The effect of participation in undergraduate research on soft skills and career plans

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Introduction

• Undergraduate research has been shown to increase confidence in research protocol and technical skills.
  – Limited research clarifying how participation affects other soft skills that employers look for

• Limited research on how participation in undergraduate research affects undergraduates career paths.
Objective

• To determine how involvement in undergraduate research enhances common soft skills and affects future career plans.
Survey

- Mixed Survey by e-mail
- 26 participants
- Ages 18-45+
- Urban (23%), Suburban (27%), Rural (50%)
- Male (23%) and Female (77%)
- 9 departments and 11 universities

Table 18: Please indicate an estimation of your feelings regarding the following statements by placing an X in the appropriate boxes below. Please mark a box for both sections: Before participating in undergraduate research and After participating in undergraduate research.

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Research</td>
<td>Undergraduate Research</td>
</tr>
<tr>
<td>Very Low</td>
<td>Low</td>
</tr>
<tr>
<td>Interest in conducting research</td>
<td></td>
</tr>
<tr>
<td>Confidence in executing research protocol</td>
<td></td>
</tr>
<tr>
<td>Ability to analyze data</td>
<td></td>
</tr>
<tr>
<td>Interest in making a career in research</td>
<td></td>
</tr>
</tbody>
</table>

Table 22: Please indicate with an X in the boxes below an estimation of how completing undergraduate research affected you with regard to each of the following statements.

<table>
<thead>
<tr>
<th>Negatively</th>
<th>No Effect</th>
<th>Mostly Positively</th>
<th>Positively</th>
<th>Very Positively</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Clarification of career plans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your credentials or qualification for future employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation for future career/graduate school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results

Interest in Conducting Research

Interest in Research Career
Results

- Written Communication
- Oral Communication
- Accurate Communication
- Time Management

Before: 0 0.5 1 1.5 2 2.5 3 3.5 4
After: 0 0.5 1 1.5 2 2.5 3 3.5 4

Legend: Before - Blue, After - Red
Results

<table>
<thead>
<tr>
<th>Item</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to Prioritize</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to Ask Relevant Questions</td>
<td></td>
<td></td>
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<tr>
<td>Strategic Thinking</td>
<td></td>
<td></td>
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<tr>
<td>Decision Making</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent Thinking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Before and After comparison graph
Results

Ability to Make Connections to Previously Learned Coursework

Ability to Produce Quality Coursework

Confidence in Ability to Complete Higher Level Courses

Desire to Continue Education

Before  After

0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5
Results

- 73% of participants stated that participation directly changed their future plans
- 100% stated that involvement in undergraduate research benefitted their college experience
Comments

• “Opened my eyes to new education and career opportunities”
• “Introduced me to techniques I will need to perform as a veterinarian”
• “I was able to network and connect with other faculty within my department.”
• “Allowed me to confirm my desire to want to go to grad school”
• “My skills have helped me in my internships and given me a left up on my classmates”
• “Became more concise and precise with my words to share information.”
• “I truly believe all students should try it. It has been the best experience!”
Conclusion

• Participants felt involvement in undergraduate research improved their communication skills, ability to make decisions, connect with classwork, and overall improve their learning experience.

• Undergraduate research participation encouraged students to pursue higher education or follow a research based career path.