THE DEVELOPMENT OF TECHNICAL COMPETENCES IN THE CONTEXT OF THE FUTURE PERFORMANCE OF SECONDARY SCHOOL PUPILS

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Abstract

The educational process is influenced by several factors that directly affect the effectiveness of education. Important factors influencing this process include not only the content and scope of education, but also the factors affecting teachers and pupils play an important role. The educational process is influenced by the application of didactical means, materialistic (used teaching aids and didactical technologies) and at the same time the necessarily included non-material didactical means (methods of teacher's work, didactic principles, teaching forms and others). Environmental factors have a significant impact on the quality of the educational process, not speaking just about the school environment, hygiene factors, the staff consistence, but also the personality of the teacher, the acquired knowledge, the school climate, or respectively the class climate. The right choice, application and formation of educational factors has got a positive effect on to the increase of the pupils' interest in the teaching process, or to the specific subject. The paper focuses on identifying factors in the subject Technology that affect pupils in education and at the same time affect the professional orientation of pupils and the choice of study at high school.

1   Introduction

Education is an essential prerequisite for any progress and therefore great emphasis must be placed on creating the right conditions for it. Education should be the essential element of the development of society. Similar to other sectors, e.g. health, economics, law or psychology, education, or technical education has an irreplaceable role in society. It has an impact on industry level and its many segments. In addition to providing basic general education, the current period also requires the subsequent acquisition of secondary vocational education. In order to prepare a suitably trained person for the labor market, a graduate of a school that reflects the changed technical conditions in accordance with the company's requirements, it is necessary to increase pupils' interest in technical education. One of the steps to increase interest toward technically oriented profession and the choice of technical upper secondary education is to correctly direct the education already at secondary schools. In the subject of technology, the pupils get the first insight into the world of work and their future employment, so they can assess themselves whether they are able to perform a certain

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manual work that they have the opportunity to do on the lessons of technology. The authors' attention of this paper is focused on the development of technical competences of pupils in the subject of technology and their associated professional orientation. The first orientation in the professional field should take place already at the secondary school, where the pupils of the second stage of the secondary school obtain information about what is the offer of professions in the labor market, the professional skills of the pupils are tested that are necessary for the profession. Professional choice is a very important decision in the life of an individual, and the professional role also implies the pupil's future social position, prestige and lifestyle. The paper includes results of the verification of factors that affect a pupil in the process of choosing a study at a high school and consequently affect his / her professional orientation and choice of future profession.

2 Professional orientation of pupils in the subject Technology

The pupil of higher secondary education at the secondary school is in the age of from 11 to 15 years. This period, in developmental psychology, is referred to pubescence. This is a period of human life, characterized by major changes, not only from a physical point of view but also from the mental point of view. The young individual detaches himself from stability and is looking for further continuation of his life journey, which will culminate in his last year of studies by choosing high school. The transition from elementary to high school is not yet a factual choice of profession, it is the first phase of the pupil's professional orientation. The choice of high school is particularly important in the whole process of professional orientation. The pupil has a large number of options in front of him, so this choice is one of the most difficult. Pupils' decision-making at the end of secondary school constitutes a serious stage in the lifelong process of professional orientation. This decision is the secondary focus of adolescents' entire professional development and is one of the most serious steps in human life (Mojžíšek, 1981). A good professional orientation has a far-reaching influence on a person and significantly affects his future. For secondary school teachers, what is most important is the so-called initial choice of profession which is not yet a choice of profession in the true sense of the word. It involves deciding on the overall professional orientation, finding a suitable study or apprenticeship, and selecting a particular school (Hřebíček, 1987; Mojžíšek, 1981; Turek, 2005).

Therefore, the choice of the profession of secondary school pupils is sometimes referred to as the first directional choice (Košč, 1971; Taxová, 1987). Strádal describes it as follows: *"It's similar to the station. As soon as you enter a train, you can change while driving and decide your next route, but the basic direction of your journey is already set. The more you want to change it, the more effort it will cost you "*(Strádal, 1995).

