



Librarians' Contribution to Sense of Belonging for Undergraduate Honors Students

Amber Pierdinock-Weed, Rachel Gammons, and Lindsay Inge Carpenter

Agenda

1. Introduction to Gemstone Honors Program and High Impact Practices
2. Sense of Belonging and Undergraduate Students
3. Our Findings





Introduction to Gemstone Honors Program and High Impact Practices

“The Gemstone Program at the University of Maryland is a unique multidisciplinary four-year research program for selected undergraduate Honors College students of all majors. Under the guidance of faculty mentors and Gemstone staff, teams of students design, direct, and conduct significant research, often but not exclusively exploring the interdependence of science and technology with society.”

Example Gemstone Teams

FSH

The goal of this project is to create a visual tracking software (using machine learning and artificial intelligence) to collect data on African Cichlids to gain knowledge on the mechanisms and evolution of their behavior.

HEMD

The team aims to investigate harvesting energy from the body itself for powering wearable medical devices.

Valve

The team aims to improve the lifetime of biological heart valves by finding a solution to calcification, mechanical degradation, or pannus growth at the opening of the valve.

How Do Librarians Support Gemstone Teams?

Sophomore Year

- Consult on literature review (fall semester)
- Thesis proposal defense (spring semester)

Junior Year

- Answer questions about resources, data services, and library services (both semesters)
- Do Good Presentations (fall semester)
- Undergraduate Research Day (spring semester)

Senior Year

- Feedback on Thesis writing (both semesters)
- Thesis Conference (spring semester)

Additional Librarian Support

- Citation management
- Using subject-specific databases
- Patent research
- AI research
- Copyright implications
- GIS support
- Makerspace use



Benefits of Librarian Mentorship in Undergraduate Research

Librarians as Mentors

- Argued for shift for academic librarians to become active mentors in undergraduate research process (Stamatoplos, 2009).

Benefits to Students

- When librarians take on sustained mentorship roles, students benefit from deeper research engagement and enhanced information literacy skills and librarians benefit from increased professional satisfaction (Bowers et al., 2020).

Current Research

- Research on academic libraries supporting undergraduate student success has focused on resources, spaces, and instructional support rather than sustained engagement in undergraduate research (Murray, 2015).

High impact practices (HIPs) in higher education are evidence-based approaches to teaching and learning that enhance undergraduate student engagement, retention, persistence, and academic success (Kuh, 2008). They are particularly effective in the first and second year of undergraduate education (Brownell & Swaner, 2009).

Kuh's (2008) High Impact Practices

1. First-year experiences
2. Common intellectual experiences
3. **Learning communities**
4. Writing-intensive courses
5. **Collaborative assignments and projects**
6. **Undergraduate research**
7. Diversity/global learning
8. Service learning
9. Community-based learning
10. Internships
11. Capstone courses and projects
12. e-Portfolios






Sense of Belonging and Undergraduate Students

The background is a solid pink color with several dark pink triangles of varying sizes and orientations scattered across the top right and middle right sections.

“Students’ perceived social support on campus, a feeling of sensation of connectedness, the experience of mattering or feeling cared about, accepted, respected, valued by, and important to the group (e.g. campus community) or others on campus (e.g. faculty, peers)” (Strayhorn, 2012).

Sense of Belonging and HIPs


- HIPs reinforce a sense of belonging among undergraduate students by creating opportunities for students to engage meaningfully with peers, university faculty and staff, and institutional resources (Brownell & Swaner, 2009).
 - Research suggests that students who participate in HIPs, such as living-learning programs, service-learning projects, and undergraduate research, experience greater academic integration and social support, which contribute to stronger sense of belonging (Spanierman et al., 2013; Strayhorn, 2012).
- 

Sense of Belonging and Undergraduate Research

- Participation in student-led undergraduate research allows students to see themselves as researchers with valuable ideas and expertise in their fields.
- A deeper knowledge of information literacy skills and specialized library resources (beyond what is taught for course assignment research) allows students to feel a comfort with the library and confidence with their research skills.



Our Findings




How do librarians working with Gemstone students contribute to sense of belonging on UMD's campus?

About the Dataset

- The research team used **90 team-generated responses** from applications for the University Libraries' Award for Outstanding Gemstone Team, collected from 2015-2024.
- While the prompt varied from year to year, it asked students to, “discuss the role that library roles and resources played in advancing your understanding of the research process, including guidance received from a librarian.”
- To protect confidentiality, any references to individual students or librarians were anonymized before analysis



Methodology

- **Qualitative Content Analysis (QCA)** is a systematic approach to analyzing verbal, written, or visual communication and can be applied to both qualitative and quantitative data (Elo & Kyngäs, 2008). The goal of QCA is to provide a concise yet comprehensive description of the research phenomenon by organizing findings into conceptual categories that aid in understanding.
 - QCA Consists of three phases:
 - **Preparation** - Identifying the unit of analysis
 - **Organization** - systematically exploring and organizing the data into meaningful categories
 - **Reporting** - Synthesizing and presenting findings in a manner that is theoretically grounded and empirically substantiated
- 

Data Analysis

To facilitate analysis, we developed an **unconstrained matrix**, which establishes high-level categories while maintaining flexibility in category formation (Elo & Kyngäs, 2008). We established two primary categories:

1. Belonging
2. Library resources/support

These categories provided an entry point for identifying relevant content.

