VII. STANDING COMMITTEES

A. Academic and Student Affairs Committee

Building the Pipeline: STEM Education at UW Bothell

For information only.

BACKGROUND

In addition to the strong STEM programs at UW Bothell, the campus is also focusing considerable attention on improving K-12 Science and Math education which will prepare more students for university studies in STEM fields. This presentation will focus on three UW Bothell projects: "Sally Ride Science Festival", "Kinect Math" and "Building a Bug." All are demonstrations of UW Bothell's commitment to improve science and math learning in schools.

PRESENTERS

Dr. Susan Jeffords, Vice Chancellor for Academic Affairs
Brief Introduction and Sally Ride Science Festival

Dr. Robin Angotti, Associate Professor of Mathematics, Education Program
Kinect Math: Changing the Landscape of Math Education

Mr. Jason Pace, Director Center for Serious Play
Building a Bug

BIOGRAPHIES

Susan Jeffords is Vice Chancellor for Academic Affairs at UW Bothell. Dr. Jeffords joined the University of Washington Bothell in September of 2007 and serves as the chief academic officer and is responsible for advancing the academic and scholarly life of the campus.

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Building the Pipeline: STEM Education at UW Bothell (continued p. 2)

Robin Angotti is Associate Professor of Mathematics in the Education Program at UW Bothell. She is a nationally renowned math educator and recipient of numerous grants that support her work. Dr. Angotti's current research includes: investigating students' mathematical understandings in technological contexts; statistics education; teaching algebra from a functional perspective using multiple representations; and developing students' conceptual understandings of mathematics and preparing teachers to teach in ways that promote and support the development of conceptual understanding.

Jason Pace is the Director of the Center for Serious Play at UW Bothell. Mr. Pace comes to UW Bothell with a wealth of experience in game design, development and marketing. He spent the past five years as a Creative Director and Lead Producer for the Halo game franchise on Xbox, dividing his time between developing new intellectual property with external studios and leading internal projects to grow the franchise in new directions. In addition to Mr. Pace's decade in the games industry he has a long history of connected experience design, with an emphasis on user experience and human-computer interaction. His interest in HCI initially attracted him to game design and has drawn him to projects that present unique interaction challenges.

We have invited students who have participated in these projects:

Jack Chang is currently a graduate student at UW Bothell where he received his B.S. in Computer Science & Software Engineering. He is expected to acquire M.S. in Computer Science & Software Engineering in Oct. 2013.

Jebediah Pavleas received a Bachelor of Science in Computing and Software Systems with a GPA in the top 5% of UW Bothell computer science students in 2012. Mr. Pavleas was the 2012 Chancellor's Medalist.

Developing our Next Generation of Scientists

Presenting ***Bugolution***, the evolution simulator

Jason Pace
University of Washington Bothell

Contributors: Jason Pace, Kelvin Sung, Alaron Lewis, Mark Chen

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The Motivation

The National Research Council's report *Learning Science in Informal Environments* found that developing expertise in science is more than the accumulation of science facts [or even] doing the practice of science; it also means identifying oneself as capable in science roles.[1]

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The Challenge

Studies show student confidence and interest in science drops dramatically in middle school, a critical time period for youth to make decisions about the extent to which they identify with careers in STEM fields . [2]

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The Approach

- Create informal, self-directed experiences designed to develop science identities in middle school students
- Include mobile and desktop components to maximize access and reach
- Enhance with physical exhibits where practical
- Identify and enhance the relationship between fun and educational science experiences

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Bugolution: Mobile

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Bugolution: Online PC

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Maximizing Academic Merit

- All aspects of the ***Bugolution*** experience reinforce active learning and science identity creation
- Experiences are designed to be completely self-directed but are grounded in curricula
- Undergraduate research assistants significantly contribute to design and development
  - Application design builds on classroom competencies
- Analytics provide research team with a wide range of data

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References

1: Committee on Learning Science in Informal Environments; Philip Bell, Bruce Lewenstein, Andrew W. Shouse, and Michael A. Feder; Board on Science Education; National Research Council. *Learning Science in Informal Environments: People, Places, and Pursuits*. The National Academies Press, Washington DC, 2009.

2. National Center for Education Statistics. U.S. Department of Education. National assessment of educational progress. *http://nces.ed.gov/nationsreportcard*. Last Access September 2006.

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