

Abstract

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Built your Own Electronic Piano Workshop for K-12 students

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One of the main barrier in engineering education is to motivate elementary students to pursue careers in engineering, specially underrepresented minority and women. This work presents a workshop offered to Hispanic students from several levels within the K-12 grade range. It includes a *crash* course in electricity and electronic basics and a hands-on activity in which students build several circuits from simple series circuit to more complex circuits, including an electronic piano circuit, as the highest difficulty. A group of graduate and undergraduate students trained to serve as ushers in the workshop have accompanied the author in visits to several schools to offer this workshop, with great acceptance from the students. The piano circuit has been built successfully in all our visits to K-12 schools. In addition, we encourage teachers to build the circuit and provide them with the Theory Sheets, Instructions Sheet, and Materials List for future repetition with other groups.

The main purpose is to motivate K-12 students to pursue careers in electrical engineering, show them how engineering helps people's lives, and to demystify the difficulty associated with engineering fields. In addition, many of the ushers participating are female to serve as role models for girls. This also serves as a double purpose to train undergraduate and graduate students in outreach activities and motivate them to pursue their professional career in the academia.

A detail description of the workshop will be presented together with the assessment from recent groups and from undergraduate and graduate students participating as ushers in the workshops.

