



# STEM TRAIL Center

December 2019, Volume 1, Issue 5

## IN THIS ISSUE

Team Building Strategies

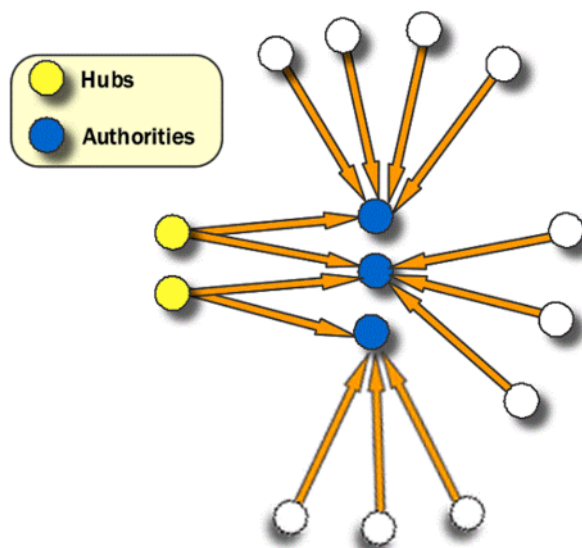
Social Network Analysis

How does the Center support pre-award projects?

Programming and Center Successes

From the OSE Director

Resources to Share



## Data-driven Decision making surrounding Team Building and Cohesive, Collaborative Impact

It's the time of year to reflect on where we've been and where we're going. The calendar year 2020 will be ripe with metaphors surrounding vision, lenses, and reflection. But as we prepare for the holiday season and some rest and relaxation, we would like to share with you some data from our first 6-months in existence. Therefore, this issue is filled with information about where we are as a Center, and where we hope to go. We hope that you'll join us for each step of the way, and to give us advice on where we can evolve to best meet the needs of our stakeholders and constituents, and continue to elevate human potential through lifelong learning. With that, let's jump into the data!

The UNO STEM TRAIL Center is led by a lead dean, director, associate director, and assistant directors, each with a slightly different charge. At this time, we have received no state-aid toward the Center, and have instead relied 100% on extramural resources, and volunteerism, to move this idea from conception to reality. This is in large part to a 66-member STEM leadership team that spans every single College on the UNO campus, as well as community members from across the Omaha metropolitan area. We continue to add new members, including those from Iowa and other states to our lists. We welcome everyone to the STEM table. We further rely on a 6-member STEM Council to give us candid advising. The Center to-date has received approximately \$3 million in extramural support, and as of 12/19/19 has \$12.56M pending in submitted proposals. This outpouring of support for the Center is largely what we heard as we conducted Strategic Planning in 2017-2018 with so many groups. We heard you, and we aim to support your work in STEM via this infrastructure so that we can elevate more people through lifelong learning. At the Center, people are our top priority. Thanks to the expertise of Dr. Tracie Reding, we now have information about effective team building for the greatest strategic impact and sustainability as well, see pg 2 for these data.

*We exist to elevate human potential through lifelong learning.*



## Social Network Analysis (SNA) as a way to identify hubs for collaboration and mentorship

Social Network Analysis (SNA) is the application of differential equations, Boolean theorem modeling, and overall graph theory, and understanding of relationship flows between people, organizations, or computers. These maps, as shown on page 1 and below (courtesy of <http://www.fmsasg.com/SocialNetworkAnalysis/>) highlight degree of association within a closed-loop network.

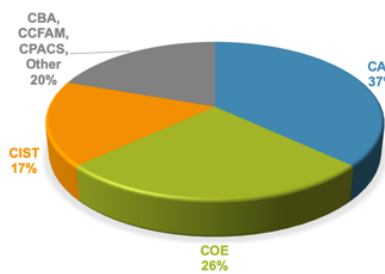
A critical question for leaders in any organization is, “who is the catalyst?” or “where are the hubs of greatest influence?” We can utilize these “hubs” as mentors for key networks to generate sustainability and long-term success through that mentorship model of Sponsorship. If you have ever questioned if a key initiative has a missing component (be that a person, or group of people), these type of data can address that question. Furthermore, when a new person gets hired and joins a team, it can be challenging to sort out who should lead which projects, and where expertise is best placed (for both the individual and the team). Similarly, SNA can address this question.

As we examined the past 5-years of work within the STEM leadership team, a key question was “how is the success of this team dependent or independent of social network nodes?” After completing a thorough study of this closed-loop network (with representation across Colleges, Panel A below), Dr. Reding identified several key findings. First, is that the team is highly connected, as evidenced in Panel B. And, importantly, that the average geodesic distance is 1.53, meaning that on average each actor (participant) is connected to every other actor through less than 2 intermediaries.

