



PILOT PROJECT No. 12
"Chemistry - Practical Training"

PROJECT TITLE

Chemistry - Practical Training: The Measure Analysis - Two Special Parts

PILOTING INSTITUTION

Studienkolleg bei den Fachhochschulen des Freistaates Bayern in Coburg/ DE

PILOTING INSTRUCTOR

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PROJECT SUMMARY

Please describe briefly the overall goal and objectives of the pilot project

The students inform themselves about the theoretical background of the experiments they have chosen. They explain their knowledge to their fellow students and give a written report to the leader of the project. They carry out the experiments in teams. Every team gives a conclusion of the results to the fellow students and to the leader.

TARGET GROUP

Please indicate age, gender, national profile and number of students in the pilot group and level of their language proficiency according to the European Framework

The participants are 26 students of the second semester of the preparatory course for the technical and engineering studies of the Studienkolleg Coburg. Their level in German as a foreign language is good. There are 6 women and 20 men and they come from China, Marocco, Poland, Peru, Israel, Jordanien, Ethiopia, Turkey, Bulgaria, Bosnia.

PILOT PROJECT RELATION TO CHAGAL PRINCIPLES

Please specify how your project fits into the CHAGAL Curriculum Guidelines.

There are three skills to be trained:

1. Self-study
2. Reporting and presenting the results of the experiments in written and oral form
3. Teamwork

METHODOLOGY

Please give a description of the methodology that you will use to achieve your pilot project objectives. Indicate the tools/instruments that will be developed/used during the pilot project (e.g. visual aids, questionnaires, handouts, teacher-developed materials etc.)

The instructor of the project selects the experiments for the students. She gives all necessary instructions (basic knowledge, examples). She also provides instructions for the experiments including the interpretation of the results.

EXPECTED OUTCOMES

Please indicate what YOUR idea of the foreseeable project outcomes is.

Students are able to gather information (theoretical background) in self-study. They know how to work in a chemical laboratory, how to use chemicals and equipments, how to prepare experiments, how to interpret results and which security measures are to be kept.

ACTION PLAN

Please provide a short description of the activities within your pilot (e.g. who is doing what and when)

- 1) Every student gets an explanation about laboratory security.
- 2) Team building
- 3) Every team chooses the experiments it wants to carry out.

Every experiment will be done by two teams. One team presents the theoretical background, the other team presents what has been the practical outcome of the experiment. Every presentation is limited to 15 minutes.

SUPPORTING DOCUMENTS

Please indicate the materials that might be included as appendixes in the pilot project final report (e.g. questionnaires, forms, handouts, records, notes, etc.)

- 1) Written report about the preparatory work and about the results of the experiment.
- 2) Instruction for the experiment.

Assessment of the pilot project by the students and the instructor.

Pilot project at Studienkolleg Coburg: Chemical practical training

The Measure Analysis – two parts

Final report

1. Step

The plan of the pilot project was to give the students at the Studienkolleg Coburg a chance to simulate a practical training this is the plan of the pilot project. It was necessary to convince the Fachhochschule Coburg that it was useful to them and that it was only possible to carry out the chemical experiments in their laboratories. The timetable was prepared in cooperation with the faculty Physical Technology represented by Prof. Dr. Ruthenberg and Dipl. Ing. Jacob.

2. Step

The practical training in Physical Technology comprised of three experiments conducted in the same manner. However two experiments had to be modified in order to have the right content. Consequently there were five experiments to carry out.

3. Step

Students of the 2. Semester of the preparatory course for the technical and engineering studies at the Studienkolleg Coburg were informed about the project beforehand. At the start of the practical, the students formed into teams of two to three persons. Each team chose one experiment out of five with a date for doing it. Then the team would decide which part of the training it wanted to focus on: whether to explain the theory before the practical part started or to do the presentation of the results afterwards. The documentation about all these parts and the date it will be done were written, distributed and put up. (enclosure 1)

4. Step

The whole group was then divided into two parts so every team had to present only once. Therefore all teams were obliged to write a report and to hand it over. This ensured that there was preparation because in the case of studying at the university and to do the practical part there would be questions during the practical session. At the same time this is the chance to look at and to make a controlled study of the principles of Chagal.

5. Step

The students were given the title of the experiment they had to do. They knew the theoretical basics like building up an equation of a chemical reaction, calculations in the chemistry, types of reactions, acid and base. Only one team had a question on how to prepare its report, the other teams did not ask.

6. Step

The elaboration of the theoretical part started. The teams presented their papers and explained them in front of the whole group. They spoke for about 20 minutes. In some cases the pronunciation and the accentuation were not very good so some words had to be repeated. Expressions typically used in chemistry science were not a problem. The documents put up by the teams showed that they spent a lot of time to do it well. Mistakes in grammar or orthography were corrected. (enclosure 2)

7. Step

The instructions for the experiments were distributed so every team was able to prepare its practical part. The students carried out the experiments twice in the afternoon. With the help of Mrs. Scheler a chemical assistant at the Fachhochschule Coburg the students were very engaged disciplined and worked safely for about two hours.

8. Step

Each team puts up its report about the results. Some had to draw a diagram while some had to do a calculation. Not all of the diagrams were drawn well, as some were not very exact. All of the calculations were correct. (enclosure 4)

9. Step

The students gave an assessment by answering questions on what it was like working in a team, how much time did they spend in preparing the report before the practical training and afterwards, did they like doing the project. (enclosure 5). Some pictures documented the steps taken. (enclosure 6)

Assessment

1. Teamwork

At the end of the project the students filled in a questionnaire. This showed that there was a really good teamwork. Almost all participants accepted it as a good practice. In the phase to prepare the theoretical part even three teams worked together. Perhaps it would be possible to prolong teamwork in the future.

2. Self - made – studies

Also the questionnaire showed that the teams spent about three hours in preparing the theoretical background of the experiments. That was a good timetable because there was nothing similar like this in the chemistry before. The students noticed that there were no difficulties in doing it.

3. Presentation in front of the group

In comparison with writing a text it is more difficult for the students to present it orally. Often because of poor pronunciation and the accentuation so that the group was not able to understand the whole content. The speaker had either to repeat the words slowly or to explain the meaning with the aid of the written reports to hand. There were a lot of mistakes in grammar and orthography but it did not matter. It was necessary to remember that there was nothing similar in chemistry before. This part would need a lot of help before the practical working starts in the future. Therefore there is the plan to train working with chemical texts in the subject "German as a foreign language" in the preparation phase.

4. How goes it on

The pilot project was a very good way to open doors. The students of the following courses asked to do it themselves. But there is a problem in the organisation because together these are two courses. If the Studienkolleg asks for permission to use the chemical laboratory once more and the Fachhochschule Coburg answers in a positive way it would be possible to repeat the project in springtime with the proposals described in chapter 3. Maybe the steps of the practical training will be established in the preparation programme of the subject chemistry.