Professional orientation can thus be understood as a choice of a certain way of life, which also reflects the characteristic features of the individual's self-perception and its typical personality traits. We know many factors that influence pupils when deciding on their future, most often these factors are divided into:

- external: when choosing the school or future profession, the attractiveness of the future vocation and the society in which the pupil is moving, the socio-economic and cultural status of the family, the vocation of parents and their level of education play an important role, also the attitude of parents toward work and how they present the importance of education for life, the professional decisions of friends and relatives,

- internal: we can include many personality traits of an individual, his special abilities, needs, talent and capabilities, interests. It also includes his personality traits, introversion-extroversion, self-sufficiency or dependence on others, activity-passivity, self-confidence or oinferiority (Friedmann, 2006; Gajdošová, 2004).

The essence of these factors is in fact the contradiction between the pupil's own choice and the parents' ideas, the desires, aspirations, expectations and personal preconditions for the chosen study, the attractiveness of the school, the study and the future profession and the number of students admitted to the school. A serious fail of career choice among pupils is their low readiness for this important life decision. Negative factors can be:

- low awareness of pupils about the world of work and each profession, about the necessary health conditions, about the required knowledge and skills and, in particular, the actual real performance of the

profession and its prospects in the labor market, the unknowledge of the school system (demands of individual types and levels of schools, their curricula, focus, etc.)

- the lack of self-knowledge, it means an overview of one's own abilities, of talents, aptitude, physical and psychological prerequisites, and others.
- short-term perspective orientation (it means focusing primarily on immediate goals) and unclear ideas about adolescents' own future (Pavelková, 1990).

Research shows that pupils are looking for help in their neighborhood before choosing a profession. They turn to other people for help and advice for various reasons. Pupils may be insecure, undecided, anxious, but on the other hand, they can only seek confirmation and support for their specific ideas and decisions. The most important institutions that play a decisive role in this field in the long term are the family and the school (Jigau, 2007; Košč, 1971; Taxová, 1987).

From these facts the result is that pupils choose further study or life orientation or profession based on:

- emotional needs, interests and wishes,

- rational consideration of their possibilities and constraints, while the starting point for the professional choice of an adolescent can be:

a) knowledge and information about various professions;
b) own school achievement, experience with own performance in different areas and their evaluation,
c) self-assessment;
d) the wishes and expectations of parents;
e) school recommendation,
f) information obtained from classmates (Brown, 2003; Gajdošová 2004).

Educational counselors serve the role of informers of elementary schools about possible study programs at high schools. It is they who help pupils orientate themselves in the world of work, in which will they may work. However, if we look at the issue in terms of technology, respectively the teachers of technology, we can assign them the function of coordinator for career choice. Of course, teachers of technology do not have the same competences as the counselors themselves, unless they are appointed to do it in schools, but they can guide elementary school pupils about the existing areas of technology and which professions and competences and skills of each profession they pertain. Most pupils of the last classes of elementary schools do not have sufficient and adequate information about all professions. Their ideas are often inaccurate, distorted and wrongly influenced by classmates and media. The motivation in the choice of career for the pubescents and adolescents is influenced by needs that are different during their adulthood. We can include: the social attractiveness of a particular profession, the acceptability of studying this field (eg mathematics is not taught there), making a joint decision with friends (we all go to the same school) and so on (Jigau, 2007; Kopányiová et al., 2007).