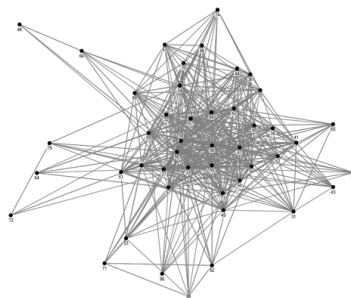
Furthermore, there exist 3 across that appear in the top quartiles of multiple interaction levels, thus identifying the “influencers” for resources and knowledge acquisition to better foster between-ness centrality.

These data will help us to best build teams to in order to effectively engage each individual's talents to their full potential, advise on core mentoring networks for new students, faculty, or staff, and aim for longer term sustainability.

A. Respondent demographics by College

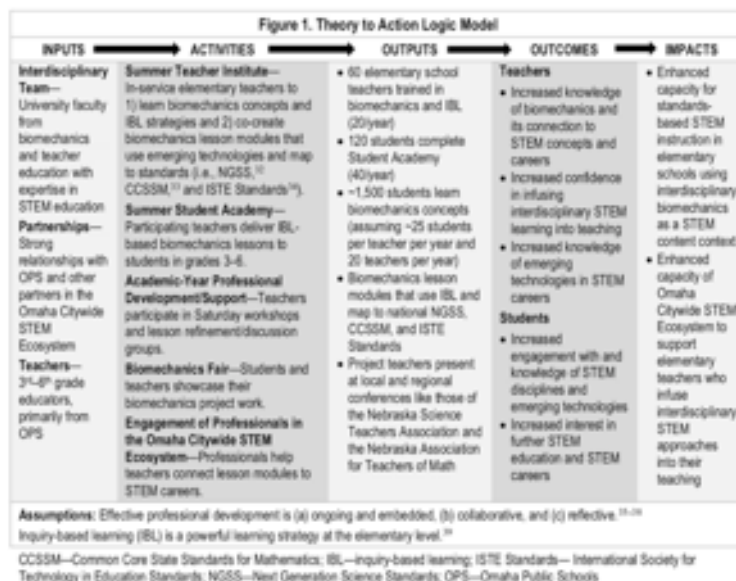


B. All levels interaction-sociogram



Would you like to include Social Network Analysis to help build or mobilize your team more effectively? We'd love to work with you:  
[unostemtrailcenter@unomaha.edu](mailto:unostemtrailcenter@unomaha.edu)

## How does the Center support projects pre-award?



As part of the **Grant Seminar Series** of the STEM TRAIL Center is helping faculty and staff with logic modeling. The next Grants Seminar is January 24<sup>th</sup> at Noon at the Alumni House and will include that topic as presented by Dr. Grandgenett and a grant writer consultant. Remember that a good “logic model” presents the overall logic of an initiative and important elements in one page so that potential colleagues, partners, administrators and funders can help to refine it and to potentially support the idea. It is a one-page communication tool.

The STEM TRAIL Center is providing free assistance from a technical writer and also provides editing by the group, to help work on a logic model with you if you wish. Above is an image of a typical logic model and is from the BODYMODELS Project (PI is Dr. Grandgenett) that was funded by the National Science Foundation. You do not need to be a part of a grants seminar to access this important Center service, but it is helpful as the sessions include time for such work. Remember also that the logic model does not need to be a grant, but can be an engaging student experience, new course, student retention effort, community partnership, etc. A typical logic model includes the following elements but can vary widely based on the initiative and what needs to be showcased or logically understood.

### Typical Logic Model Elements:

1. The name of your initiative
2. Key need(s), reason(s), or “why UNO” for your initiative
3. What is your **Key** overall Goal or Goals?  
*(or to save space you can sometimes put those elsewhere as in the example)*
4. What do you want to do exactly in focused objectives supporting your goal  
*(if long...those can also be put elsewhere as in the example)*
5. Strategies or activities: How will you undertake your objectives?
6. What short-term or immediate outcomes will you have?
7. What long-term impacts do you expect?

If you are interested in this STEM TRAIL Center service, please email Dr. Grandgenett at [ngrandgenett@unomaha.edu](mailto:ngrandgenett@unomaha.edu) to discuss possibilities and to receive samples.

## Upcoming Opportunities & Events

### Award Notices and Exciting Highlights

We're halfway through year 1 of the Center. At this time, faculty across 4 Colleges have submitted grants through the STEM TRAIL Center, with \$12.56M pending at this time.

Planning a grant submission for 2020? Reach out with any requests early: [unostemtrail@unomaha.edu](mailto:unostemtrail@unomaha.edu)

Are you submitting your first proposal and need help with a Logic Model, core components of a grant, or other formatting assistance? Do you need help finding partners for your Broader Impacts for an NSF proposal? Are you looking for businesses that would also be interested in collaborating because of shared interest in a platform, software, or new technology? Reach out!

Maybe you've spent 2019 developing a new technology (educational, technology-based, or otherwise) and you would like help navigating the intellectual property process, we're here to help connect you with the right groups for your exciting next steps! (Note: Center takes NO ownership in IP, nor new companies, we aim to instead serve as a network to connect resources)

### Remember the Friday Seminar Series!

Join us on Fridays at noon, usually in the Thompson Alumni Center's first floor meeting space for weekly programming. See calendar to RSVP and for location updates. For event parking passes: [tinyurl.com/UNOSTC19](http://tinyurl.com/UNOSTC19)

Join our mailing list!

