PSYCHOLOGICAL AND PEDAGOGICAL CHARACTERISTICS IN THE TRAINING OF TECHNICAL TEACHERS

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Abstract

All psychological effects prevail only through intrinsic conditions of the individual. So the psychological theories of learning demand differentiated treatment and effective methodological solutions. This statement is true in the case of adult students as well.

Training adults can only be successful if we consider general age characteristics, the qualification of the participants, their previous knowledge, their life and work experiences, their problems, their attitudes and interests, their needs and prejudices, emotions etc. Thus the achievement of adults must be considered as the expression of their whole personality.

Accordingly, an important basic task is to clarify their expectations toward the training (what kind of information, knowledge etc. they need) and to collect the personality requirements necessary for the profession.

In this work I present the results of interviews and questionnaires (self-evaluation).

Keywords: technical teacher, training, curriculum, personality, motivation.

1. Some Aspects of the Training

The training of technical teachers is going on in both full-time and part-time or correspondence courses in technical higher education. The students are adults and in the correspondence courses, they are very often already over thirty. Thus, age is one of the main general features of this training. The other feature is that they are already graduates. From this point of view, there are some specific aspects:

- Methods and attitudes considered useful for a teacher, not only for an engineer,
- They are students, very often teachers and parents at the same time,
- They fulfil many kinds of roles at the same time, often similar to each other, often in different aspects of life,
- They have a stable personality.

1.1. Effective Training

We know from educational psychology (JARVIS, P. [2]) that training adults is more effective if the adult students can:

- reveal their needs to be taught,
- participate in discussing and solving problems,
- decide the goal (definitive goal etc.),
- take part in defining requirements during learning,
- realize their former experiences,
- understand that learning and studying are intrinsic processes,
- be open to every opinion,
- be responsible for their learning,
- be willing to change their mind, way of thinking,
- affect the teaching method, the teaching process, and the time-table employed.

Moreover, it is important in training adults – both in graduate and undergraduate training – that we should aspire to co-operative partnership based on open communication, instead of subordinated traditional student-teacher relationship. It is very important to make clear that the achievement of the students is more important than that of the teachers.

1.2. Activity – Student Centered Education

Another important question is that of successful learning. This is possible only if the experiences and the knowledge are synthetized with the new information received in the courses. It means that in the teaching-learning process the student group, community is primary, it is them who play the main role, instead of the teacher.

Students' activity is one of the most significant requirements toward the training. Spontaneous activity is created in group or teamwork in co-operation with others in a constant exchange of information and the common shaping of opinions. To develop the ability of group co-operation in group work – starting with the experiences of the adults participating in training – it is important to analyse and discuss professional problems together, to set up alternatives, and to give reasons for the decisions reached. In this case the teacher has to help or assist only, and should not give solutions. The education should be basically student-centered. We have to make the adult student responsible for his own development in the teaching process.

1.3. Curriculum and the Requirements of Training

Unless we are specialists in curriculum-development of technical teacher training, we know, that a psychologically and professionally well planned curriculum

(which concerns the psychological subjects, too), and methodology can meet the requirements of training. Some of them are as follows:

If possible, applicants must perform an aptitude test or take part in an interview aiming

- to raise the knowledge (basic level) of the students to a sufficient but equal level,
- to establish and maintain close harmony between theory and practice. After the theoretical foundation, a practical activity has to follow, which gives sufficient motivation to adult students.
- Adult students have different learning habits. But many of them continue their studies after a long break and forget the knowledge and learning habits as well. Therefore they must learn again the independent study or learning habits that suits them best.
- In connection to the above mentioned fact, the training must develop their activity, communication skills and trade skills as well.
- The continuous increasing of student's learning ability should be ensured by optimal motivation and activity.

1.4. Motivation and Learning Activity

Motivation and learning activity create a functional unit. They are always interrelated. Learning habits depend mainly on needs, motives, interests and real attitudes. Based on psychological study theories (summarized by Hans LÖVEL, [3]) we list some tasks to realize a study habit suited well to personality:

Some tasks:

- To motivate the student to work at the optimal level and take an active attitude towards the study process e.g.: active knowledge can be reproduced more easily than passive knowledge.
- Achievement of activity: To set up positive goals. It is the question of long-term study goals and current goals. The former enables us to get higher and longer achievement, the latter enables us only to solve a given task.
- Relationship between the study goal and the practical professional task: The practical professional task of the study has a stronger effect on the isolated than the optimal level and takes an active attitude towards the study process. That is: active knowledge can be reproduced more easily than passive knowledge.
- Relationship between interest and the practical professional task. The practical professional task of the study has a stronger effect on motivation than the isolated but practical examples. At best, the adult students use their own professional interests, knowledges, and experiences.
- Situation plays, case studies give the opportunity to correct and to try different possibilities. Either the students or we create the situation. The best concept is to do them together.

- Logical learning instead of mechanical memorization. The most important and indispensable aspect of studying is gaining a total understanding of the subject matter, and recognizing logical relationships, because adults' memory tends to shift toward intellectually organized matters.
- Evaluation: Any learning process must have feedback about the student's achievement and his/her success. Evaluation should follow closely after finishing a given exercise because the timing progress in learning depends on the time between action and awareness of it.
- Constant repetition and practice: Knowledge and skills should be repeated. Thus we strengthen positive behaviour and working habits. The negative habits must be eliminated of course with the assistance of the tutor, teacher.
- The number of repetitions and their sequence depend to a great extent on the intellectual capacity of the adults and on their individual personal traits. We should strengthen successful college achievement only because it is necessary to achieve the desired effect.

