Workshop: Enhancing Student Interaction and Engagement in Computer Science Courses

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Introduction

Numerous factors, including the recent proliferations of smartphones and social networking, have brought about tremendous changes in the behavior of college students such as frequent checking of emails, texting, checking/posting social media updates, playing games, etc. While it is okay for the students to stay entertained, connected, and being updated on information and events of interest and relevance, the real problem seems to be their indiscriminate use which hinders their focus and attention in classrooms, and is detrimental to their thinking and learning process. It also results in wasted times and efforts on the part of the instructors. This trend has led to real challenges in keeping the students motivated, interactive, focused, and engaged during lectures in the classrooms, and in facilitating effective teaching and learning processes.

Workshop overview

This is a 1–day (7–8 hours) workshop. This workshop is interactive and hands–on. It presents numerous ideas, techniques, and strategies for keeping the students engaged in class. These have been gathered and refined over many years of teaching undergraduate and graduate courses in Computer Science. Although the workshop presents strategies techniques and examples used in Computer Science courses, they can be suitably adapted to any course / topic with appropriate modifications.

The workshop consists of two parts. The first part starts with a round-table discussion of experiences of participating instructors related to nature of distractions and their perceived common causes of those distractions, and their practices and suggestions for addressing them. This will be followed by drawing lots on some sample topics, and making short presentations/lectures by the participants for 5–10 minutes each. Audience take notes, and provide suggestions / comments / feedback (both positive and critical). This will be followed by discussion and summarization. The second part consists of presentation of numerous ideas and techniques that have been developed over many years of teaching Computer Science courses to undergraduate and graduate (bachelors and masters) students, and used in classroom teachings. This is followed by open discussion and summarization.

Workshop outcomes

The workshop outcomes are for the participants to: (a) understand some of the root causes of student distractions in classrooms / during lectures; (b) get exposed to techniques to increase student participation and engagement; (c) understand major factors which make lectures boring and learn techniques to avoid the pitfalls; (c) learn some techniques and strategies to make lectures more interactive, engaging and productive; (e) have a forum for open discussion and articulation of ideas; (f) have a platform for trying out of some techniques they have developed and get feedback, and to develop / modify / improve their ideas and methodology.

Brief Bio

S.R. Subramanya received his B.E. in Electronics Engineering from Bangalore University, M.E. in ECE from Indian Institute of Science, M.S. in Computer Science from Indiana University, Bloomington, and Ph.D. in Computer Science from George Washington University, Washington, D.C. He has been the recipient of several awards including the Richard Merwin memorial award at George Washington University, the Grant-In-Aid of Research award from Sigma-Xi Scientific Society, and the Professoriate award and the Faculty Distinguished Scholarship award from National University. He is the recipient/co-recipient of grants from NSF (National Science Foundation), University of Missouri Research Board, National University System office of strategy and innovation, and from industry.

Dr. Subramanya is currently a Professor in the School of Engineering and Computing at National University in San Diego, California. He is also the President and CEO of Exskillence, a company specializing in technical skills enhancement workshops for students, as well as for corporate employees. He was formerly a faculty member at Missouri University of Science and Technlogy, teaching courses and conducting research in Multimedia Systems. He has also worked at several multinational corporations – ASEA AB in Vasteros, Sweden, NOKIA in Helsinki, Finland, and LG Electronics in San Diego, California.

He has been a visiting professor at Nayanova University, Russia, Dresden University of Applied Sciences, Germany, Northwestern Polytechnic University, Xi'an, China, Polytechnic University of the Philippines, Manila, Philippines, and Alagappa University, Karaikudi, India. He has been conferred the Honorary Professorship by Amity University, Noida, India.

He is the author/co-author of over 120 technical papers in refereed conferences and journals. He has served as reviewer, program committee member, session chair, and keynote speaker of several International Conferences. He has also served as a reviewer for several journals and research grant proposals. He has presented technical tutorials at numerous conferences. He is a senior member of the IEEE. His current research interests are in algorithm design, novel services for digital content, mobile applications, and Computer Science education.