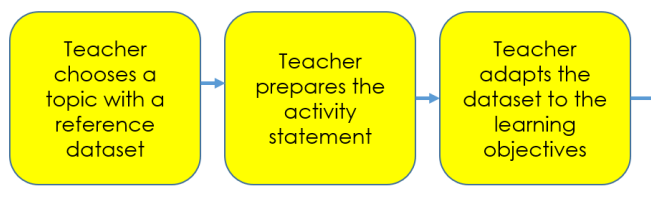# eSTEM

DATASET-BASED LEARNING

DEFINITION AND DESCRIPTIONS

Dataset-based learning (DBL) is a student-centred pedagogy in which students learn about a subject through the experience of working directly with datasets taken from real situations. The DBL process works over the approach that students should be able to analyse or identify problems (guided by teachers) in a provided dataset in order to solve the problems proposed by teachers or to obtain behaviour patterns useful to learn some topics in depth.
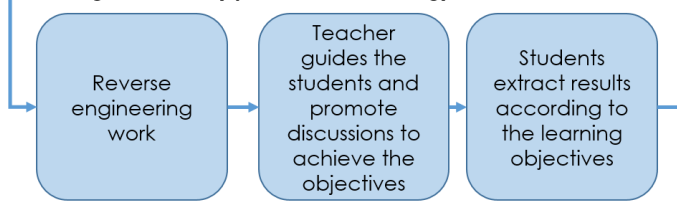
DBL can be considered a subset of Active learning (Bonwell & Eison, 1991) because "students are actively or experientially involved in the learning process".
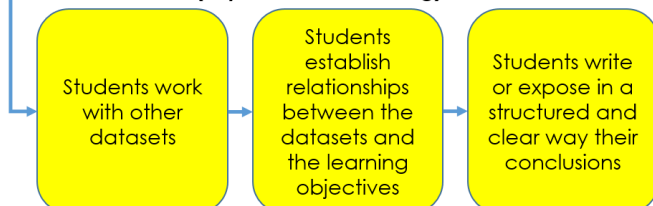
BENEFITS

1. Give prominence to comprehension, not facts: students have to be able to identify the problems and their nature, and to develop a solution.

2. In-depth learning and constructivist approach: DBL fosters learning by having students interact in depth with the learning materials.

3. Self-motivated attitude: the use of resources close to the reality improves the usefulness of the lessons and motivates students to learn.

LEARNING PROCESS STAGES

Previous to the lesson:

Teacher chooses a topic with a reference dataset → Teacher prepares the activity statement → Teacher adapts the dataset to the learning objectives

During the lesson (synchronous learning):

Reverse engineering work → Teacher guides the students and promote discussions to achieve the objectives → Students extract results according to the learning objectives

After the lesson (asynchronous learning):

Students work with other datasets → Students establish relationships between the datasets and the learning objectives → Students write or expose in a structured and clear way their conclusions

CHALLENGES

1. Identifying key dataset resources according to the topics of the subject. Not all subjects can be taught with this approach.

2. It requires a previous intensive work by the teachers to find suitable datasets and adapt them.

REFERENCES: BONWELL, C.; EISON, J. (1991). ACTIVE LEARNING: CREATING EXCITEMENT IN THE CLASSROOM AEHE-ERIC HIGHER EDUCATION REPORT NO. 1. WASHINGTON, D.C.: JOSSEY-BASS. ISBN 978-1-878380-08-1.