In this way, the teacher of Technology can play one of the important factors influencing the professional orientation of pupils and the choice of study at high school. The subject Technology is a part of general education and its aim is to create knowledge about technology (its production, use and disposal), basic user skills in working with technology, correct attitudes towards it, but it also significantly contributes to the professional orientation of pupils. Its focus enables pupils to acquire the necessary set of knowledge, work skills and habits needed during the further education, at work and in the everyday life and forms the pupil's personality by developing positive qualities, motoric and creative abilities and skills. In this conception, we can perceive Technology as a systematic and controlled process of deliberate shaping of the personality of a human individual in relation to technology, so that the educated person acquires the right attitudes to technology and to the use of technology in life. These goals should be achieved on scientific basis, done consciously and in activities related to technology whit what each individual will encounter in life, or that can affect his life. Technology is hardly executable due to its predominantly practical-activity character without teaching aids, and their need is felt more than in other subjects. It is necessary to enable pupils a direct and active work with technical objects or with their models and symbols (Taxová, 1987; Vargová, 2010).

3 Technical competences in the context of the future profession of secondary school pupils

For a person learning means a lifelong process. He / she acquires knowledge, acquires skills and abilities, forms its own values and goals, learns how to behave and communicate in various social situations, learns to solve problems, to evaluate himself and others, express his opinion or attitude. The interconnections between family upbringing, upbringing and education in the school environment and social impact on human personality development are undeniable. However, a substantial part of professional information is obtained by the individual through school education. Schools prepare pupils for life and for working activity not only for the present but also for the future, so it is essential to anticipate the development of society in local and global contexts and to be able to respond flexibly to the changes. It is therefore necessary to develop such skills and abilities for secondary school pupils - competences that enable an individual to pursue different occupations, occupy different job positions and functions - and thus are applicable to most job occupations (including new) (Turek, 2005).

Competence is not a state that we own immediately after birth and therefore the development of personality depends to some extent on innate assumptions. A person becomes competent gradually during his / her own development and after a time he becomes more and more competent.

The place where he / she starts to acquire competences is in the family where the pupil lives and is brought up. Another important place for their acquisition and development is the school, which, together with the family, greatly influences human competence. The development of certain competences occurs even after leaving school in a future job and we cannot leave out the personal life, which also plays an important role in this. The change of competences of pupils is strongly influenced by teachers, who also possess certain competences necessary for successful education of pupils (Suchožová, 2014).

Therefore, when developing competences in the context of the future profession of elementary school pupils, it is necessary to realize their interconnection with the competences of the teacher or with their teacher of the Technology.

4 Methodology

The aim of our self-executed research was to investigate the factors that influence pupils' interest in technical education and their subsequent professional orientation to technical programs of high schools.

Our research tool was a questionnaire consisting of 13 entries. The survey was conducted at four elementary schools in Nitra in May 2019. It was attended by pupils of the eighth and ninth class of elementary schools. The questionnaire contained opened and closed types of questions and questions with 5-degree scaling. In total, 189 pupils participated in the survey, of which 90 were boys and 99 were girls. The return rate of the questionnaires, out of the total distributed number of 250 questionnaires, was 75.6%. Pupils had 45 minutes to complete the questionnaire. The pupils had to mark their attitude by circling the appropriate statement on the scale or by expressing their opinion. After collecting the questionnaires, the results were evaluated by statistical methods. For the purposes of the paper, we present just a few of the entries:

Entry # 1: What high school do you want to study after finishing elementary school?
Entry # 2: Was your choice of high school affected by the fact that someone close to you had studied at that school before?
Entry # 3: Who or what influenced you when choosing a high school?
Entry # 4: What else influenced your decision when you were choosing a high school?

The first entry in the survey was to investigate what type of high school pupils chose for their further studies. They could choose from the following: high vocational school, grammar school, conservatory, business academy or other.

The second entry of our research wanted to find out whether pupils were influenced by the fact that one of their relatives had studied at their chosen school.

The third item was to find out who or what influenced pupils when choosing a high school. The pupils had the choose from: parents, teacher, friends, educational counselor, siblings, relatives, social networks (Facebook, Instagram, Snapchat), media (TV, radio, internet, newspapers) or whether it was the pupils' own choice.

The last asked entry in the survey was investigating, what affected pupils in their choice of high school. In this category we can include the content of education, teaching aids, methods of teacher's work and personality of the teacher. We consider that the relationship between the teacher and the pupil is a factor that greatly influences the pupil's desire to learn and his / her motivation for further education in technically oriented subjects.

