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Competency

Competency is the combination of knowledge and skills that build awareness and the ability to a correct performance of certain activity. In this specific case of future science teachers' training, competency is the result of purposeful training and can be viewed as personal accomplishment, a prerequisite for their future work as science teachers.

Main competencies necessary for future science teachers can be classified according to different features. Due to the various character of teaching activities and the new role of the teacher according to the constructivist approach, by the end of the training students are expected to have the following competencies:

1. Regarding their scientific background:

Students should:

- A. Have enough correct knowledge of science – facts, theories, methods, principles and laws but understand that science cannot be characterized as being either content or process alone;
- B. Be able to use that knowledge in guiding pupils in their science learning;
- C. Know the main research methods of science;
- D. Have a sufficient amount of knowledge of cross subject character;
- E. Know the history of the science;
- F. Be aware of the contemporary fronts of the science and its impact on technology and society;
- G. Have experimental skills – be able to formulate a hypothesis, choose the equipment, build an experimental site, identify a change, determine variables, describe the relationship among variables, find data, and arrange data in tables and graphs.

2. General intellectual:

Students should:

- A. Know the general scientific methods of research;
- B. Be able to collect information from various sources – books, Internet, etc.
- C. Be able to present and share information in an accessible way;
- D. Be able to find information on an issue and to evaluate its scientific value;
- E. Encourage the dialog among the students;
- F. Be able to listen and correct ;
- G. Stimulate pupils thinking by asking open questions;
- H. Be able to update their knowledge;

- I. Have sufficient knowledge to use ICT;
- J. Understand cause-and-effect relationship and use it to formulate a model.

3. Pedagogic (related to educational aspects of teaching)

- A. Be able to control the class – impose discipline and motivate students to work;
- B. Be able to determine clearly the objective of activity;
- C. Be able to stimulate students' activities;
- D. Be able to work with school documents – curricula, textbooks, etc.
- E. Be able to assess student's achievement and use the results for future planning;
- F. Organize and perform summative and formative assessment;
- G. Be able to create a problem situation;
- H. Manage students' individual and extra class work.

4. Particular didactic (related to particular science (or physics) teaching)

- A. Be able to formulate the objectives of a specific lesson;
- B. Plan the teaching of physics;
- C. Create in students a necessity to acquire certain knowledge, i.e. motivate them regarding a specific scientific issue;
- D. Know the structure of knowledge on physical phenomena, variables and constants, laws, tools and theories;
- E. Have experimental skills to perform physical demonstrations;
- F. Know and use the most popular methods and approaches for the management of students' activities related to the teaching of physics;

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