So, to sum up, successful learning is only possible if the given experience and the knowledge of the adults are synthetized with the new information taught in the course. This requirement is applied to different study groups and study hours during the information flow. It means that in the teaching – learning process, the community of the students – the group – will play the main role, and not the teacher! This is a very important feature of adult education.

Another important trait of adult technical teacher training is the following:

- There is a constantly growing importance of the social and human sciences. A technical teacher has a key role in the society, the same as any other specialist or teacher. However, he has a basic role in the promotion and transmission of technical development as well, what is a primary factor in the development of a country.

2. Research

The objective of our research was to clarify the expectations of students (they were already graduated engineers, 100 in number) in the context of pedagogical psychology, and to get information about the basic motives and personal traits and skills needed to become a good pedagogue.

Knowledge and skills required for a technical teacher are the followings:

2.1. Topics

They want to get more social psychology and management and more personal psychology in practice.

The topics emphasized by the students: age characteristics, understanding of personality, recognition of abilities, adaptation of adequate methods, social psychological rules in student – teacher relations, group effects and influence of environment, arising and maintaining interest and attention, motivation, guidance, learning methods, models, development of communication ability, methods to establish students' load, stress and strain.

2.2. Difficulties in the Teacher's Work

The everyday activity of technical teachers consists of simplified information packages. They are technical, methodological, and psychological. They can treat the technical subject matters well, the integrated methodology to less extent and the psychological knowledge and the application of psychological methods to an even less extent. Eighty percent of the students have difficulties with the application of pedagogical, psychological principles in raising the motivation level of their students in secondary schools. There are also problems with rating and disciplining their students. This question is often in connection with the low self-esteem as a pedagogue. It is the phenomena of personal unsuitability. The joint utilization ratio of technical to pedagogical capacity by estimation is two to one, however, only ten percent of teachers are able to utilize it maximally in their everyday teaching. They apply their knowledge without considering it important.

2.3. Important Personality Traits

The requirements marked on a five-grade scale show the importance index. The most important sixteen traits are between four and four point nine as follows (the strongest point = 5.00).

- mobilization, transfer of knowledge,
- recognition of essence,
- well balanced male/female
- foreseeing the result of the activity,
- communication skills,
- visualization/visual type,
- sociability,
- sense of vocation,
- morality,
- character (has to be),
- mental attitude,
- critical willingness,
- creativity, originality of thought,
- frustration tolerance and
- self actualization.

2.4. Professional Identity

Information on professional identity and its level supports the hypothesis that a
technical teacher is pressed to oppress his engineering ambitions and should tend
toward technical teachers' attitudes, therefore after a time he will feel neither an
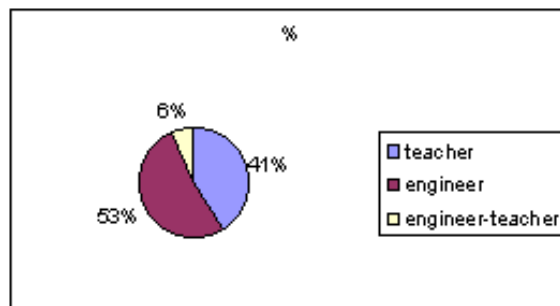engineer nor a teacher!

The identity marks of engineer teachers are:

- 41 percent consider themselves as teachers
- 53 percent consider themselves as engineers
- 6 percent consider themselves as engineer–teachers

See below:

Table 1.

Prof.	%
teacher	41
engineer	53
engineer-teacher	6

Fig. 1.

2.5. Occupational Identity Index (highest = 5.0)

- as teacher: 3.51
- as engineer: 3.36
- as engineer – teacher: 3.00

2.6. Technical Teachers' Motivation

Three motivation groups have been separated:

2.6.1.

They say that there is a possibility to learn human sciences like psychology, logic, ethics and pedagogy. Psychology is in the highest demand. Some of them mentioned: 'I would not like to be a narrow-minded technical professional.'

2.6.2.

There is a possibility to learn a new profession and obtain a new degree. Some of them mentioned 'I am not sure if I can work as an engineer, but a teacher is always wanted.'

2.6.3.

The drive to be a teacher. Remarks: 'A professional teacher would like to utilize his engineering knowledge. A twofold professional activity for an engineer is his being an engineer teacher: it supplements the engineering work'. 'To deal with human beings and to teach them'.

2.7. Technical Teachers' Attitude

Teachers' attitude (a set of attitudes, professional inclination) as personality trait was investigated with a self-evaluation questionnaire. For half of the female technical teachers, the primary drive for learning that profession was the teacher's role and importance. Only the other half of the female teacher students showed a stronger attitude toward engineering. Among the male teacher students almost everybody showed stronger attitudes toward engineering and less for being a teacher.

2.8. Interests and Strength of Attitudes

Among the needs and personality features that can be described and achieved in the teaching profession, social ability is the strongest, which is followed by scientific theories of educational sciences and its definite practical phenomena. These features from the highest to the lowest ranking are as follows:

Flexibility, sociability, scientific theories, practice, need for aesthetics, profession as middle, comfortable work, and self-actualization. They are also attractive factors of this profession.

3. Conclusion

According to students' opinion, it can be clearly seen that for the interpretation of information and its communication, the knowledge of human understanding and methods are essential. It is also evident that teachers' sensibility depends on personality traits, but it is also shaped and formed by the students' environment and their quality. It is not by accident that the need for social psychological information and knowledge on the part of the students in technical teachers' training is high. It cannot be neglected generally that self-esteem is in inverse proportion to the sense of profession. The level of identity does not point definitely toward engineering or teaching, but toward the direction of being neither an engineer nor a teacher.

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