

***Beyond Broader Impacts:
University Infrastructure for
Community Engagement***

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BI at Northwestern

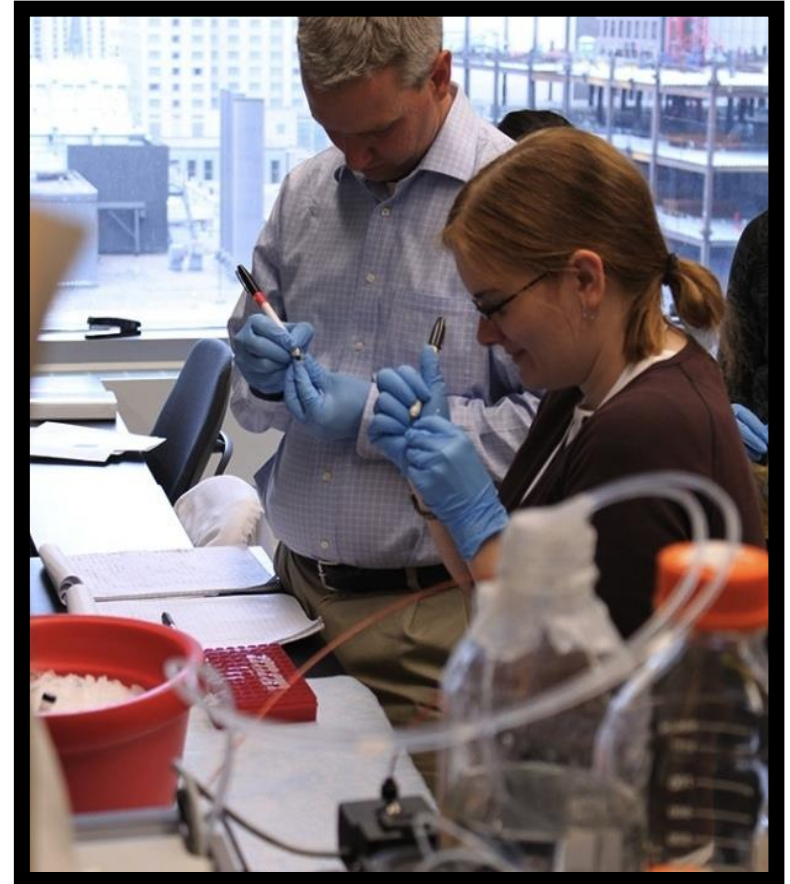
- benefit our communities of Evanston and Chicago – and the world
- forward Northwestern’s strategic plan and community engagement efforts - ***Good Neighbor, Great University***
 - Mutually beneficial
 - Common concerns and priorities
 - Action-oriented
 - Work for equity & are inclusive
 - Critical thinking & inquiry
 - Sustainable and scalable

“Northwestern is fortunate to be located in Evanston, one of the best college towns in the country. By working together, Northwestern, the city, the school districts, and many other organizations help to make Evanston a strong community and wonderful home for the university”

President of Northwestern University
Morton O. Schapiro

BI Outcomes may include:

- Advancing discovery while promoting teaching, training and learning
- Broadening participation of underrepresented groups
- Enhancing research & education infrastructure & public engagement
- Improved well-being of individuals in society
- Increased partnerships between academia, industry, and others



How can BI be accomplished?

- through the research itself
- through the activities that are directly related to specific research projects
- or through activities that are supported by, but are complementary to, the project.
- **We go beyond research projects...**



Guiding Questions for BI and beyond

- What is the potential to benefit society/community?
- Do the activities suggest creative, original, or potentially transformative concepts and outcomes?
- Is the plan aligned? Mutual benefit?
- Is the plan/initiative well-reasoned, well-organized?
- Are the right partners involved and engaged?
- How well qualified is the individual, team, or organization?
- What about assessment?
- Are adequate resources available/budgeted for?

NSF and Beyond...



