The Motivations of the Technical University Students in Choosing their Profession

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Abstract— **A research work was done among the students of the Alba Regia Technical Faculty. It has two parts.**

The first part is examining the motivations of the students in choosing the profession they are studying at the moment. What and who had influence on their choice. How appropriate do they feel their choice at the moment.

The second part is a personality test based on the HOLLAND-model. Holland differentiates six personality types (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional = Holland Codes or RIASEC. Those people will be satisfied with their working life, whose personality matches the environment they are working in. The research tries to discover these parallelisms among the students..

I. INTRODUCTION

„Choose a job you like and you have never to work a moment in your life." – this is a saying from the ancient times, from Confucius. How successful was the career choice of the students of the engineering faculty, what is the reason of the high drop-out rate or in the contrary the reason of being successful and the devotion to the chosen profession? The research was done among technical students. The answer was searched to questions about their satisfaction in their chosen profession, what motivated their choice of career, and how much is their choice matching their personality.

Young people usually talk with their parents about their career choice, the parents' impact is the most significant on their decision [1]. The supporting behavior of the parents helps the youngsters in learning process about professions, but the neglection has the opposite effect, it causes indecision. German youngsters were examined in by Dietrich and Kracke in their research, where girls more often reported about their parents' support, but boys mentioned more often parents' intervention. They considered this as girls have more often deep conversations with their parents, especially with their mother.

The self-esteem of the adolescents [2] and the ability of decision making in the career choice highly depends on their relationship with their parents. Vignoli [3] examined in his research 241 adolescents about their difficulties in career choosing parallel with their self-esteem and their contact with their parents. The result showed the following: the better contact the adolescent had with the parents the easier it was for them to make the career decision.

Nowadays the employers expect more knowledge, better qualification and, internal motivation from their employees. The students not always meet these expectations [4], they have less internal motivation, their carrier choice is often random made, which often causes a high drop-out rate. According to Kuijpers et al. [4] the students should be more independent in controlling of their career, they should decide on their own about what they want to learn. The traditional school system relies on the teacher providing information. The same characterizes the career counselling, the teachers or counselors provide information. If the questions and the spontaneous responses are formulated parallel with the practical experience:

- the transfer of information is not the focus primarily, but also the acquisition of real work experience,
- the focus is not on the teacher's monologue to the student, but on a dialogue between the teacher and the student,
- non-institutional occasional advice, but have a continuous guiding.

According to Kuijpers et al. [4] there are three main areas of the career competences:

1. Career reflection: it is about finding all what the individual considers important in life, and talking about it with the parents and educators. Reflecting on the areas in which the person is really good.
2. Job performance: seeking extra advice and making additional activities in the direction to increase the opportunities for an interesting and enjoyable work.
3. Networking: developing relationships with professionals, talking to them about the future plans

Brown et al. [5] in their study found that it had little impact on the career choice of the students, how much money was spent on teachers' training in the field of career counseling and the number of career consultant jobs. What mattered was that they heard from their teachers about different professions, and the quality of the relationship between teachers and students. A good teacher-student relationship reduces the risk of attrition, teachers shape the decision-making process of the student learning on the connection. Brown et al. [5] research found those students who have more information about careers from their teachers chose less professions requiring low qualification levels. The teachers have a significant impact on that how their students get into the labor market.

II. RESEARCH METHOD

This study presents a quantitative research carried out on a sample of 96 people. It had three parts: a Background Questionnaire, which examines the respondent's personal and family background, the context of these issues later should be explored. A questionnaire that examines what were the student's career motivations, who and how influenced the career decisions, and how they feel now about their career choice. The third part is a personality test based on Holland, J. L. [5] theory. Holland's study distinguishes between six personality types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (RIASEC or Holland Codes). People who work in an environment that matches their personality are more likely to be successful and satisfied. The used test is based on the Western Illinois University Office RIASEC Career test (www.wiu.edu, 31 May 2014).

The test was done in May 2014 at the Obuda University, Alba Regia Technical Faculty among the regular students born between 1985-1995. The faculty had in the year of the examination 388 regular students, the test sample of 96 student was a good, representative sample. The age range was between 19 and 23, proportionately from different grades, specialties, gender, home town and educational level of parents.

III. THE FACTORS DETERMINING A TECHNICAL CAREER CHOICE

Most of the students of the Obuda University Alba Regia Technical Faculty were satisfied (84%), only 11% has the feeling of mistaking with their choice. The unsatisfied students want to finish their studies which they have started, but they think they will never look for a job in this work area.

It is interesting to examine how much the personality of these students determines the rejection of the studied profession, whether the RIASEC personality test confirms that the technical profession doesn't suit them.

Among the unsatisfied students there are two girls and 9 boys. 5 of them studies technical management, this is 10% of the questioned technical managers. 5 of them studies electrical engineering, which is the 31% of all the interviewed electrical engineers. There was only one IT-engineering student among them. What is the reason behind these results? Why did the electrical engineers move away so significantly from their chosen profession, and why are the IT engineers so satisfied?