5   Results

The first entry was to determine the preferences of high school selection among pupils participating in the survey of the eighth and ninth grade of elementary schools. Pupils had the choice to choose from: high vocational school (where they should also state the field of their choice), grammar school, conservatory, business academy, others or did not answer this question.
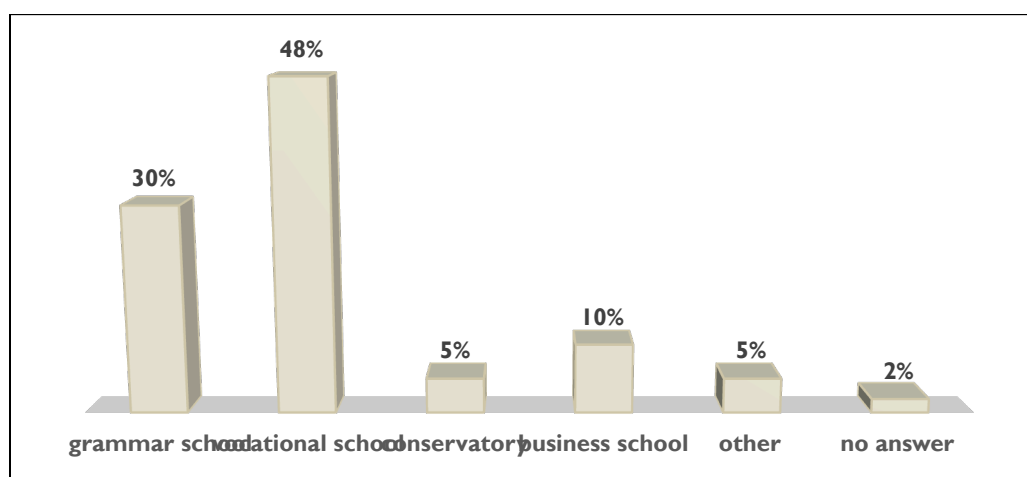

Fig 1: Elevation of entry n.1

As it can be seen from the evaluation of respondents' answers, the largest percentage of students (48%) chose high vocational school for their further studies. This is due to the fact that in their further studies, pupils want to pursue selected fields of study and to a greater extent to specific professions, for which they are prepared by the high vocational school. Consequently, the next highest percentage (30%) of the answers were given to the grammar school. Conservatory (5%), Business Academy (10%), Other (5%) and for 2% of respondents this entry had no answer. These low percentages may be due to the fact that it is a more specific type of high school, such as grammar school and vocational school.

The second entry of our research represents the results of the question we were trying to find out whether the choice of their high school was influenced by the fact that someone from their relatives had been studying on that high school. Pupils should have recorded their answers on a five-point scale with these options: certainly yes, yes, I don't know, no, certainly not. Figure 2 shows the results of this entry.
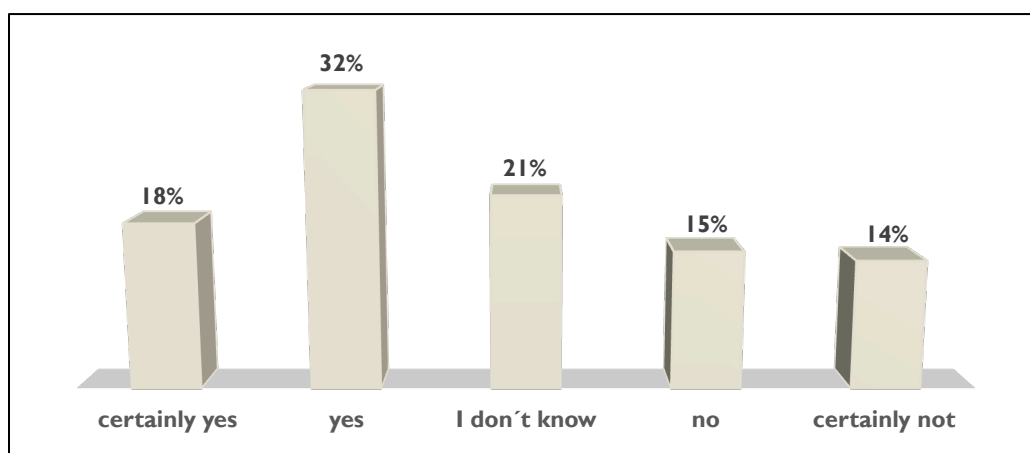
Fig 2: Elevation of entry n.2