Institutional Mission

Private Foundations



CORPORATE FOUNDATIONS

Benefits to Researcher/Institutions

- Enhances & bridges research, teaching & service
- Learning & professional development
- Increases competitiveness for funding
- Attract Faculty & Students
- Supports Institutional Mission & Strategic Plan

Benefits to Partners/Community

- Brings resources & expertise
- Builds Capacity
- Enhances learning & service
- Role Models & Near Peers
- Closes the gap between “school” & real world
- Excitement for STEM & other fields
- Improved Scientific Literacy
- Supports community development & education efforts

Mutual Benefits

- Mutually-beneficial, long-standing partnerships
- Promising Practices, Models for University – Community Partnerships
- Leverages & maximizes resources
- Sustainability & Scalability
- Positive Impact on Community

Northwestern Infrastructure and Support for BI & Engagement

- **Office for Community Education Partnerships (OCEP)**
- **Science in Society (SiS)**
- **Searle Center for Advancing Teaching and Learning**
- **Office for Research**

Northwestern

OFFICE OF COMMUNITY EDUCATION PARTNERSHIPS

School of Education and Social Policy

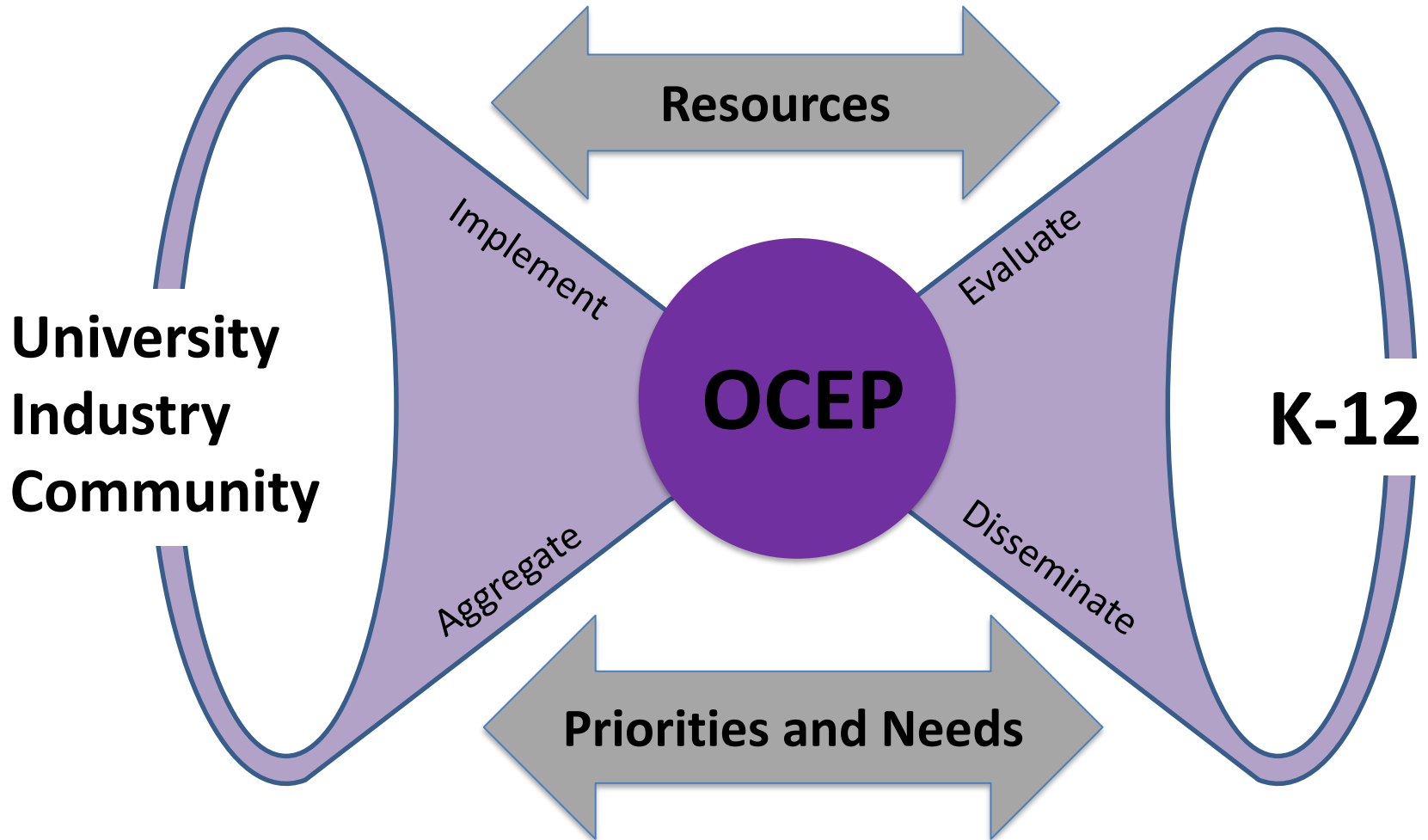
OCEP's mission is to promote, build capacity for, and engage in actionable scholarship and partnerships that improve learning and well-being in our home communities of Evanston and Chicago, and beyond.

