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PROBLEMS IN DIDACTIC IMPROVEMENT OF ACADEMIC TEACHERS

ABSTRACT

In this article the author tackles didactic problems in relation to academic teachers working in pedagogic colleges, and therefore responsible for educating future teachers. The goal of this article is to provide arguments convincing of the need to improve their knowledge and pedagogic abilities – especially less experienced ones. How we educate future teachers has a tremendous impact on what effect Polish schools have on their students.

KEYWORDS*: teacher, didactics, improvement*

INTRODUCTION'

The dynamics of scientific and technological proccesses these days calls for modernization of education systems in whole, academic as well. It is obvious that this modernization will include contents of specific scientific disciplines. On universities, however, academic teachers should be the ones responsible for choosing and updating suitable methods of working with students. Apart from their research and achieved scientific titles, they have a responsibility to provide an exemplary model of how lessons and lectures should be conducted. Therefore it is imperative to inform future teachers about the connection between methods of teaching and the efficiency of learning and educational successes in their respective fields.

1.GAINING KNOWLEDGE AND ABILITIES, DEVELOPING COGNITIVE FUNCTIONS

The modern studying model is based on learning the basics of directional subjects, necessary abilities, but most of all on developing cognitive functions such as: noticing, thinking, connecting theory and practice, improving professional skills. Students are introduced bymeans of lectures, practices, as well as different projects, into a normal cognitive process, which consists of sensual, empiric and intellectual levels of cognition. Cognitive functions are made up by abilities such as: accuracy of observation, imagination, forming of ideas together with inductive, reductive and deductive cuncluding. On this solid base connecting theory and practice is applied and technical skills are developed. The knowledge and abilities gained during student education process are the fundamentals of teachers' creativity in the future and indeoctrinates the need of life-long education to the teacher.

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Teaching in college is closely connected with the process of upbringing the students, which in turn produces the need to get to know their personalities and educating them pedagogically through every academic teacher that comes in contact with them. To do this, academic teachers need to be widely trained in aspects of psychology, pedagogics, college and subject-specific didactics, behavioural theories, scientific research methodology.
Modern lecture should be up to three conditions: correct, interesting, proper to the level of students' knowledge (J. Półturzycki, 2002).
When introducting a new problem, it must be remembered, that it is the first level of cognition (sensual) that the other ones (intellectual, empiric) are grossly affected by. Modern lecture should be of the following structure:

- Reference to previous lecture(s)
- Introduction of a new problem – based on specific things, phenomenae, multimedia, etc.
- Elaboration of the new problem by students through sensual, intellectual and empiric ways
- Gathering of the elaborated material
- Preservation and widening of gained knowledge

Using logical reasoning provides students not only with didactic effects – knowledge, but develops a full set of rational cognitive functions. After presenting the problem during a lecture, when based on sensual cognition students wrote down their observations, they need to be shown methods and logical operations through which they can convert their imaginations into ideas. Using analysis methods, the teacher sets apart essential and non-essential features. After the students know how to form their ideas, they learn to notice the connections between separate ideas and, later on, concluding. This is the hardest part, it is conducted through deducting either from causes to effects or from effects to causes. Empiric implications of learned theory cannot be neglected. Last part of the lecture should be a synthetic gathering of most important facts, or a short dialog between the teachers and students, to confirm their understanding of that lecture's problem.
So teachers' main goals are:

- Underlining the most important parts of the lecture
- Choosing a proper level of knowledge
- Making the lecture interesting
- Following a logical structure of the lecture
- Presenting information by writing them on a white board or by showing them by a projector
- Taking care of speech's clearance
- Using terminology which is understood for everyone
- Making listeners pay attention.

Teaching is more effective when the main subject is clear, important definitions and facts marked and a plan of the lecture is shown at the beging (K. Kruszewski, 1993).
Apart from lectures, the second basics form of work with students are exercises, in Techincs Institute these are auditorial and laboratory exercises. They provide a complementation and widening of lecture's topic, and also shape observation abilities, searching for connections in a set of characteristics, forming conclusions. Cognitive abilities gained during studies are a base for creative attitude and self-improvement of future teachers. These exercises should be conducted in line with standards for each subjects, which in turn means the need for conspects – detailed exercise/lesson plan, which consist of:

- Clearly stated problem, in line with respective lecture and subject's standards
- Didactic goals

- Exercise plan – tasks to be done
- Base and supplementary literature

In laboratory exercises, all the steps of experiments that are conducted by the students are written down in a manual. To ensure high efficiency of those classes, it is imperative to have students elaborate the problem using scriptures and lecture notes ahead of the laboratories.
Similar to lower education levels, on universities students are consulted at the beginning of each subject to come to an agreement about educational requirements. However, based on research of Didactics of Technics Institute and author's own experience, it is adviseable to state the basic requirements clearly, without any influence from students. They are highly valued by students themselves, and form a habit of stating their own requirements clearly in future teachers. Lessons prepared in such way, together with didactic "casing" and consistance in their realization, lead to propriety and efficiency in the whole didactic process.
The didactic process in scintific disciplines is orientated on intellectual cognition and logical operations, especially deduction. In humanistic disciplines the most important cognition is the sensual one – it provides materials for intellectual cognition and forming ideas as statements and conclusions, not only the deductive type, but inductive and reductive as well. For lessons and exercises to be modern and effective, a logical structure of tasks is needed. Getting young people to develop their cognitive skills requires constructing new situations, taking up problematic topics and forcing the students to verify their assumptions through experiencing. The teachers has to put all his/hers heart in this process, especially in large groups of students, although simple "fact-feeding" technique seems insufficient these days. Through use of modern multimedia, students can quickly fill in dents in knowledge or vocabulary, while knowing methods of solving problems they gain cognitive functions as expected. Remember, univeristy/college didactics should use general didactic rules not to make such mistakes as: working only with single best students, not connecting education with behaviourexpactations, lack of topic corelation with similar disciplines.

