

PILOTPROJEKT Nr. 12

„Praktische Übungen in Chemie“

PROJEKTTITEL

Praktische Übungen in Chemie: die Maßanalyse – zwei Teile

DURCHFÜHRENDE INSTITUTION

Studienkolleg bei den Fachhochschulen des Freistaates Bayern in Coburg / DE

PROJEKTLEITERIN

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ZUSAMMENFASSENDE BESCHREIBUNG DES PROJEKTS

Bitte um kurze Beschreibung der Gesamt- und Teilziele des Pilotprojekts.

Die Studierenden informieren sich über den theoretischen Hintergrund der von ihnen gewählten Experimente. Sie vermitteln ihr Wissen ihren KommilitonInnen und überreichen der Projektleiterin einen schriftlichen Bericht. Sie führen die Experimente in Teamarbeit durch. Jedes Team präsentiert seine Schlussfolgerungen den KommilitonInnen und der Projektleiterin.

ZIELGRUPPE

Bitte um Angabe des Alters, des Geschlechts, des Nationalprofils und der Anzahl der Studierenden in der Pilotgruppe und der Einstufung ihrer Sprachkompetenz laut Europäischem Bezugsrahmen.

Bei den TeilnehmerInnen handelt es sich um 26 Studierende des zweiten Semester des vorbereitenden Lehrganges für Technik- und Ingenieursstudien am Studienkolleg Coburg. Ihre Sprachkompetenz in Deutsch als Fremdsprache ist gut. Die 6 Teilnehmerinnen und 20 Teilnehmer kommen aus China, Marokko, Polen, Peru, Israel, Jordanien, Äthiopien, der Türkei, Bulgarien, Bosnien.

BEZUG DES PILOTPROJEKTS ZU DEN CHAGAL-GRUNDSÄTZEN

Bitte um nähere Erläuterung des Bezuges Ihres Projekts zu den CHAGAL Curriculum Guidelines.

Kompetenzen müssen in drei Bereichen ausgebildet werden:

1. Selbststudium
2. Verfassen von Berichten über Experimente und deren Präsentation in schriftlicher und mündlicher Form
3. Teamarbeit

METHODOLOGIE

Bitte um eine Beschreibung der Methodologie, die Sie zur Erreichung der Zielsetzungen des Pilotprojekts einsetzen werden. Geben Sie jene Werkzeuge/Instrumente an, die während des Pilotprojekts erarbeitet/verwendet werden (z.B. visuelle Hilfsmittel, Fragebögen, Handouts, von Lehrenden zusammengestellte Materialien, etc.).

Die Projektleiterin wählt die Experimente für die Studierenden aus. Sie gibt die notwendigen Anweisungen (Grundwissen, Beispiele), einschließlich der Anleitungen für die Experimente und die Interpretation der Ergebnisse.

ERWARTETER ERFOLG

Bitte um Angabe des von IHNEN VOR Beginn des Pilotprojekts erwarteten Erfolgs (= Text Ihres Vorschlags).

Die Studierenden sind in der Lage, im Selbststudium Informationen zu sammeln (theoretische Grundlagen). Sie kennen die Arbeitsabläufe in einem Chemielabor, beherrschen den Umgang mit Chemikalien und Geräten, können Experimente vorbereiten, Ergebnisse interpretieren und die erforderlichen Sicherheitsmaßnahmen einhalten.

VORGANGSWEISE

Bitte um eine kurze Beschreibung der im Rahmen ihres Pilotprojekts durchgeführten Maßnahmen (z.B. wer was wann getan hat).

- 1) Jeder/m Studierenden werden die Sicherheitsvorkehrungen im Labor erklärt
- 2) Bildung von Teams
- 3) Jedes Team wählt die Experimente aus, die es durchführen möchte
Jedes Experiment wird von zwei Teams durchgeführt. Ein Team stellt die theoretischen Grundlagen vor, das andere Team präsentiert das praktische Ergebnis des Experiments. Für jede Präsentation stehen 15 Minuten zur Verfügung.

