Near-Peer Mentoring as a Tool for Increasing Interest in STEM

Ms. Margaret Hart, Johns Hopkins University

Margaret Hart, Ed. M is the STEM Outreach Advisor at the Johns Hopkins Whiting School of Engineering’s Center for Educational Outreach. She works closely with student groups and leads our robotics outreach efforts. Margaret has a bachelor’s degree in Astronomy from Boston University and a Masters in Teaching and Curriculum from Harvard University. She has worked as a software test engineer, run a high-school outreach program at the MIT Kavli Institute for Astrophysics and Space Research, and taught physics, astronomy and engineering in Cambridge, MA and at Baltimore City Public Schools in Baltimore MD. One of her passions is photography which she has taught to both middle and high school students.

Ms. Christine A Newman, Johns Hopkins University

CHRISTINE A. NEWMAN, M.B.A. Assistant Dean, Center for Educational Outreach, Whiting School of Engineering, Johns Hopkins University 3400 North Charles Street, Baltimore, MD 21218 Phone: (410) 516-4473; email: cnewma13@jhu.edu

Professional Preparation: Virginia Polytechnic and State University B.S. Mechanical Engineering 1989
Marshall University MBA 1995


Collaborative Network for Engineering and Computing Diversity

Near-Peer Mentoring as a Tool for Increasing Interest in STEM
Overview

• Context
• How it Started
• What *IT* is
• Why Do We Do it?
• Money Talks
• Growing & Changing
• Reflection
Beginnings and Connections

Johns Hopkins University
Whiting School of Engineering

Social Entrepreneurship class

STEM Outreach Center

Summer planning

Pilot Year at Middle School

Baltimore City
Program Structure

Baltimore City

Mentored Schools

Maryland Science Olympiad Schools
Near Peer Mentoring
Expansion

Growth of Science Olympiad Teams

- Mentored Teams
- Baltimore City MSO Teams

<table>
<thead>
<tr>
<th>Year</th>
<th>Mentored Teams</th>
<th>Baltimore City MSO Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-2013</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2013-2014</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>2014-2015</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>2015-2016</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>2016-2017</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>2017-2018</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>2018-2019</td>
<td>17</td>
<td>25</td>
</tr>
</tbody>
</table>
Member motivations

Previous SO Experience

- Yes: 75%
- No: 25%

Considered Mentoring When Scheduling Classes

- Yes: 90%
- No: 10%
Member motivations
$5,000 from initial grant
2012-2016

$15,000 from NSF grant
2015-2017

$10,000 for VISTA
2015-2017

$13,000 from JHU
2017-2018

$23,000 from JHU
2018-2019

Sept 2012
Sept 2013
Sept 2014
Sept 2015
Sept 2016
Sept 2017
Sept 2018
Sept 2019
Group leadership

Founder left before group started 2012

1st gen leadership 2012-2015

2nd gen leadership overlap 2012-2016

3rd gen leadership overlap 2014-2017

4th gen leadership overlap 2014-2018

5th gen leadership overlap 2015-2019

Growing Pains

2nd gen leadership
2013-2015

VISTA

3rd gen leadership
2013-2017

Lessons learned

Community partnerships are complex and ever-changing and need oversight

College students may not realize their limits until it’s too late

Strong student leadership and role modeling