

# **EFFECTIVE TEACHING AND LEARNING METHODOLOGY: MODULES BASED ON PRACTICAL COMPONENTS**

## **Introduction:**

Teaching is a vital duty that includes preparing lecture materials, assessment documents, marking, moderation, project supervision, and participating in research activities. (Hatti, 2009), concluded that the best works for students is similar to what works best for teachers. This concept is a challenge of the learning goals through understanding what success means, and an attention to learning strategies for developing understanding about what teachers and students know and understand. (Bishop, 2008) model include the creation of visible, appropriate context for learning such that students is involved in a process of co-learning culture in consideration.

## **Student led thinking as a Methodology:**

The most successful classrooms are those that encourage students to think for themselves and engage in critical thinking (Alan C. et al, 2005). Students studying engineering, in my opinion, need to understand how components, surfaces, and measurement equipment are make, as well as where they be used. They should cultivate their imaginations and propose ways based on prior knowledge and day-to-day instruction on how can make the pieces. What machinery, methods, equipment, measurement & instruments, and so on are available. For advance, ask them to describe the problem and reminding them that whatever approach they select is important to the project's success (a strategy that initially looks good but that proves to be difficult to implement is not a good strategy). Then initiate individual discussions with each students on report contents. Wearing them, on the other hand, should not discuss these aspects with other groups until they have settled on a design plan in principle. Otherwise, a lot of time and effort would be wasted in lengthy debates, only to discover later that none of it is significant. It is important to encourage students to utilize their imagination via reality by using many resources such as handbooks, notebooks, films, observations from various industry trips, and not being afraid to come up with fresh ideas. This is due to the fact that most students are frightened of appearing dumb or of rejecting their solutions before they are consciously aware of them. To avoid this, I believe we must take specific measures, such as praising everyone who brings a new proposal to be address freely, with all strengths and weaknesses highlighted. Finally, Students expected to assess their designs because they are a crucial element of the process and might be the key to a successful outcome.

## Reverse Engineering as Methodology:

It is the method of learning of the technical principles of a machine, object or system through analysis of its elements, function, and operation. I think that most of the engineering students need to earn this skill on role of reverse engineering. Start with grouping the students after disassemble the object to its elements to examine and functioning each part separately. However, in this method of using reverse engineering for teaching and learning lead to discover two things; how to manage an integrative design-through-to-make/test project using sufficient softwares and evaluate the difficulties of manufacturing when compared to virtual manufacturing on computer systems. Reverse engineering is also defined as the process of obtaining a geometric model from 3-D points acquired by scanning/ digitizing existing arts/products. I believe that Reverse engineering provides a solution to engineering problem because the physical model is the source of information, this is also referred to as the physical-to-digital process.

## References:

[Alan C.](#), Wendy S., Samuel R. Mathews, James M., 2005 “Teaching and Learning Strategies for the Thinking Classroom. Contributors” International Debate Education Association, ISBN-10: 1932716114, 256 pages, New York.

[Bishop](#), A.J. 2008 “Decision-making, the intervening variable. Education Student Math” 7, 41–47.

[Hatti J.](#) 2009 “Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement” 1<sup>st</sup> Edition, Taylor & Francis, Education - 382 pages.

## Bibliography:



Associated Professor Dr. Basim A. Khidhir  
Department of Mechanical Engineering,  
Middle East College, Muscat.