Creative Convergence

Conducting a systematic review project through cross-institutional, distance collaboration
Objective

To reflect on a cross-institutional systematic review project:

What are effective collaboration methods for geographically dispersed research teams?
We compared our experiences to literature on collaborative research:

- Benefits
- Challenges
- Team Characteristics
- Success Factors
- Best Practices
Benefits

Our Project
Systematic Review on:
Effective Library Instruction for
EBP Health Sciences Education

Our Team Experience

New Perspectives
International Networking
SR Experience
Build Technical Skills
Publication Opportunities
SR Project Specific Challenges

- Ambiguity of concepts
- Duplicate citations
- Lack of abstracts
- Varied Educational Interventions
- Copyright questions
Team Collaboration Challenges

Large, Dispersed Team
Diverse knowledge & Experience
Geography
Methodology Development
Ambitious Timeline
Work/Life Conflicts
Decisions - Maintaining Consistency
Lit Review

What is being written about effective methods for cross-institutional, distance research team collaboration, including:

- dispersed locations and time zones?
- different institutional resources and policies?
Searching the lit

After trying various options to get to literature *about* how research teams collaborate effectively, especially across institutions and space:

research collaboration
cross institutional collaboration
collaborative research
online collaboration
Team Science!
“The rapid proliferation of scholarly knowledge and the increasing complexity of social and scientific problems have prompted growing investments in team science initiatives.”

Team-based research with multiple disciplines may accelerate progress towards resolving complex societal and scientific problems.

Hall, et al., 2012

Shift in how science is being conducted - teams increasingly dominate in production of high-impact, highly cited science; teams are growing in size, and are increasingly located across university boundaries rather than within them.

Borner, et al., 2010
How might Med Libs participate in Team Science?
SciTS

Why developed

Definition

Momentum
Characteristics of Team Science

Lit review
Large teams - from a few to 50, to 200, to more!
Multiple projects
Multiple disciplines
Different departments, institutions, and geographic locations
Diverse goals - discovery, training, translational/public health, policy

Team
Large team
Diverse knowledge and experience
Geography
Ambiguity of research focus
Methodology discussions
Benefits
Factors for success

**Intrapersonal** (internal motivations and individual attitudes)
**Interpersonal** (interactions among team members - communication, learning, work jointly to accomplish goals)
**Physical environment** (spatial distribution)
**Technological** (technical infrastructure and support)
**Organizational** (influence of team member’s institution as well as make-up and org of team itself)
**Political/Societal**

Recommended Best Practices: Attitudes

Be open and adaptable
Be willing to learn and participate
Communicate
Address and resolve conflicts
Persevere through difficulties

Additional Team & Lit Review Insights
Top 3 Recommendations for Team Research Sponsors

Train team leaders

Facilitate initial f2f meeting

Provide teams with technological support
Tools - What we used

Communication

- Email
- Online meeting software - ...(often audio only)
- Recommendation: Use video options when possible, include asynchronous methods such as Google group, discussion board

Record Keeping and Production

- Google Drive
  - Documents
  - Spreadsheets
- Wiki - some use at beginning, but set up and use had higher barrier than Google Drive options
- Consider: project management platform

Citation Management

- EndNote and EndNote Web
- Recommendation: Consider platforms that allow for comment, annotation, and full text sharing within restricted group
## Project Planning

### Example timeline at project level

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Project Planning
Example task-specific timeline

Example:

1. Preparing a search strategy for 1 database (LISTA via EBSCOHost) based on the group’s model strategy for PubMed/Medline
   ○ 3 hours (mainly due to need to adjust MeSH to appropriate LISTA headings)
2. Conduct 1 database search and post the results for the group
   ○ 15 minutes
3. Set up an EndNote Web account and become familiar with using it
   ○ 30 minutes
4. Title/Abstract Review of 100 abstracts
   ○ 1.5 hours
5. Full Text Review of 10 articles (for inclusion/exclusion)
   ○ 1.5 hours
   - Additional time to pull full text / request via ILL: 30 minutes with possible wait time of 1-14 days to receive ILL response
6. Data extraction for 1 article
   ○ 30 minutes
7. Critical appraisal for 1 article
   ○ 15 minutes

Example expectation - title/abstract review time for 500 results: 7.5 hours
Tools: Communication

Consider Online Education recommendations

- Asynchronous
  - Discussion forum
  - Email list - Google group

- Synchronous
  - Video, audio, chat meeting options
Tools: Communication

Consider Online Education recommendations

- **Stable**
  - Group project website, wiki, or planning platform
  - Deadlines and goals on front page

- **Automated**
  - Shared calendar with reminders
Tools: Project Planning

Prepare Yourself for Team Science

Template of questions to consider in preparation

Questions for Scientific Collaborators

Although each research project has unique features, certain core issues are common to most of them and can be addressed by collaborators posing the following questions:

Overall Goals
1. What is the overall vision for the collaboration?
2. What are the scientific issues, goals, and anticipated outcomes or products of the collaboration?
3. When is the collaboration over?
4. When is the project over?

