Level 4	High qualified specialist
Level 5	Professional

The main occupations are listed in accordance with skill levels like in the table 5.

Table 5. Main occupations according to skill level

Unskilled physical worker	Level 1	- Hygienist - Distributor
Low skilled worker	Level 2	- Assistant offset worker - Print finishing worker
Qualified worker - technician	Level 3	- The commercialist - Technican for preparation of printing - Offset worker - Administrative worker - Cameraman
High qualified specialist	Level 4	- Marketing manager - Technical editor - Head of printing process - Secretary - Producer - Editor - Graphic designer - Tone engineer - Light engineer
Professional	Level 5	- Manager

4. DISCUSSIONS AND CONLUSIONS

Identifying opportunities for advancement and the usual career development paths within the sector help to understand the way in which an employee develops and specializes in a particular area or work, and how individual workers move from one level to another within the sector.

The opportunities for career advancement and the usual career paths in the graphics sector depend on several factors:

- The size of the company
- The development of the company in terms of modernization
- Personal ambition of employees.

In smaller companies, the interweaving of tasks is very common. On one hand, it means that it is working in many positions, which may mean insufficient improvement in the primary position. On the other hand, it also means other work skills, that provides the flexibility that is required and often necessary in smaller companies.

In large companies, most often is no relocation in the workplace. Here comes the possibility of progressing to another level. Most often this is done according to the scheme: Assistant - Technician – Head of process. Here the ambition of the employees comes to the fore, that is desire for learning and advancement.

In companies where have good modernization, in terms of purchasing new, more advanced machines, progress in terms of specialization may be bigger. Complexity of the machines of the new generations (automation, computer management, etc.) is most often associated with the organization of trainings by the specialists of the manufacturers.

In the field of graphic design, except formal education, there are also ways of informal education through certain courses and trainings for education. The tools used by the graphic designer and technical editor such as the computer and etc. gives great opportunities for self-education by working in certain computer programs, the ability to access e-learning and even the exchange of knowledge through other forms of learning.

From the analysis, we have a clear picture about the types and size of organizations that are employers in the field of the graphics industry. Key factors for the development of the graphic sector are:

- Ministry of Education and Science
- Ministry of Labor and Social Policy
- Ministry of Economy
- Ministry of Environment and Physical Planning
- Employment Agency of the Republic of Macedonia
- Economic Chamber of Macedonia
- Macedonian Chambers of Commerce
- Craft Chamber of the Republic of Macedonia
- Employers and owners of printing houses
- Employers and owners of design houses

- Center for Vocational Education and Training
- Center for Adult Education
- State Educational Inspectorate
- State Examination Center
- Local self-government
- Council of parents in vocational schools
- Faculty of Technical sciences Bitola
- Vocational secondary schools in Macedonia

ACKNOWLEDGEMENTS

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