2.PROPOSITIONS ON HOW TO RAISE DIDACTICS POSITION WITH STUDENTS

Problem of college didactics is still underestimated, especially when concerning young teachers. Although lesson hospitation system is in place for several years now, preparation and on-the-fly methodical support is neglected. In 70's and 80's there was a compulsory one year study for begginer assistants. This idea has been forsaken for couple of years now. Neither is a didactic seminary functioning, which would present methods and forms of working with students, using modern didactic helps, planning of didactic work, pedagogic research, evaluation. In lower level school a colleague lesson model is implemented, which means that lessons are visited and rated by teachers of the same subject in specific school. Applying the same scheme on univeristy level would provide a tremendous support to younger teachers.
Apart from having the leading role in college education, exercises efficiency and student activity depends on quality of teacher preparation for such responsible tasks.
Raising didactics position in student's minds is an important, yet complicated problem, as teachers on univeristies are in major part valued for their scientific work and research, and salaries are far from compensating the huge didactic workload.

SUMMARY

Each school, universities as well, is a miniature society itself. It's purpose – to create organized and disciplined student groups, and to prepare each individual student to solve

future problems. Creating valueable personalities in students takes place during lectures and exercises, therefore pedagogical staff attitude, especially on pedagogical academy. Didactic problems on exercises with future teachers should be of primary importance, together with providing conditions for activization methods of teaching-learning. The first and most important measure of a student, and later, a teacher should be his didactic successes, scientific R&D on the level of didactic abilities at most. What needs to be changed in the nearest future are the system of giving teaching permits in academic didactis and system of pedagogical abilities development, learning about newest trends in didactics included.
Basing on an analyse of pedagogical literature and anthor's experience, it is recommended to follow a self-perfecting in didactics by:

1. preparing goals in details for every lecture
2. using various didactical methods
3. filming a lecture and then analysing it according to subject presenting, right terminology, way of speaking, time using, interesting style etc.
4. analysing students' understanding and their questions and doubts
5. evaluation of preparing lecture's conspect and compatible realizing it.

There is much to be done to raise the rank of didactics in pedagogical academies. The need has been noticed, and at present didatics and pedagogical practice system are being improved. It seems logical to create conditions for teachers of particular detailed didactics to exchange experiences. The education process is very complex, ready prescriptions for maximum efficiency will not be found, but using good experiences will most definitely be fruitful in better preparation of all teachers.

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understod by someone who has got some practical backgrounds in the field of physics. However, in the case under discussion, the students have only some theoretical knowledge without any reference to practical applications, and therefore it is necessary to spend a lot of time on explaining this part of the educational material. The phenomena of displacement and propagation of defects in the form of dislocations observed in the structure of the examined material are difficult to master on the same account, that is, due to the lack of the fundamental knowledge of physics.

CONCLUSIONS

To sum up, it can be stated that most of the problems faced in the basic course of materials engineering are due to some deficiencies at the previous stages of education. ETI students are often graduates from the secondary schools of profiles completely different than the exact sciences. Hence problems must arise as regards practical application of the theoretical knowledge acquired in mathematics, physics and chemistry. Nominally, when the course of materials engineering starts, the course of mathematics, physics and chemistry assigned to this subject should already have been completed. In practice, however, the students continue with being given some pieces of information which, though new, are firmly rooted in the knowledge already acquired. Many students cannot cope with this problem even at this stage, which results in failure and natural selection. Therefore, from the point of view of teaching materials engineering, it would be recommended to make the stereometry and geometry included in the course of mathematics with increased number of practical classes to develop the skill of calculations. At the same time, leveling of knowledge during the studies should be regarded as a last recourse. The grammar and secondary schools should rather be informed on the problems currently observed and requested to introduce some modifications to their programme of teaching exact sciences, allowing for a stage when the theory would be interwoven with practice. The greatest problem which the students have to face is how to apply in practice the theoretical knowledge once acquired. An analysis of the currently used academic handbooks is rather optimistic, as most of the information is disclosed in a way that makes it relatively easy to assimilate. As regards the tutorial staff encharged with the task of teaching materials engineering during the studies, a solution to at least some of the problems might prove to be the use of the methods that would promote among the students the idea of self-education and self-dependence by making them aware of the fact that knowledge acquired in this field will be used all the time in further course of the studies. At the same time one should remember about maintaining a proper equilibrium between this subject and other subjects taught parallel to materials engineering.

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