Research in educational psychology has found that traditional educational approaches (e.g., lectures) do not lead to a high rate of knowledge retention, most material learned through lectures is soon forgotten, and natural problem solving abilities may actually be impaired. Motivation in such traditional classroom environments is usually low. Using the power of problem solving (PBL), we can engage students and enhance their learning and motivation. Problem based learning (PBL) is a widespread student-centred method used in many educational areas. PBL essentially involves small groups of students discussing the problem and determining what they need to study, after that, they share the results of their learning. It combines various learning approaches, encourages mutual exploration and debating, and emphasizes the role of communication and cooperation. The key feature of PBL is the use of problems as a starting point to acquire knowledge and develop students' problem-solving skills. Although studies have shown that the academic achievements obtained using PBL are not lower than those obtained using traditional teaching methods, PBL puts greater demands on teachers, teaching time, and learning space, and increases learning burdens.

On the other hand implantology is a discipline that is constantly changing. For this reason we consider it is important to provide tools to the student so that he can be up to date and solve the problems that arise on the basis of the available evidence. However studies on the application of PBL in teaching Implantology are rare. For this reason we decided to design a problem scenario and a series of sequential subproblems that forced the student to:

- Develop diagnostic reasoning and analytical problem-solving skills.
- Discover the best resources for acquiring that information.
- Apply the information you have learned back to the problem.

**OBJECTIVE**

To evaluate the PBL method to develop specific transversal skills in the subject of Implantology at the University of the Basque Country (UPV/EHU).

**METHODS**

A scenario-problem was designed for Implantology teaching and learning, which was implemented in year five of the Dentistry degree during the 2015-2016 academic year.

**LUNCH AT JAURÍ’S COTTAGE ON A SATURDAY IN FEBRUARY**

In Jaurí’s Cottage kitchen, Antxon and his wife Maite were sitting opposite each other at the table talking. There was a dish of lamb on the checked tablecloth; it’s a Saturday in February. Maite is very upset, because she has spent all morning cooking the stew but is unable to eat. Her lower denture moves and she can’t chew with her teeth. She urgently removes the dentures placing them in a glass while trying to remember when she last ate a Tbone steak. She can’t hold back her indignation, she finds it incredible that both she and her husband have lost all their teeth, yet even though Antxon’s 10 years’ older, he could have his teeth screwed in. Moreover, he’s very handsome and can eat without difficulty. Without raising his eyes from his plate, Antxon very calmly tells his wife that she should go to his dentist. Maite puts her knife and fork back down on her plate looking at him angrily and adds: “you’re always telling me the same thing, but I’ve already tried those screws, which caused me a lot of problems and did not help me, they were just a waste of money.”

**GLOBAL ASSESSMENT:**

No student responds unsatisfactorily. For the majority (50%), it has been a satisfactory experience. Five students consider it very satisfactory.

**FIRST SUBPROBLEM**

To achieving a successful oral rehabilitation with implant-prosthesis in a totally edentulous patient, how important is the implant used and the bone available?

Perhaps it was because his dentist used better screws, I am of better quality... Learning outcomes:

- Identifies the fundamental principles of bone healing and osseointegration.
- Analyzes the differences and shapes of implants based on mechanical and biological principles.
- Evaluates the differences and complications analysis systems, Osstell®.
- Sees the advantages and disadvantages of different load patterns, indications and comandations.

**SECOND SUBPROBLEM**

How can I know the best possible way to fully and aesthetically rehabilitate the totally edentulous patient and be successful?

If many things before putting them in, such as taking special x-rays, showing you how your teeth will look on the computer and a model before she started doing anything...

Learning outcomes:

- Establishes the type of rehabilitation taking into account the patient’s needs, aesthetic requirements and bone availability for implant placement.
- Identifies the complex cases where radiological and surgical splints are necessary.
- Interprets complimentary diagnostic imaging techniques.
- Raises the need for increased bone availability after the study of different diagnostic imaging techniques.
- Discusses the communications of treating total edentulous with prosthetic implant.

**THIRD SUBPROBLEM**

If the patient does not have enough bone for the implants planned How can I increase bone availability?

Since she’s already been told she hasn’t got enough bone.

Learning outcomes:

- Critically analyses the different techniques for increasing bone availability.
- Explains concisely with reason the most relevant information regarding the techniques of increasing bone availability.
- Collects, analyses and synthesizes information regarding short implants.

**FOURTH SUB-PROBLEM**

How should I perform surgery and prosthetic treatment for a planned restoration to be successful?

So, everything seems easier when she does the work, screwing the teeth as she showed you.

Learning outcomes:

- Justifies reasons for selection, characteristics, number and position of implants to be placed.
- Plans an implant prosthetic treatment in the totally edentulous patient.
- Designs provisional and definitive prostheses for the totally edentulous patient.
- Gains an estimate cost.
- Drafts a personalized confirmed consent.
- Gains up a chronogram for the patient.

**FIFTH SUB-PROBLEM**

How to identify, avoid and solve the major complications and causes of treatment failure with an implant-prosthesis?

I’ve already told those screws, which caused me a lot of problems and did not help me, they were just a waste of money.

Learning outcomes:

- Classify according to references available, the possible complications which may arise during treatment with an implant-prosthesis.
- Analyze and synthesize the information available regarding implant treatment survival.
- Identify and critically analyze the main causes of implant-prosthetic failure.
- Identify, document and co-operatively resolve the problems arising during the different stages of implant treatment.

Sixteen students, working in small groups, had to define the learning objectives in a dynamic co-operative self-directed manner, which would enable them to acquire knowledge to successfully resolve a problem. The academic results (assessment and success rates) were analyzed. In addition, a questionnaire survey was administrated to find out the influence of the PBL regarding skill acquisition.

**RESULTS**

**CONCLUSIONS**

PBL is a well-accepted method which helps students to acquire the skills necessary to exercise their profession.

2. Preliminary investigation into a problem-based learning in the practical teaching of diagnostics Zeng Ruil, Yue Feng-Cheng, Qu Hu-Yu, Zeng Jing-Wen Xue-Hong, Zhu Chu-Advances in Medical Education and Practice 2015 S 223-228