According to the above results in Figure 2, it can be stated that pupils in the selection of their high school are influenced by the fact that one of their relatives had studied at that high school. Up to half (50%) of the asked pupils answered this question positively. They have chosen certainly yes (18%) or yes (32%). This fact is not at all surprising if we take in view researches that confirm and also point to the influence of close relatives and parents on pupils when choosing high school (Hrabinská, 2016; Pavelka et al., 2019).
21% could not answer the question. 15% of pupils chose no and 14% certainly not, which means that 29% of pupils did not choose high school because someone from their relatives had studied at that school before.
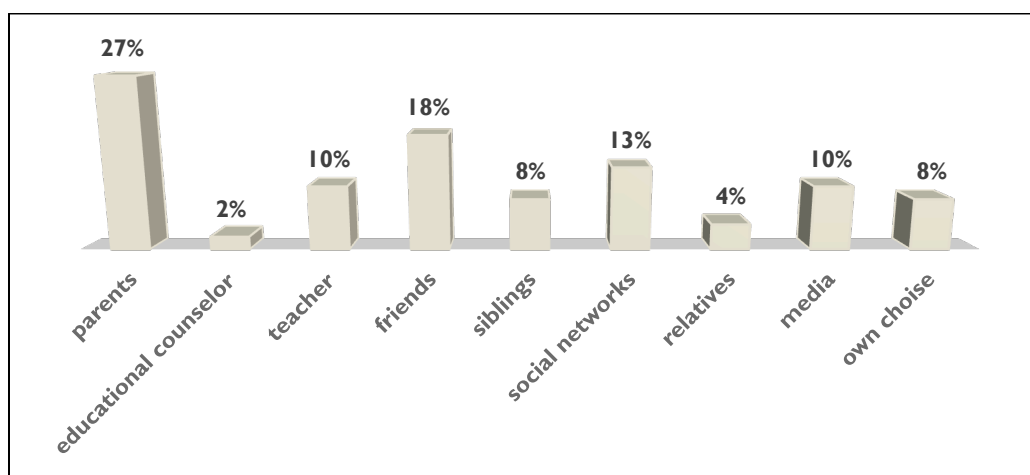

