

Education Seminar # 6: GK-12 Fellows Project STEP Integration and Review

Coordinators: Mr. Mike Borowczak and Dr. Andrea Burrows, Grant Coordinators for the RET and NSF GK-12 Fellows Project STEP, University of Cincinnati

Date: July 22, 2011

Times: 10: AM – 12:00 Noon

Venue: University of Cincinnati, Old Chem. 615A

Prepared by:

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The NSF GK-12 Fellows Project STEP educational seminar for the 2011 RET participants was jointly coordinated by Mr. Mike Borowczak and Dr. Andrea Burrows.

Mr. Borowczak is a 5th year Ph.D. student in Computer Engineering and Computer Science. He completed his B.S. in Computer Engineering in June 2007 at the University of Cincinnati. While an undergraduate student Mr. Borowczak held co-op positions at Texas Instruments - a large semiconductor corporation, International Techne Group, Inc. – a local software company, and Clifton Labs – a proof of concept and computer engineering consulting firm. As a graduate student, his primary research interests include the design of Computer Aided Design tools for computer chip design. In particular, he is interested in developing secure methods for implementing cryptographic algorithms in hardware. Currently Mr. Borowczak serves as the Grant Coordinator for the RET and NSF GK12 grants at the University of Cincinnati – he took this position from Dr. Burrows. In the past, he was a NSF GK-12 Fellow paired first at Norwood High School and then paired with CPS Hughes STEM High School.

Dr. Breiner received his B.S. in Chemical Engineering as well as his PhD in Chemistry from the University of Cincinnati (UC) in Cincinnati, Ohio. Dr. Breiner started his career as an educator by becoming an adjunct professor at UC and other local colleges including Cincinnati State and St. Thomas Moore. Dr. Breiner earned a track position at the University College at UC where he first fell in love with teaching “at-risk” students. He refers to himself as a “STEMist” and is a firm believer in the saying, “Whether you believe you can or you can’t, you are right!” Dr. Breiner is now a tenured professor at UC and is currently teaching Chemistry 103 to incoming college freshman. He has also received a grant from the NSTA which will help students attending Hughes High School to successfully complete UC courses in order to become effective secondary science teachers.

The purpose of this session was for the RET participants and STEP fellows to obtain a fundamental understanding of research and teaching. Specifically, the expectations were for RET participants to acquire an understanding of what the STEP fellows’ research entailed, and for the STEP fellows to grasp an understanding of what to expect in their teaching endeavors. The session was done in a “round robin” discussion format. Groups consisted of three RET participants, who were not on the same team, and a STEP fellow. Photographs showing groups in action during the seminar are presented below.



Mr. Borowczak (top left) and Fellows Interacting with the RET Participants

The group sessions began with introductions. Each STEP Fellow shared their research project details and the schools they will be student teaching at. The RET participants shared their teaching experiences and any constructive knowledge they had of the particular schools. The RET participants' experiences emphasized to the STEP Fellows the difficulties they may experience in the teaching environment and addressed any teaching questions the STEP fellows may have had. After eight minutes, the STEP Fellows moved to another group and the process was repeated.

The STEP Fellows' career fields were in Aerospace, Biomedical, and Electrical Engineering with research studies in tensegrity, muscle movement utilizing 3D ultrasound to image, cooperative controlling for unmanned aerial vehicles (UAV's), brain to computer interfaces, and fuzzy logics. The teachers were intrigued and fascinated by the details of the shared research data.

The areas of concern expressed by the STEP Fellows were; planning for the unexpected, settling discipline issues, interfacing with boys verses girls, overcoming shyness, and effectively working with their teachers. Some of the "watch outs" shared by the RET participants were; making sure to never be alone in the room with a student/s, understanding that the students will challenge them on a personal and academic level, avoiding verbal confrontations, recognizing and dealing with the differences in the behavior of boys verses girls.

Dr. Andrea Burrows ended the session. She solicited questions and/or concerns from the RET participants and STEP Fellows to close out the session. Participants expressed how valuable the session was and shared some of their insights. Dr. Burrows and Mr. Borowczak then met with the STEP Fellows

to debrief on what they learned by interacting with the RET teachers. Overall, they expressed a better understanding of the K-12 classroom and the needs of teachers.