OCEP

- 3 Pillars:
 - Scholarship
 - Infrastructure & Capacity Building
 - Community Partnerships
- School of Education and Social Policy (SESP)
- 300 schools, 1,000 teachers, and 100,000 students in the Chicago area
- 10+ existing projects
- Faculty, Students, Community (K12, Industry, Informal Ed, Funding Community, Policy-makers)
- Federal, Foundation, Corporate Funders
- Founding Member of NABI



OCEP: catalyzing partnerships, amplifying impact

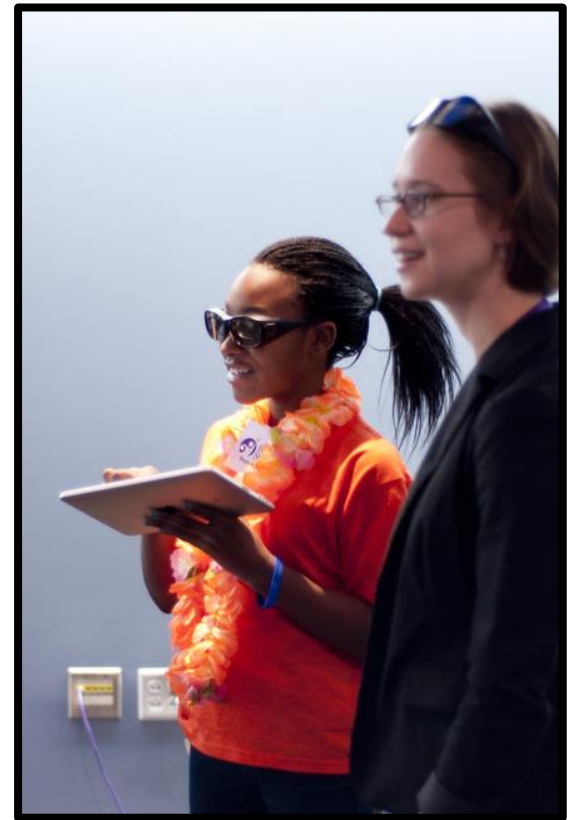


Collaboration with University & Community

OCEP collaborates with the university and community to design and promote BI and engagement activities

Specifically, OCEP:

- Consults on BI and community engagement plans
- Provides pre-award support—development of BI and engagement plans and partnerships during proposal/planning stages
- Delivers post-award support—implementation and distribution of plans and activities
- Evaluates outcomes and impacts



OCEP Facts – since 2010

Large Center Grants

- NSF Engineering Research Center (ERC), Science and Technology Center (STC), Sustainability Research Network (SRN), & Smart and Connected Communities & NIH Superfund
- 6 full proposals for center grants, 3 site visits, one reverse site visit, one virtual site visit
- 4 ERC pre-proposals supported

NSF CAREER Grants:

- 26 to date
- 9 Funded – 1 Communication, 4 Weinberg, 4 McCormick
- 40% Success Rate

Other Faculty Grants

- 19 other faculty grants supported (NSF, NIH, NOAA, NASA)
- 9 awarded, 10 denied

OCEP Grant Activity (2010-2017)

	Faculty	OCEP	Awarded	Overall Success Rate	OCEP Success Rate
Totals	55	85	75	53%	70%