Fig 3: Elevation of entry n.3

The third entry of our research was focused on finding out the factors that influenced pupils in the selection of high school. As it can be seen from the answers, parents have the greatest influence on the selection of high school, 27% of respondents replied so. On the second place (18%) were friends, followed by the social networks (13%), and 10% of respondents answered equally that they were influenced by the media and by the teacher. 8% of respondents chose as answer their siblings and their own choice. At least pupils were influenced by relatives (4%) and only 2% of pupils were influenced by educational counselors. These results are not surprising for us. If we take in count the research (Pavelka et al., 2019) accomplished this year on a sample of 2199 pupils in the eighth and ninth classes, the results showed that only 2.15% of pupils were influenced in the selection of high schools by educational counselors and for 8.14% was due to their own choice. From the research (Pavelka et al., 2019) also shows that up to 42.73% of pupils are influenced by their parents when choosing high school. This was also confirmed by our research that parents have the greatest influence on the choice of high school among pupils.
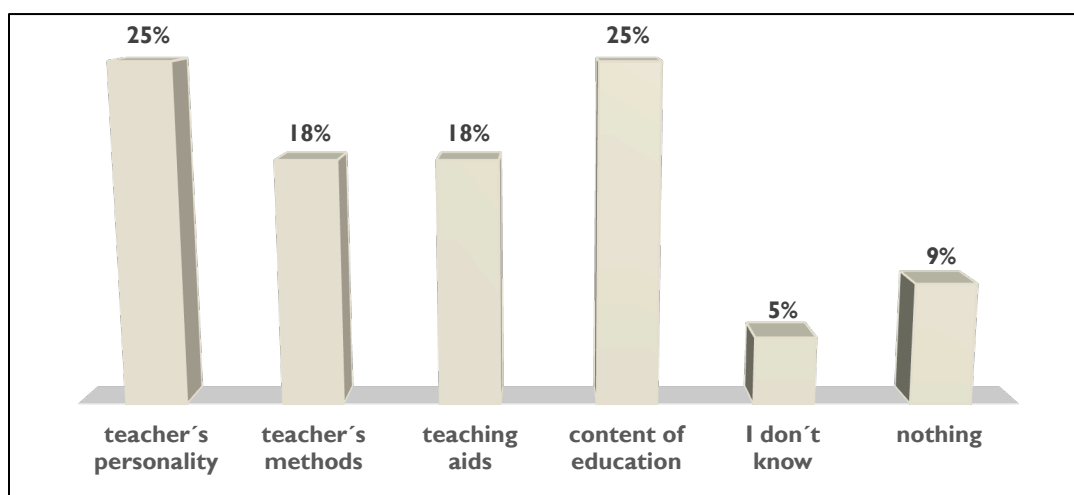
Fig 4: Elevation of entry n.4

The last entry asked in the survey was to find out what other factors have an impact on the pupil when choosing further studies at high school. From the results we can see that most of the pupils (25%) chose in their response that they were influenced by the personality of the teacher and the content of education. Secondly, 18% of respondents equally chose the methods of teacher's work and teaching aids as their answer. According to the results, 9% of pupils were not influenced by anything and 5% of pupils could not answer this question. Based on the above, we can say that pupils are most influenced by the content of education and the personality of the teacher when choosing high school. This means that the form of teaching that the teacher uses is considered by pupils as the most important in shaping their interest in further education in the relevant field. The teacher should strive for the right atmosphere in the classroom, good communication with pupils and making the content of education more attractive.

6   Conclusion

Recently, there has been a decrease in the interest to technical education among pupils and in the society at all, as confirmed by some previous researches (Hrabinská, 2015; Pavelka et al., 2019). From the results of the survey we can conclude that the content of the educational subject and the personality of the teacher have a significant influence on pupils in their selection of high school. Developing pupils' technical skills should be led by the teacher. It should strive to attract pupils, guide them to the right direction with regard to their abilities and skills.

If we want to increase pupils' interest in further technical education, the content of education must become more attractive to pupils, teaching should take place in materially and technically well-equipped classrooms, subject Technology should be taught by a qualified teacher and communication and cooperation should be improved between schools, teachers, educational counselors and parents. The survey results show that only 2% of pupils are influenced by educational counselors when choosing high school. The survey confirmed the significant influence of parents (27% of asked pupils) and of the home environment on pupils in the selection of high school. The results showed the need to focus more on close cooperation between school and family.

Surveys of other authors point to the lower prestige of secondary vocational education in the perception of a part of pupils, and probably their parents. There is a need to show pupils and their parents that education in secondary vocational schools is an equal educational path as grammar schools. Pupils of secondary schools need to be given more opportunities to get to know different working environments more closely so that they can get a more concrete idea of a wider range of different occupations. There is a need to improve awareness and to increase the status of post-secondary school education with certificates. At the same time, it is necessary to improve the teaching of technology, mathematics and science subjects on secondary schools and to support and develop pupils' interest in these subjects (Hrabinská, 2015; Tomková, 2019).

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