Essential Skills for Biomedical Librarians Engaging in Cross-Disciplinary, Multi-Institutional Team Projects: Experiences from the VIVO Collaboration

Rolando Garcia-Milian, Hannah F. Norton, Beth Auten, Valrie Davis, Kristi Holmes, Margeaux Johnson, Michele R. Tennant

University of Florida

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Background

- Global challenges and complex questions require complex teams for research and implementation.
- Librarians, accustomed to working on teams within the library, are branching out to serve on interdisciplinary teams.
- Serving on interdisciplinary teams is part of being embedded with our patrons.
Definitions

• **Team:** Interdependent collaborative group of two or more individuals that interact and share clearly articulated roles and responsibilities in order to complete a task

• **Cross-disciplinary Collaboration:** Any type of interaction between team members from different disciplines

• **Multidisciplinary Collaboration:** Team members from different disciplines work independently and coordinate, rather than integrate, efforts

(Fiore 2008, Stokols et al. 2006)
Definitions

• *Interdisciplinary Collaboration*: Joint work among cross-disciplinary team members allows them to interact, integrating their strengths

• *Transdisciplinary Collaboration*: Team members from different disciplines work together over extended periods of time and develop shared understandings that transcend disciplines

• *Science of Team Science*: A combination of conceptual and methodological strategies aimed at understanding and enhancing the outcomes of large-scale collaborative research and training programs

(Fiore 2008, Stokols et al. 2006, Stokols et al. 2008)
Case Study: VIVO Collaboration

VIVO is an open-source **semantic web application** that enables the discovery of research and scholarship across disciplines in an institution.

VIVO contains **detailed profiles** of researchers that display items such as publications, teaching, and grants. These profiles are **linked** to each other and to additional departmental information.

VIVO supports faceted searching for quick retrieval of data. This is a **powerful search functionality** for locating people and information within or across institutions.
What is VIVO?

• Some history:
  – VIVO originated at Cornell University in 2003 as an open source product.
  – Through a $12.2 million grant from the National Institutes of Health, 7 partner institutions, led by the University of Florida, are expanding VIVO for national use.

• The Goal:
  Improve all of science by providing the means for sharing and using current, accurate, and precise information regarding scientists’ interests, activities and accomplishments.
Role of librarians

- Developing core and local ontologies
- Locating and selecting subject vocabularies
- Providing local support and training on the system
- Performing usability studies and focus groups
- Engaging with local and external data providers
- Developing user-centered interface design
- Providing project management and leadership
- Engaging potential users
Goals and methods

• Goals:
  – Analyze the challenges librarians have encountered during VIVO implementation and outreach
  – Investigate the impact of the VIVO project on librarian’s professional development and skill sets

• Methods:
  – 9 librarians interviewed for 1–1½ hours each
• Open questions: challenges, skills gained, lessons learned
Typology of Contextual Factors Influencing TD Scientific Collaboration at Each Level of Analysis

**Intrapersonal**
- Members' attitudes toward collaboration and their willingness to devote substantial time and effort to TD activities
- Members' preparation for the complexities and tensions inherent in TD collaboration
- Participatory, inclusive, and empowering leadership styles

**Interpersonal**
- Members' familiarity, informality, and social cohesiveness
- Diversity of members' perspectives and abilities
- Ability of members to adapt flexibly to changing task requirements and environmental demands
- Regular and effective communication among members to develop common ground and consensus about shared goals
- Establishment of a hospitable conversational space through mutual respect among team members

**Organizational**
- Presence of strong organizational incentives to support collaborative teamwork
- Non-hierarchical organizational structures to facilitate team autonomy and participatory goal setting
- Breadth of disciplinary perspectives represented within the collaborative team or organization
- Organizational climate of sharing
- Frequent opportunities for face-to-face communication and informal information exchange

**Physical Environmental**
- Spatial proximity of team members' workspaces to encourage frequent contact and informal communication
- Access to comfortable meeting areas for group discussion and brainstorming
- Availability of distraction-free work spaces for individualized tasks requiring concentration or confidentiality
- Environmental resources to facilitate members' regulation of visual and auditory privacy

**Societal/Political**
- Cooperative international policies that facilitate exchanges of scientific information and TD collaboration
- Environmental and public health crises that prompt inter-sectoral and international TD collaboration in scientific research and training
- Enactment of policies and protocols to support successful TD collaborations (e.g., those ensuring ethical scientific conduct, management of intellectual property ownership and licensing)

**Technological**
- Technological infrastructure readiness
- Members' technological readiness
- Provisions for high level data security, privacy, rapid access and retrieval

(Stokols, Misra, Hall, Taylor, & Moser, 2006)
Factors Impacting VIVO Collaborative Effectiveness

- **Intrapersonal**
  - Team members’ attitudes toward collaboration and the project

- **Interpersonal**
  - Team unity against common challenges
  - Perceived potential for future collaboration

- **Organizational**
  - Diversity of team members’ disciplinary backgrounds
  - Lack of leadership training for team leaders
  - Changing nature of the project

- **Societal/Political**
  - Decentralized institutional organizations

- **Physical Environment**
  - Spatial distribution of team members

- **Technological**
  - Team members’ technological readiness
Interpersonal Factors

Factors impacting team effectiveness:
• Team unity against common challenges
• Perceived potential for future collaboration

Required Skills:
• Communication
• Perseverance in overcoming obstacles

Lessons Learned/Skills Developed:
• Talk openly as a team
• Use every possible communication channel (from phone calls to teleconferencing)
• Empathy is important when navigating multidisciplinary conversations
Organizational Factors

Factors impacting team effectiveness:
- Diversity of team members’ disciplinary backgrounds
- Lack of leadership training for team leaders
- Changing nature of the project

Required Skills:
- Willingness and ability to adapt
- Leadership
- Communication

Lessons Learned/Skills Developed:
- Team leaders have learned to hire individuals with the right skill sets for each position
- More efficient decision making process
- More task-driven orientation, centered around an action plan
Technological Factors

Factor impacting team effectiveness:
• Team members’ technological readiness

Required Skills:
• High tolerance for change
• Willingness and ability to adapt

Lessons Learned/Skills Developed:
• Increased knowledge about technical aspects of the project and terminology
• Learned to interpret the progress of the project and translate for end users
Physical/Environmental Factors

Factor impacting team effectiveness:
• Spatial distribution of team members

Required Skills:
• Communication

Lessons Learned/Skills Developed:
• Talk openly as a team
• Use every possible communication channel (from phone calls to teleconferencing)
Intrapersonal Factors

Factor impacting team effectiveness:
• Team members’ attitudes toward collaboration and the project as influenced by
  • Perceived enthusiasm toward the project from the outside community
  • Individual professional development
  • Opportunities to engage in the wider campus community

Required Skills:
• Inclusive thinking

Lessons Learned/Skills Developed:
• Learned more about institution’s various cultures
• Increased level of comfort in talking to people across the scholarly spectrum
Summary: Required Skills

• Strong communication and interpersonal skills
• Willingness and ability to adapt/High tolerance for change
• Perseverance in overcoming obstacles
• Leadership
• Inclusive thinking
Moving Forward

Team members’ new cross-disciplinary collaborations:

- Research data assessment and data management training with high performance computing experts
- Textbook chapter authorship with medical educators
- Providing patient education services in internal medicine clinics with health literacy and medical specialists
References


