

PEDAGOGICAL OBJECTIVES FOR FINAL PRACTICAL PLACEMENTS

The Final Practical Placement (TFE) is an important time in the engineering degree course. It is the practical application in a professional work situation of the theoretical knowledge acquired through their studies. The trainee has to fulfil two requirements; the assignment given to him by his host organisation and that demanded by the school, which is specifically detailed below.

The pedagogical objectives can be defined under 5 headings :

- The experience of vocational training
- Going deeper into a subject
- Development of a professional approach
- Project managing a project
- Evaluation of the finished work

The Experience of Vocational Training

The host organisation will give the trainee an assignment very similar to that carried out by an engineer except that the placement tutor will assume responsibility for managerial, economic and financial matters.

This assignment should be given to the trainee to solve a real problem encountered by the organisation, which makes demands on his scientific and technical knowledge as an engineer, and is not limited to carrying out a simple assignment. It is usually a study assignment that needs to be performed, where the trainee should study a particular question.

This "study assignment" can be conceived through different types of approach:

- Technical
- Experimental
- Pragmatic
- Diagnostic
- Operational

These types of approach are not independent from each other but are dependent on the type of activity of the host organisation and its supervision.

The spirit of the work is retained through :

- A concrete vision of the problem posed and its practical implications
- An attitude of posing questions and doing research to solve the problem

Some examples of assignments are given at the end of this document.

The final practical placement is an occasion for a total immersion in the professional world and not only an invaluable experience in a new environment but also an assessment of professional objectives.

Going deeper into a subject

This allows each student to acquire, in any given field, specific competence and real life experience that can be valued professionally. The subject that is chosen should bring into use the knowledge acquired at the school and although preferably technical could also be complemented by an economic, social or statutory approach.

Development of a personal approach

The "study assignment" involves a **personal and in-depth approach to the subject** that progressively helps the trainee to develop his **method of working**. Apart from this methodological approach the student gains experience of **following through a project by an appropriation of the subject** and learning to work autonomously and responsibly which is a characteristic of an engineer. Of course, this personal work is performed in close collaboration with the tutor of the training period throughout the placement.

Managing a project

The trainee sees himself entrusted with an assignment in which he is the driving force. He must act like the head of the project to accomplish it better. The aims of **managing the final practical placement project** are laid out below:

- **Define the subject:**

Clarify the commission (what should and should not be dealt with) after a time of reflection, the first contact and an analysis of the study.

- **Decide on a working method**

At this stage the trainee must develop a critical approach: possible methods, advantages and disadvantages, criteria for comparison, proposed choices etc.

- **Establish a programme of action**

Defined in stages and according to a provisional calendar

- **Identify what resources are needed and their availability or where they can be acquired:**

- their own competencies
- calling on external competence
- technical materials
- the data

- **Managing a project according to a programme:**

The trainee must keep control of events while at the same time have the flexibility to make any necessary changes caused by internal anomalies, such as unexpected results, or external restraints of materials, weather conditions etc.

Evaluation of the finished work

Apart from what is expected of him by the host organisation the student should be able to explain his work in front of an audience outside of the organisation. What is expected is not only an explanation of the form of the project but also an in-depth explanation that can be understood by all. The presentation of the final dissertation of the practical placement gives the possibility to evaluate their aptitude.

This exercise also allows the student to defend his project through the force of his conviction and his ability to convince his audience.

Examples of assignments

These examples are given to illustrate the proposals below and must in no way be considered as guidelines. The range of possible situations is very wide and the subjects cannot be taken out of context. Much caution is therefore required in examining the following:

Assignments which are in perfect harmony with the objectives of the Final Practical Placement

In an engineering planning department

- Model of a network integrating a new problem for the host organisation
- Improvement and testing of a hydraulic pattern in an authentic case where the results had not previously been ratified
- Experimental approaches to new procedures of water treatment or purification
- A hydrologic study to scale of the sides of a reservoir leading to concrete proposals in reference to protection against flooding, water for an irrigated perimeter etc.
- Drainage master plan (preliminary study, diagnosis etc.)

In a research institute

- Mathematical model or physical hydraulic phenomenon not yet understood
- Following a pilot study (prototype, experimental site etc.)
- Functioning typology trials in natural complex environments

Assignments that do not comply with the objectives of the Final Practical Placement

- Working on a problem that does not normally require engineer's abilities
- The study of a new problem for the host organisation but one that has already been dealt with by others and considered ordinary
- Collecting data without analysing it
- Analysis and treatment of data without either checking on its precedence or its reliability, carrying out a series of assignments in a planning department without any other supervisor to answer to than the one from the business order.
- Working on an experimental mechanism that is too complex to expect any working results.