Who Will Do What?
1. What are the expected contributions of each participant?
2. Who will write any progress reports and final reports?
3. How, and by whom, will personnel decisions be made? How and by whom will personnel be supervised?
4. How and by whom will data be managed? How will access to data be managed? How will you handle long-term storage and access to data after the project is complete?

Authorship, Credit
1. What will be the criteria and the process for assigning authorship and credit?
2. How will credit be attributed to each collaborator's institution for public presentations, abstracts, and written articles?
3. How and by whom will public presentations be made?
4. How and by whom will media inquiries be handled?
5. When and how will you handle intellectual property and patent applications?

Contingencies & Communicating
Tools

Google

● Sites
  ○ Project templates
● Groups - discussion and email
● Drive - documents, spreadsheets, forms, presentations
● Calendar - reminders, list-calendar syncing
Tools
Team Science Toolkit

www.teamsciencetoolkit.cancer.gov
Tools

Team Science Toolkit

About Us

What is HUBzero?

HUBzero is an open-source software platform for building powerful web sites that support scientific discovery, learning, and collaboration. It is built around the concept of "team science." We call these "Hubs" because each site becomes a focal point for its user community.

HUBzero was originally created by researchers at Purdue University, in conjunction with the NSF-sponsored network for Computational Nanotechnologies. It supports dozens of hubs across a variety of disciplines, including cancer research, pharmaceuticals, biology, microelectromechanical systems, and many more.

Just Another Web Site? Why Not Use a WordPress Blog?

HUBzero includes a powerful content management system built to support scientific activities. Blogs, wikis, and forums on a Hub can be easily created and used to share insights, research findings, and other information. Interactive digital resources such as simulation/visualization tools can be embedded into web pages, and other scientific high-performance computing (HPC) facilities can be easily integrated.
Tools

Systematic Review Toolbox
http://systematicreviewtools.com
Tools - Data

Translate what you learn to support your users
Further questions

Possible roles for librarians in support of team science

- Data management
- Collaboration methods
- Researcher networks
- Knowledge sharing and transfer
- Open access support
- SciTS research
Image Sources

- Map image created by Alison Ferrell and Genevieve Gore
- Project timeline example created by Genevieve Gore
- All screenshots taken by Ginny Pannabecker using the Mac Grab utility application or Windows Snippy application.
- Additional photo and image sources*
  - [https://flic.kr/p/dUwB97](https://flic.kr/p/dUwB97) - CC-BY photo, Education Experts, AJ Cann
  - [https://flic.kr/p/dxvmRd](https://flic.kr/p/dxvmRd) - CC-BY photo, SAM team celebrates landing, NASA Goddard Space Center
References

Lit Review


Tools

Google Sites
http://www.google.com/sites/overview.html

NIH - Prepare Yourself for Team Science - Collaborative Agreement Template
https://ccrod.cancer.gov/confluence/display/NIHOMBUD/Collaborative+Agreement+Template

Team Science Toolkit
https://www.teamsciencetoolkit.cancer.gov/Public/Home.aspx

HUBzero
https://hubzero.org/

Systematic Review Toolbox
http://systematicreviewtools.com/

LabKey
http://www.labkey.com/

REDCap
http://www.project-redcap.org/
Recommended Best Practices

For institutions / funders / supporting groups

- Plan ahead using templates
- Clear vision of what constitutes success
- Assessment to track project, adjust
- Gauge team member readiness toward teams science: openness and adaptability, previous experience with collaborative projects
- Consider combining strangers and known colleagues
- Provide training for leaders and team members
- Provide platform/tools for project management, communication, and discussion
Recommended Best Practices

For team leaders

● Communicate with open, enthusiastic, inclusive approach
● Set regular meeting times
● Provide opportunities for f2f meetings to build community
● Utilize centralized planning and production platform
● Plan ahead with team using templates
● Designate roles and responsibilities - when changes, communicate to all along with changed expectations
● Encourage open, frequent, explicit communication
  ○ Decisions - reinforce group decisions for consistency
● Address conflicts and work through to resolution
Recommended Best Practices

For individual team members

- Attitudes: openness, adaptability, willingness to devote substantial time to learning and participating, egalitarian values
- Commit time needed
- Active participation in meetings, planning, and tasks
- Keep up with progress and activities
- Communicate openly, with empathy, explicitly, and often
- Willingness to address conflicts and work to resolution
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Virginia Pannabecker, GinnyP@vt.edu

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