The university education of Syrian engineers: an analogico-theoretical system

The paper will analyze methods of university instruction and learning in Syria pertaining to the training of engineers and the impact of these methods on the patterns of reasoning of these engineers when they enter professional life. This study is based on a survey I conducted at the beginning of 1990s in the framework of my doctoral thesis (see Hanafi, 1990 and 1994).

Western and Syrian Curricula: Same Content but Different Method

In order to evaluate Syrian engineering education with regards to its “Western standard”, comparison was made between the training of civil engineers in Syria and in France within two institutional settings: the University of Damascus and the ENSAIS (Ecole Nationale Supérieure des Arts et Industries de Strasbourg). It is striking that while the items on the program and their contents are similar in both institutions (with the exception of computer sciences and law, and to a certain extent the technology of construction, where the Syrian students level is lower), the methods of instruction (teaching methods) are completely different. Two problems of method\(^1\) in Syria can be observed:

1- The absence of appropriate laboratories and the under using of some of them\(^2\), make the instruction characterized overwhelmingly by the theoretical training and by the quasi-absence of a vocational-technical education. In the same time the university is completely cut from the society and especially private sector, thus it is not demanded from students to do training during their vacation.

2- 85% of teachers expose their lectures with all the details without asking students to refer to reference. Only few teachers exhort students to go beyond their lessons. However this problem not related to the welling of the teachers and the student satisfaction for the easiness, but related to a structural problem due to the textbooks and politics of arabization.

Politics of Arabization

University textbooks are often translated into Arabic without mentioning the original source and without any bibliographical references. In fact, producing textbooks for the university is part of the large politics of arabization. Although Syria often prides itself in regional and Arabic conferences of its capacity to provide "Arabized" sciences, the engineering sciences produced show mitigated results, and in some cases a catastrophe. While the policy of arabization aims to spread the knowledge of sciences to all its population and not only to small a "colonial" élite, it produces engineers handicapped by the rarity of translated books and having huge difficulties keeping up-to-date on new knowledge. The arabization of all the sciences as a part of political agenda of "decolonization", paradoxically turn out to be a tool to reinforce Syria's dependence on former "colonial" states en terms of engineering sciences and technology.

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\(^1\) This is the case of the UNESCO gift of a laboratory of liquid mechanic that was never used by the teachers and students. Some of teachers consider this laboratory as unoperatoinal, while others admit to a lack of appropriate knowledge.
I am not arguing that Arabic is incapable of keeping up-to-date in the field of sciences but I am rather criticizing the manner in which the arabization took place. The very mediocre efforts regarding translation prevent university students and professionals from having access to the necessary literature to update their knowledge. This problem may remain unsolved in the light of the financial capacity of scientific institutions in Syria or in the Arab world in general. Could we then consider changing the conception of the arabization from a substitution process where Arabic become the sole language of teaching to one of juxtaposition where Arabic is predominant but leaves room for another language. The paradigm behind the politics of arabization in countries like Syria and Algeria is substitution, while the Tunisian experience could be a successful one as the state imposes Arabic for main parts of the curriculum, but the good level of students in French and sometimes in English allows them to refer to foreign sources and textbooks. Contrary to what the dean of the faculty of medicine in the University of Damascus, Dr. Hani Murtada, suggested that is that one can become schizophrenic, I believe that the human being is capable of think using more than one language without this affecting his/her national identity.

Impact of the curriculum on the students’ patterns of reasoning

The use of only one textbook for each course imposed by a teacher makes it so that it becomes respected as a sort of holy book by the students. Moroccan philosopher Mohammed Abed el-Jabiri has noted a problem inherited by the Arabic tradition concerning the status of the written text and how the Arabs in history were sometimes limited by their patterns of thinking centered on the interpretation of the holy texts (like the Koran). This is one of the dominant patterns of reasoning that he calls *alaql al-bayyani*. (1986 and 1972)

The curriculum based on the theoretical training and “holy” textbooks has a major impact on students’ patterns of reasoning and creates problems as to how to translate theoretical knowledge into practical problem-solving. Instruction (*teaching*) methods and the academic evaluation of students reinforce analogy as a pattern of reasoning. According to my inquiry about how the structural engineers design bridges in one prominent Syrian public company, they always referred to their textbooks translated from a 1960s Russian one or they asked help from national or foreign experts. Some of these engineers admit to always needing an example from which they deduce the solution to the problem they are facing, while in the engineer’s daily changing reality some analogies are not only misleading, but, in particular circumstances, they inhibit creativity as well.

Finally I am conscience of the fact that the problems with instruction methode in Syrian universities cannot be separated from general issues of the higher education such as: material and financial capabilities; admission policies and the imbalance between the huge number of students in a “democratic” public educational system and the small number of staff; the poorly endowed university and faculty libraries and the difficulty of access to foreign references. However, this article attempted to cover also problems not directly related to financial capabilities but rather to educational philosophy which led to the creation and strengthening of the analogico-theoretical system in engineering education.

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3 - Already With the computerization of the sciences there is a problem which affects the engineers all over the world regarding their creativity. Levi-Strauss has pointed out how the handy(wo)man (*bricoleur*) in the past was more creative as s/he processed fewer scientific laws and rules than contemporary engineers.
**Bibliography**