***BI and Engagement at NU:
examples from OCEP***

PI Evan Scott – BI on NSF Career Grant

- **Goal:** to expose students, particularly underrepresented minority (URM) and female students, teachers, and parents to the field of engineering, focusing on biomedical engineering.
- **Objectives:** to provide URM and female students, teachers, and parents with
 - 1) meaningful and sustained connections to URM scientists and engineers
 - 2) to offer targeted learning and mentoring opportunities and support to help advance the STEM pipeline
- **Capacity** – OCEP, NU-ETHS Partnership Office

BI Activities

- **STEM Speakers for Students (S³):** guest lectures, co-teaching in science and engineering classes at ETHS, in partnership with McCormick School of Engineering.
- **STEM Pathways for Parents:** discussion groups with parent groups including the ETHS Black Advocacy Network (E-BAN) and the Latino Advisory Committee (LAC).
- **STEM College and Career Coaching (C³):** mentorship, college advising, assisting in exploration and education around potential career pathways. Through STEM courses and WiSTEM, coordinate with College and Career services at ETHS
- **Kits n' Cats@NU and Biotechnology Day:** leveraging existing OSEP programs and activities



PI Woodruff to the Baxter Center for Science Education (BCSE)

NIH – large center/multi-institutional grant

- Oncofertility concepts and biotech skills to teach high school biology, also for advanced electives
- Initial BI activities
 - Research experiences for HS girls
 - Curriculum development
 - Teacher training
- Leveraged NIH funding into corporate investment - \$350K+ per year from Baxter International Inc.
 - **Baxter Center for Science Education**
- Corporate \$ sustaining program and increasing impact

Current BCSE Activities

Baxter Center for Science Education – Chicago Public Schools (CPS)

- Development of lab activities
- Teacher professional development
- “Baxter Boxes” – lab equipment & loaner program
- Biotech elective courses – scaling across CPS
- Coaching and mentoring
- 275+ teachers per year, thousands of students
- Engages Baxter and NU scientists & students
- <https://bcse.northwestern.edu/>



NU-ETHS Partnership Office

- Enhance educational opportunities of students on both campuses
- Priorities: diversity in STEM Pathways; STEAM; College Access; and Identity and Social Consciousness
- Capacity: OCEP and Neighborhood and Community Relations
- Funded by Northwestern

“Evanston is a diverse town with diverse options but what holds us together is our ability to agree on the importance of K-12 education. Northwestern’s decision to enhance learning at ETHS is the absolutely right decision.”

School District 202 Superintendent
Dr. Eric Witherspoon
(on the NU-ETHS Partnership Office)



Data Partnerships

- CPS, Evanston Districts 65 and 202
- Provides innovative research on issues important to school districts – policy issues, learning, and health
- Data sharing agreements
- Researcher and district-initiated projects
- 2 full-time data analysts
- Capacity: SESP/OCEP, funded by internal funds and Spencer Foundation
- <https://osep.northwestern.edu/data-partnerships.html>

Promising Practices for Achieving BI and Beyond

- Institutional and individual commitment and culture
- Infrastructure
- Expertise
- Internal funding
- Partnerships, consulting, brokering
- Training and professional development
- Leveraging R&D into other funding, vice versa
- Policies and procedures
- Campus-wide mission
- Engages university & community – faculty, staff, students, community
- Evaluation – evidence of impact
- Sustainability and scalability
- Aligned partnerships
- Communication

Future Directions...

Northwestern University
PK-20 Workgroup

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Resources



NSF 2018 Proposal and Award Policies and Procedures Guide (PAPPG)

https://www.nsf.gov/pubs/policydocs/pappg18_1/nsf18_1.pdf

NSF Website on BI

<https://www.nsf.gov/od/oia/special/broaderimpacts/>

NSF Perspectives on BI

https://www.nsf.gov/od/oia/publications/Broader_Impacts.pdf



AAAS

Resources on BI and Communicating Science

<https://www.aaas.org/>

National Alliance for Broader Impacts –

www.broaderimpacts.net

BI Guiding Principles and Questions for NSF Proposals

https://broaderimpacts.net/wp-content/uploads/2016/05/nabi_guiding_principles.pdf

