

Long-Term Impacts of Project-Based Learning

Alumni Survey Findings

Rick Vaz, Director
Paula Quinn, Associate Director
WPI Center for Project-Based Learning

Research questions: What are the long-term professional and personal impacts of experiential project work on the careers and lives of alumni? What factors influence those impacts?

Group studied: A sample of over 10,000 alumni of Worcester Polytechnic Institute's project-based curriculum, classes of 1974 to 2011. Survey yielded a 25% response rate, giving a 95% confidence level.

Curricular description: Each alumnus completed two nine-credit-hour intensive academic projects (not course-based) involving real-world problems. Projects were completed in small teams under faculty guidance, often for external organizations. Over half of students complete at least one project off campus; about 40% complete one overseas.

Junior year interdisciplinary project: a problem involving social issues and human needs

Senior year capstone project: a significant research or design effort in the major area

Intended learning outcomes: Critical thinking; written and oral communication; research skills; application of prior knowledge in authentic settings; collaborative problem solving; interdisciplinary and contextual understanding.

Areas of greatest reported long-term impact

- **Professional abilities:** Taking responsibility for one's own learning, developing ideas, integrating information, solving problems, understanding ethical responsibilities, using current technology.
- **Interpersonal and communication skills:** Teamwork, project management, leadership, written and spoken communication, communication, interpersonal dynamics, professional interactions.
- **Professional advancement:** Succeeding in business or industry, gaining knowledge to inform future plans.
- **World views:** Understanding connections between technology and society, awareness of how one's decisions impact others, awareness of global issues, understanding of other cultures.
- **Personal impacts:** Developing a stronger personal character, achieving work/life balance, feeling connected to the university community, having one's life enriched in non-academic ways.

Impact factors

- **Alumni who completed projects away from the campus** reported greater impact in 33 of 39 areas, with notable differences in interpersonal and communication skills, world views, and personal impacts.
- **Females** reported more positive impacts than males in 36 of 39 areas, again with notable differences in interpersonal and communication skills, world views, and personal impacts.
- **Engineering alumni** reported more positive impacts in 29 of 39 areas than alumni of other fields, including all 24 items related to professional abilities and advancement, interpersonal skills, and communication skills.

Long-Term Impacts of Project-Based Learning (n=2532)

| Professional Impact Area | % Reporting Positive Impact |
|--|------------------------------------|
| Taking responsibility for one's own learning | 89 |
| Developing ideas | 89 |
| Solving problems | 88 |
| Having effective professional interactions | 87 |
| Functioning effectively on a team | 86 |
| Effectively managing projects | 86 |
| Writing clearly and effectively | 83 |
| Succeeding in business or industry | 78 |
| Being an effective leader | 78 |
| Speaking clearly and effectively | 76 |

| Personal Impact Area | % Reporting Positive Impact |
|--|------------------------------------|
| Developing a stronger personal character | 87 |
| Feeling one's own ideas are important | 79 |
| Feeling able to make a difference | 66 |
| Having an enriched personal life | 64 |
| Feeling connected to WPI | 62 |
| Achieving work/life balance | 53 |

| Impact on World Views | % Reporting Positive Impact |
|--|------------------------------------|
| Viewing issues from different perspectives | 79 |
| Understanding connections between technology and society | 77 |
| Understanding global issues | 55 |
| Understanding people of other cultures | 51 |
| Developing respect of cultures outside one's own | 49 |

References

1. Heinricher, A., P. Quinn, R. Vaz, and K. Rissmiller, "Long-term Impacts of Project-Based Learning in Science and Engineering," *Proceedings of the 2013 ASEE Annual Conference*, Atlanta, Georgia, June 2013.
2. Vaz, R., P. Quinn, A. Heinricher, and K. Rissmiller, "Gender Differences in the Long-Term Impacts of Project-Based Learning," *Proceedings of the 2013 ASEE Annual Conference*, Atlanta, Georgia, June 2013.
3. Vaz, R., and P. Quinn, "Long Term Impacts of Off-Campus Project Work on Student Learning and Development," *Proceedings of FIE 2014*, Madrid, Spain, October 2014.