Workshop – Engaging Undergraduate Students in Research Using the Affinity Research Group Model

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Abstract - An Affinity Research Group is a comprehensive model for the creation and maintenance of dynamic, productive, and inclusive research groups in engineering and computing. The model is comprised of a set of fundamental principles and effective practices that emphasize the conscious development of students’ domain knowledge as well as research and professional skills. This workshop introduces the model and engages the participants in exercises that illustrate the use of the model.

Index Terms – Research skill development, Underrepresented groups, Undergraduate research, Cooperative groups.

INTRODUCTION

Undergraduate research is a well-known approach to integrate knowledge and provide practice of the skills critical to business, industry, and government, in particular, refinement of cognitive and interpersonal skills, enhancement of personal growth, and inculcation of intellectual and management habits [1]-[3]. While a common practice is to recruit and involve the most visibly successful students, this may result in lowering the number of promising students who can benefit from research experiences. Thus, to extend the research experience to a broader range of students, particularly students from underrepresented groups, UTEP successfully developed and implemented the Affinity Research Group (ARG) model [4]-[6] that provides students with opportunities to learn, use, and integrate the knowledge and skills that are required for research with those required for cooperative work.

The three core components of an ARG are: the definition of a group’s core ideology, active fostering of student connectedness, and deliberate and intentional development of skills. The model creates an integrated research environment where faculty mentors create and sustain a cooperative environment to make students successful in research, academe, and the workforce. As a result, students and faculty can reach higher levels of productivity and achievement. With National Science Foundation CCLI and IEEE-Computer Society Seed funding, the investigators have published an ARG handbook (www.computer.org/arg).

WORKSHOP DESCRIPTION

This workshop uses active participation to introduce the ARG model and engages the participants in exercises that illustrate the use of the model. The model is comprised of a set of fundamental principles and effective practices that emphasize the conscious development of students’ domain knowledge as well as research and professional skills. Participants will use the ARG handbook (http://computer.org/arg) to review activities that focus on student development. The objectives of the workshop are to:

• understand the key components of an ARG,
• become aware of ARG practices, and
• engage and reflect on an ARG activity

The agenda for the 3-hour workshop follows:

Part 1: Introduction
Description: Introduction to ARG philosophy and goals.

Part 2: Development of Essential Skills
Description: Discuss the components of a research plan, the importance of developing cooperative group skills, and the refinement of communication skills.

Part 3: Components of the ARG Model
Description: Discuss the main component of an ARG: core ideology, student connectedness, and deliberate practices.

Part 4: Putting the Model into Action
Description: The nuts of bolts of an ARG: orientation, getting started, troubleshooting, and continuous quality improvement.

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REFERENCES


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