The unsatisfied students are mainly in the upper years. The first and second year students are more satisfied with their choice. It exists also among the university students that the enthusiasm in the early years reduces and a trend of distancing appears.

The half of the full-time students (48 persons) work beside their studies. 21% of the students work in their studied profession during their study years. The others do different other student works. There is a big demand for newly graduated engineers and IT specialist in the neighborhood of the Alba Regia Technical Faculty. Even before graduation every fifth student starts to work in his or her studied profession. As a result of this they postpone their graduation, because they are not able to concentrate on their studies enough. But parallel with this they gain a lot of important experience in the world of work. Those students, who already started to work in the studied profession are all content with their career choice.

There are different persons who have great impact on the career choice of the youngsters. Half of the students has already taken part in career counselling, 42% has already done a personality or interest test. But 41% unfortunately declared the only time when they spoke about the career choice at school was when they had to fill in the application form for the university enrolment. At the secondary school 40%, at the primary school 25% got useful advice from their head teacher. Only the 56% of the students talked with their parents about the career choice, which is a surprisingly low rate compared with the 68% of the students talking about it with their friends. According to the research it can be stated the the primary reference group of the students were their friends, the secondary reference group were their parents and the third reference group were their head teachers.

The next few questions were about the main motivations of choosing the university and the profession. Mostly the potentially good salaries (89%) and the good opportunities of finding an appropriate job (88%) were the main initiatives. Some of the students (69%) chose the university because of its location in Szekesfehervar. Many students reported their father having a technical profession (46%), but only 2% admitted that the parents' model had an impact on their choice. More then the half of the students (53%) had classmates in their secondary school class who chose the same university to study, even the best friends of many of them (16 %) study at the same university. This fact also confirms the fact of the friends being the primary reference group.

IV. CHOOSING A CAREER AND PERSONALITY

Some of the features of the professions, the so called profession stereotypes have a psychological and sociological importance in the career choice. What do we think about a good engineer?

Being innovative:

"What is the difference between the engineers and the normal people?
- Normal people think of a well working machine that nothing has to be done.
- Engineers think of a well working machine that it doesn't have enough functions, new functions must be developed…"

Being realistic:

"The optimistic person thinks the glass is half full. The pessimistic person thinks the glass is half empty. The engineer thinks the glass is too big"

Besides the two above mentioned characteristic which are in the common thinking about engineers, the social abilities are also very important. The most engineering work is not possible to do without being able to cooperate and communicate with each other. This is one of the reasons why the university offers more group and project works, which helps to develop these abilities.

According to Holland's theories [5] the members of the specific profession groups have similar personality and development history. Due to this they react similarly and they have similar human contacts in their group. The satisfaction in the professional life, the feeling of stability and the achievement depends on the accordance of the personality of the people and the work environment. In case of harmony the person can do his or her work with happiness, as in my first quotation from Confucius, not as work, but as an activity causing satisfaction.

The American psychologist Holland [5] determined six different personality types in his study, which is shown in a hexagon (figure 1.):

R - REALISTIC, they are the „doers": the realistic people prefer the tangible issues, they like the clear, specified tasks, activities which require physical strength and skills. E.g. the construction engineer, mechanical engineer, etc.

I - INVESTIGATIVE, they are the „thinkers": this type of person prefers to deal with abstract issues, such as practical implementation. Looking for the solution of complex tasks. They have lower social outreach capacity, they are more introverted. E.g. researchers, mathematicians, physicists, chemists, etc.

S - SOCIAL, they are the „helpers": they deal well with people, they often choose teaching, helping or therapeutic roles. They have excellent verbal ability, they make connections with other people easily. E.g. teachers, doctors, managers, etc.

C - CONVENTIONAL, they are the „organizers": this personality type prefers well-defined tasks. They prefer the activities on numerical and verbal areas. They have a strong self-control, and tend to avoid conflict situations. E.g. accountants, librarians, bank officials etc.

E – ENTERPRISING, they are the "originators": this personality has a good verbal ability, which is useful in sales, management and leadership. They avoid tasks that require longer periods of intellectual effort, however they solve tasks with great energy, that require swift adaptation and improvisation in unexpected situations. E.g. sales manager, salesman, lawyer, etc.

A – ARTISTIC, they are the "creators": the artistic personality has a strong need for individual and emotional expression. Similarly to the intellectual and social type, they are introverted with less social activity, but they are different because they need individual expression, they are sensitive and they have less self-control. This type usually likes the arts, music and writing.
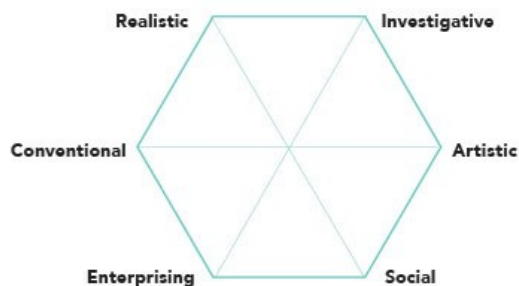

Figure 1.
The hexagon of the personalities [4]

Each individual has 3 dominant features from the six above described types. Holland assigned occupations to these code triplets. Several researchers continued developing his theory, and in the United States many career guidance system is based on it. Several universities offer according to the code triplets professions, including the Western Illinois University as well. In the various engineering professions R-realistic and I-intellectual notes dominate primarily and S-social and E-enterprising secondarily.

