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New trends in structural engineering education with application to design of steel structures

Components of higher education are students, faculty and curriculum/teaching paradigms. Regarding the students, higher education needs people with desire to improve them; this is a fact. For faculty, in many developing countries, the system of faculty rewards is undeniably well-below the level that can safely support faculty's social needs. As a result, faculty involve in other non-academic activities to raise their level of income. Every day passes without resolving this issue turn this "secondary" non-academic activity turns to be the faculty's primary job; the ones who end-up paying the penalty are the students. As for the curriculum, we get the famous phrase "we had the best engineering education"; this is true if we modified to "we had the best engineering education; then" where both the curriculum and teaching paradigms served the need of that era. However, this does not mean that we must fix both for decades. Should not we accept that all what we have shinned-in is currently surpassed by something newer and better? Traditional teaching may kill the best designed curriculum. Our teaching pedagogy must be developed to fit the needs and modes of today's students. Generation Z students are not interested anymore in passive learning; classes must be switched form teacher-centered to student-centered: The only learning path of this generation is active learning. Innovative teaching techniques for design courses (e.g., structural steel design) have been adopted by the author and proved to be very rewarding. Among these innovative techniques are blended learning and flipped classrooms, which stretch the utilization of technology in our today's classes. Other techniques such as student-generated examinations, student-generated classes and course competitions are also direct reflection of student-centered education. Herein, these innovative paradigms will be presented. Believing that the true purpose of education is to stimulate creativity and passion of the students and more important to teach them how to master the life-long learning skills, we will come to a conclusion that what-ever we are doing now should be reformed: it is a leap of faith.

Recent Publications

1. Sayed-Ahmed E Y, Abdelrahaman AA, Embaby RA (2017) Concrete Dams: Thermal-Stress and Construction Stages Analysis. Dams and Reservoirs Journal, Proceedings of the Institution of Civil Engineers (ICE); 27(1): 1-19.

2. Akroush N, Almahallawi T, Seif M, Sayed-Ahmed E Y (2017) CFRP Shear Strengthening of Reinforced Concrete Beams in Zones of Combined Shear and Normal Stresses. Composite Structures. Elsevier; 162: 47-53.

Biography

Ezzeldin Y Sayed-Ahmed is a Professor and the Graduate Program Director in the American University in Cairo, Egypt. He has earned his PhD in Civil Engineering in 1995 from the University of Calgary. He is a Fellow of the Academy of Scientific Research and Technology and a RC and Steel Structures Consultant. He was the Acting Director of the Credit Hours Engineering Programs of Ain Shams University and the Associate Dean of the College of Engineering of Qatar University. He is a Member of the Egyptian Code of Practice Committee for FRPs and the Chair of the Subcommittee of the Composite Polymers Structures Code. He holds the State Award in Engineering Sciences (Egypt) in 1999 and Bruce M. Irons Memorial Scholarship (Canada) in 1994. He has a USA patent and has 169 publications and supervised 35 MSc and PhD students.

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