LISTE DER UNTERLAGEN

Bitte um Angabe der von Ihnen erarbeiteten Unterlagen (z.B. Fragebögen, Formulare, Handouts, Aufzeichnungen, Notizen, Feedback von Studierenden, etc.). – Bitte legen Sie die Unterlagen im **ANHANG** bei:

- 1) Schriftlicher Bericht über die vorbereitenden Arbeiten und die Ergebnisse des Experiments.
- 2) Anweisungen für das Experiment.
Beurteilung des Pilotprojekts durch die Studierenden und die Projektleiterin.

Pilot project at Studienkolleg Coburg: Chemical practical training

The Measure Analysis – two parts

Final report

1. Step

Giving the students at the Studienkolleg Coburg a chance to simulate a practical training this is the plan of the pilot project. It seemed to be useful for them therefore it was necessary to convince the Fachhochschule Coburg because it is only possible to do chemical experiments in their laboratories. In cooperation with the faculty Physical Technology represented by Prof. Dr. Ruthenberg and Dipl. Ing. Jacob the time table could be prepared.

2. Step

The practical training in Physical Technology comprises three experiments which could be taken over in the same manner. Two experiments needed to be changed a little bit than they had the right content. In summary there are five experiments to carry out.

3. Step

Before starting the whole project the students of the 2. Semester of the preparatory course for the technical and engineering studies at the Studienkolleg Coburg were generally informed about it. Now the action starts. The students get together in teams with two persons one team has three persons. Every team chooses one experiment out of five in combination with one date for doing. The team decides if it wants to explain the theory before the practical part start or if it wants 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 is divided into two parts so every team has a presentation only one time. Therefore all teams are obliged to write a report and to hand it over. So you can be sure that there was a preparation because in the case of studying at the university and to do the practical part there it will be a quiz during the practical time. At the other hand this is the chance to look at and to control the principles of Chagal.

5. Step

The students only got the title of that experiment they had to do. They know the theoretical basics like build up an equation of a reaction, calculations in the chemistry, types of reactions, acid and base. Only one team had a question how to prepare his report, the other teams did not ask.

6. Step

The elaboration of the theoretical part starts. The teams present their papers and explain them in front of the whole group. They speak about 20 minutes. In some cases the pronunciation and the accentuation are not very well so that it was necessary to repeat some words. Expressions typically used in chemistry science are no problem. The documents put up by the teams show, that they spent a lot of time to do it well. A few of them content explanations about carrying out the experiments or use special words without an explanation. Mistakes in grammar or orthography were corrected. (enclosure 2)

7. Step

The composed instructions of the experiments were distributed so every team is able to prepare his practical part. The students carry out the experiments two times in the afternoon. With the help of Mrs. Scheler a chemical assistant at the Fachhochschule Coburg the students work very engaged disciplined and safely over about two hours.

8. Schritt

Every team puts up his report about the results. Some of them had to draw a diagram some had to do a calculation. Not all of the diagrams are well done, they are not very exactly. All of the calculations are correct. (enclosure 4)

9. Step

The students give an assessment by answering questions about something like working in a team, how much time did they spent to prepare the report before the practical training and afterwards, did they like to do the project. (enclosure 5). Some pictures document the steps. (enclosure 6)

Assessment

1. Teamwork

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

2. Self - made – studies

Also the questionnaire shows that the teams spent about three hours for preparation the theoretical background of the experiments. That is a good timetable if you see that there was nothing similar like this in the chemistry before. The students notice that there were no difficulties to do it.

3. Presentation in front of the group

In comparison with writing a text it is more difficult to present it. Often the spoken words were bad in the pronunciation and the accentuation so that the group was not able to understand the whole content. The speaker had to repeat the words slowly or to explain the meaning. The written reports were near by the request of that what it shall be. There are a lot of mistakes in grammar and orthography but it does not matter. It is necessary to remember that there was nothing similar in chemistry before. This part needs 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 asked for permission to use the chemical laboratory once more the Fachhochschule Coburg answered in a positive way. So it seems to 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 program of the subject chemistry.