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Enquiry Based Learning, what's that then? How to inspire your students, develop their professional skills and enjoy yourself.

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Enquiry Based Learning (EBL) has been gaining momentum in undergraduate programmes internationally. It is argued [1, 2] that EBL provides students with an inspirational learning experience through which they develop subject knowledge, professional and personal skills as well as attributes ranging from teamwork and leadership skills to problem solving and information literacy. They can also develop attitudes such as acceptance of responsibility for their own learning and actions. At the heart of EBL is an environment in which the learners are supported in determining their own lines of enquiry: identifying what is already known about a topic; what needs to be learned; what information is required; how it is to be acquired, processed and applied; and how it is to be shared with others [1].

Development of this general pedagogy attempts to engage with an increasing range of engineering disciplines by building on well-established approaches to teaching and learning within those disciplines. These approaches may be described by terms such as Problem Based Learning (PBL) [5]; design exercises; investigations; case studies; and Project Based Learning. The essential, common ingredient is that an initial stimulus (the enquiry, design or 'problem') engages and motivates the learner(s) to pursue particular lines of investigation, through which learning is achieved and new knowledge created. The learners, usually working in small groups, are guided through the investigation process by a tutor/facilitator, and are supported by a wide and diverse range of resources including online, paper based and human resources.

EBL represents a shift away from passive learning methods, which involve the transmission of knowledge to students, to more facilitative teaching methods through which students are expected to construct their own knowledge and understanding by engaging in supported processes of enquiry, i.e. learning in 'research mode'. The learning is driven by a process of enquiry or investigation. It is student-centred, and requires active participation. It is a supported process that develops a range of skills in students: teamwork; problem solving; academic; research; information; professional; and personal.

Crucially, though, Enquiry Based Learning is a social activity, which students and staff enjoy. EBL encompasses familiar active learning environments such as design, problem based learning, field studies, case-based learning, dissertations, projects and research.

This highly interactive workshop will explore the concepts of EBL and participants will enjoy a personal experience of EBL.

Workshop structure

Introduction (10 minutes)

During this brief activity, participants will develop a shared understanding of EBL

Group activity 1; collaborative learning, creativity and high level intellectual skills (30 mins)

The first part of the Workshop will be set aside for a group activity. Participants will be divided into groups and will work on an activity designed to explore concepts such as 'knowledge harvest'; teamworking; creativity; and high level intellectual skills.

Debrief

This will allow participants to reflect on the experience and their learning.

Group activity 2; design scenario and action planning (30 mins)

During this group activity, participants well analyse a design scenario to develop an action plan through which they will gain an understanding of the development of professional skills in engineering as well as personal skills in the context of an engineering subject.

Debrief

Participants will be able to reflect on their contributions to the group process, their learning and their professional, academic and personal skills development. They will also be able to recognise the role of the tutor and of the student in EBL.

Concluding process

Case studies will be provided to exemplify the processes, roles and outcomes of an Enquiry Based Learning environment in engineering.

Participants will begin to design or develop practices that they will employ in their own subject.If you already have a paper in a different format, you can copy the styles from this document into your current file using the Tools | Templates and Add-ins | Organizer feature.

Session learning outcomes

By the end of the session, participants will:

1. be able to describe and explain the principles, benefits and practices of Enquiry Based Learning;

2. be able to list and explain the academic, professional and personal skills and attitudes developed through EBL;

3. understand the role of the student and how students learn by constructing their own knowledge and understanding;

4. appreciate the role of the tutor as facilitator and how it differs from that of knowledge expert;

5. have gained some insights into how to construct an EBL experience for students;

6. have experienced several EBL-type activities through which they will have established both personal learning and productive outcome.

References:

1 Barrett T et al [eds]; Handbook of Enquiry and Problem Based Learning; AISHE; Ireland; ISBN 10:

0-9551698-0-1

2 Savin-Baden M, Wilkie K; Challenging Research in Problem Based Learning; McGraw Hill; 2006; ISBN 0335220061

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