The most often mentioned personality feature in the test among the university students are listed bellow with their Holland code:

friendly	S	86 persons
cooperative	S	78 persons
conforming	C	76 persons
polite	C	74 persons
kind	S	74 persons
helpful	S	72 persons
responsible	S	71 persons
logical	I	68 persons
conscientious	C	67 persons
outgoing	S	66 persons
cooperate well with others	S	66 persons
inquisitive	I	65 persons
frank	R	65 persons
well-organized	C	61 persons
understanding	S	60 persons
work independently	I	59 persons
persistent	C	58 persons
use a microscope or computer	I	58 persons
work outdoors	R	57 persons
build things	R	54 persons

Among the students examined in this research, the social features were mentioned the most. 1116 times were different social characteristics mentioned as specific for themselves. This was almost the quarter (24%) of all the mentioned features. The most frequently mentioned social skills were friendly, cooperative, kind, helpful, responsible, loving company, can work well with others and understanding.

Rank	Holland code	Number of mentions
1.	S	1116
2.	C	1057
3.	E	932
4.	A	718
5.	I	707
6.	R	134

Figure 2.
The features mentioned among students
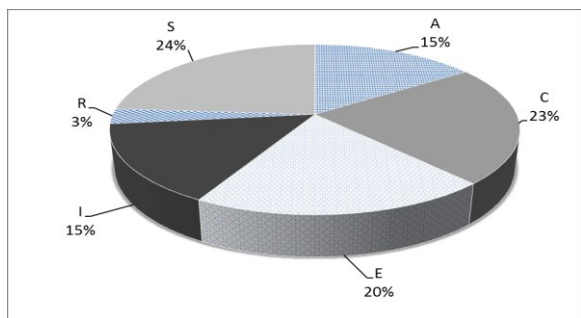*in the six different categories of Holland (number of mentions)*

Figure 3.
The features mentioned among students
in the six different categories of Holland (%)

As it was mentioned at the beginning of this chapter, the social personality does not fall into the category of what the society is pretending about the engineers in their stereotypes, but it is actually an essential virtue of a good technical person.

The realistic features were hardly mentioned among the examined students, even though these features are essential for engineers. This was the less mentioned category from the six types, only 3% mentioned any of these characteristics.

The intellectual features were on the fifth place on the list of the mentioned characteristics, which have a 15% mention rate.

Among the examined students beside the social features, the features of the enterprising and the conventional personality were the most often mentioned. The majority's Holland code triplet was CES (conventional-enterprising-social): 20 persons, 21%.

The 6 different personality group has 20 different combination without repetition. Among the students of the Alba Regia Technical Faculty only 7 of these 20 combinations occurred. The only personality category, which didn't occur in any code triplet was R-realistic, which should be the basic feature of the engineers. However in 5 code from the 7 we could find S-social together with C-conventional.

The students who were not content with their career choice and felt they have mistaken 67% had ACS code combination. Surprisingly only these students had this combination. They had A-artistic feature, which is not the main category in engineering and computing. It seems

to be correct regarding this research, that these students didn't choose a profession matching their personality, which was in their case the electrical engineering.
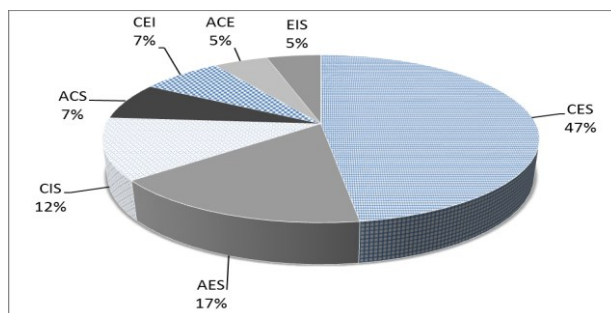

Figure 4.
The Holland code triplets occurred in the research (%)

V. RESEARCH RESULTS AND FURTHER INVESTIGATIONS

This research at the Alba Regia Technical Faculty was searching the motivations of the technical students in career choice and checking the level of satisfaction in their choice.

According to the examinations mainly the age group had an influence on their career choice, many of them had friends who chose to study the same profession. Secondarily they discussed their choice with the parents, many of them have parents with technical degrees. A notable proportion got useful suggestions from their head teachers at primary (24%) or secondary (38%) school.

The significant majority of the students is satisfied with their career choice. Many work beside their full time studies and they are all happy with their career choice, they like their chosen profession.

The main motivation factor in choosing the specific profession was the expectable good salary. The second most important factor was the foreseeable good employment opportunities on the labor market. Other determining factors were the good location of the university and the many classmates choosing the same school.

The examined university students had the social features dominant in their personality, but besides that in numerous proportion the conventional and enterprising personality features were also present. The realistic and intellectual features, which mainly characterize the engineers were in a low number present. Those students who were not satisfied with their career choice had all artistic features in their personality, which has not the highest importance in engineering and computing.

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