*STEM TRAIL Center:* This listserv goes out related to all those interested in STEM TRAIL Center activities.

[unostemtrailcenter@unomaha.edu](mailto:unostemtrailcenter@unomaha.edu)

Email: Nik at: [nstevenson@unomaha.edu](mailto:nstevenson@unomaha.edu)

*UNO STEM Colleagues:* Networks among faculty interested in STEM related opportunities:

[STEMColleagues@unomaha.edu](mailto:STEMColleagues@unomaha.edu)

Email: Jim at: [jbwolfe@unomaha.edu](mailto:jbwolfe@unomaha.edu)

*WiSTEM Pro^2:* Gender equity, advancement, diversity  
Wistemp2 <[unowistemp2@unomaha.edu](mailto:unowistemp2@unomaha.edu)>

Email: Kelly at [kgomezjohnson@unomaha.edu](mailto:kgomezjohnson@unomaha.edu)

*Omaha STEM Ecosystem:* Connects to city STEM collaborators

Moderated by Julie Sigmon

To join email: [julie.sigmon@omahazoo.com](mailto:julie.sigmon@omahazoo.com)

### Message from OSE Director and Funding Updates

FROM THE DIRECTOR OF THE OMAHA STEM ECOSYSTEM:

As we get ready to close out the year, the Omaha STEM Ecosystem is thankful for the support from our community partners and the tremendous work accomplished to transform Omaha into a robust STEM community to grow our talent pipeline.

A few of our highlights include the commitment of three new organizations joining as Founders: Clarkson College, AIM Institute, and Union Pacific. In addition, the five action committees, with over 72 members, have actively engaged our community as hosts to several community conversations around critical skills (Gallup Campus), Math Teaching Circles for Educators (Olsson, UNO, Why Arts?, OHDZA, MCC, BVH Architects ), and culminating with the October summit: *Charting a Course for Success: Internship Models For Tomorrow's Career*.

The value of these community events brings together speakers, panels, brainstorming and networking opportunities to create pathways through experiential learning, quality STEM Programs, and job-connected mentoring/internships that create lasting career opportunities.

#### Funding Model for the Center—Update:

We are all actively pursuing funding for the Center and we always welcome feedback on ways to further support the Center. One such strand of support to the Center is via F&A (indirects) returned to the Center starting in 2020. We aim to utilize these returns to support staffing of the Center, and for providing seed dollars pre-award to assist with your projects.

Interested in donating? Please consider your year-end contributions to our UNO STEM TRAIL Center Excellence Fund #01149830 at the Nebraska University Foundation:

Checks can be mailed to:

University of Nebraska Foundation

PO Box 3465

Omaha, NE 68103-0465

and reference: **01149830** - UNO STEM TRAIL Center Excellence Fund

Or gifts can be remitted electronically.

**We look forward to working with you on your projects and goals in 2020!**





## Great resources to share, from our desks to yours:

### Press Releases or Articles:

NSF Appropriations News, 2019:  
<https://www.nsf.gov/about/congress/>

STEM Congressional Highlights, 2019:  
<https://www.nsf.gov/about/congress/nsf-congress-highlights.jsp>

Graduate STEM Education for the 21<sup>st</sup> Century (National Academies Press):  
<https://www.nap.edu/catalog/25038/graduate-stem-education-for-the-21st-century>

English Learners in STEM Subjects, 2018 (National Academies Press):  
<https://www.nap.edu/catalog/25182/english-learners-in-stem-subjects-transforming-classrooms-schools-and-lives>

Discipline-based Education Research (National Academies Press):  
<https://www.nap.edu/catalog/13362/discipline-based-education-research-understanding-and-improving-learning-in-undergraduate>

### Books:

- *The Effective Executive* by Peter Drucker
- *The Impact of Confidence: 7 Secrets of Success for the Human Side of Leadership* by Timothy Ressmeyer
- *Improving How Universities Teach Science* by Carl Wieman
- *Networking for Nerds* by Alaina G. Levine
- *Make It Stick* by Brown, Roediger III, & McDaniel
- *Turning the Flywheel: A Monograph to Accompany Good to Great* by Jim Collins
- *The 5 Languages of Appreciation in the Workplace: Empowering Organizations by Encouraging People* by Gary Chapman and Paul White

*Do you have a favorite book or article? Please share with us on Twitter @UNOSTEMTRAIL to be featured here*

**STEM TRAIL Center** [unostemtrailcenter@unomaha.edu](mailto:unostemtrailcenter@unomaha.edu)

6001 Dodge Street, Thompson Alumni Center 204B & C | Omaha, NE 68182

402.554.2917 | [unomaha.edu](http://unomaha.edu) [stemtrail.unomaha.edu](http://stemtrail.unomaha.edu)