218d Personal Class Binders (Pcb): an Incubator of Life-Long Learning

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Life long learning is perhaps the most lasting attribute that students should get from their training in college and, yet, one of the most difficult to develop and assess. In addition to the inherited difficulties of the subject, many current learning environments are not helping to obtain the most effective outcome for the student. We introduce here a model, the PCB that has the potential to help change this situation substantially. The approach is described below after a brief review of the background.

Documentation of activities and or procedures in engineering education are usually summarized in formal reports such as those used to communicate the results and analysis of laboratory projects. These are, frequently, an effort that is shared with other team members and they are focused on the technical aspects such as discussion and an overview of references related to the project, summary of the experimental techniques, data gathering and the analysis of these data. Comments for improvement are usually offered at the end. The report is typed and submitted to the instructor with a formal submittal letter. For cases where lectures are the dominant mode of instruction, journals or diaries are, sometimes, used as a supplement to help students enhancing the learning. These are, usually, a summary and points of view of the students in the process of learning new materials. These exercises are useful, however, they are not in the “heart” of the students learning process and they do not promote life-long learning. Therefore, there is an opportunity to enhance the students' possibilities to enhance their chances to become an effective life-long learner.

When an instructor changes radically the mode of instruction and s/he adopts active and/or collaborative learning approaches, students are usually given a “summary” of instructor notes: They are polished, well organized, and very personalized from the instructor point of view. Instead, if he students are required to prepared notes, organize them in a way that uniquely related to the students, and enhanced with comments from the student's efforts, the gaining from the students learning may be significant. Furthermore, this environment simulates or mimics quite substantially the student situation as a life-long learner. In this contribution, the authors will describe an approach based on questionnaires, “dirty” notes, “cleaned” notes, re-worked assignments, and a section on the “history of science” that give the students plenty of opportunities to use an active and/or collaborative approach to learn new materials and work in a “life-long” learner mode. Students are coached to produce a personalized class binder (PCB) that is evaluated and given a percentage of the grade to increase the perception of its value in the learning by the students. Assessment by students show several benefits for the development of life-long learning atributtes. Examples of binders in transport phenomena, colloidal sciences and reactor design will be offered as illustrations.