The second stage of analysis employed an inductive approach, refining parent categories into subcategories based on the material assigned to each category.

Example 1 : Belonging Parent Category & Inductive Subcategorization

	A	B	C
1	Excerpt from Essay	Affect	Summary
48	We first met with our librarian...and have maintained a rapport with her until the present...she gave us very important advice on how to utilize the resources provided by the UMD Libraries system both online and at the libraries. She helped us improve and refine our literature review...As the year went on, we sent [NAME] several drafts of our literature review, methodology, and proposal; she went out of her way to give us detailed feedback that greatly improved our writing. For example, she advised us on how to do proper in-text citations in IEEE, a writing style with which we were unfamiliar. She also made numerous corrections on the formatting of our references to make sure they looked professional and properly credited the papers we used. In addition, she deeply read each and every one of the drafts we sent her and pointed out numerous grammatical and spelling errors, which we were very glad to have corrected before submission.	Feeling supported	Feedback; time
49	Beyond assistance in locating and managing resources, our librarian was integral in revising and editing the literature review, methodology, and proposal draft. Through communication across email channels and visits in person, [NAME] not only provided insightful comments, but also put our team in connection with a group of librarians as well as other researchers and physicians with knowledge in the subject and a stake in the outcome.	Feeling supported	Feedback; putting students in contact with other experts related to topic
50	[NAME] has been an integral member of the team. From the beginning, she has exchanged regular email correspondence with us and helped us edit our proposal both stylistically and to ensure we credited our references as needed. We have even tried a few times to get her in for a pizza dinner; we'll make it happen soon enough.	General appreciation	Wanting to show appreciation by inviting librarian to informally meet with the team
51	In our first semester, our project was constantly updated, and our librarians were indispensable. [NAME] our policy analysis librarian, created a library guide specifically for team [TEAM]...Thankfully, we were paired with [NAME] a Spatial Data & Maps Librarian, who was kind enough to offer the subgroup unlimited access to the working space in the GIS lab.	General appreciation	Time; building resources specifically for team; help with using new resources
52	In her stead, however, the librarian [NAME] proved to be an invaluable resource to us. After our proposal presentation, she met with us to help us improve our research proposal and offered useful, tailored feedback.	General appreciation	Feedback
53	[NAME] has been tremendous resources throughout our research process so far, and have assisted our team in finding informational, scholarly sources, conducting our research ethically, and assisting us in creating accurate citations and bibliographies for all of our assignments and proposals...Beyond just fixing these mishaps, she constantly informed us on what was done wrong and instructed us on how to avoid making these mistakes again, thus making us better writers and researchers.	Feeling supported	Librarians teaching students how to do research
54	Because of the great feedback, she has given us, we have been able to improve the quality of the way we communicate our research.	Feeling supported	Feedback
55	In addition, our librarian, [NAME] has been there to help us every step of the way. With her vast knowledge of scholarly literature, she has opened the door to a wider world of research, teaching us how to sift through its immensity to ultimately profit from the relevant knowledge. She meticulously edited each iteration of our proposal, from our preliminary literature review to our final thesis proposal, which included a comprehensive introduction, methodology, conclusion, and appendix. She gave us advice on our written analysis techniques and technical formatting. [NAME] also attended our proposal defense, where she listened to our presentation and made constructive comments about the direction of our project.	Feeling supported	Attending events; time

Institutional Engagement

How librarians guided students in navigating institutional resources, academic research enterprise systems, and professional networks.

- **Librarians as Institutional Navigators** - Librarian mentors provided students with an expanded understanding of the university, positioning academic libraries as integral parts of the broader higher education ecosystem.
- **Librarians as Co-Curricular Advisors** - In addition to their disciplinary expertise and mentorship in research, librarians played an essential role as co-curricular advisors, helping teams navigate institutional processes and research logistics.
- **Library Resources and Services** - Essays collected before 2020 tended to emphasize the accessibility of library resources, such as study rooms and group meeting spaces. In contrast, those collected during and after the COVID-19 pandemic increasingly focused on the role of librarians in facilitating connections to research experts and helping students navigate institutional infrastructures

Intellectual Engagement

How librarians contributed to students' understanding of research as an iterative and evolving process and strengthened student's research products through their disciplinary and professional expertise.


- **Librarians as Experts in the Iterative Research Process** - Teams emphasized that their librarian mentors provided more than access to resources; they offered holistic guidance on the research process itself. While faculty mentors contributed subject-specific expertise, librarians brought a distinct perspective as specialists in research methodology, helping students navigate its complex and nonlinear nature.
- **Librarians as Experts in Source Evaluation and Information Literacy** - Responses from teams indicated that librarian mentors empowered them to analyze scholarly impact, track citations, and assess credibility, reinforcing the idea that research involves interpreting and contextualizing knowledge rather than simply accumulating references.
- **Librarians as Experts in Disciplinary Knowledge** - In addition to their expertise in research methodology and information literacy, teams recognized that their librarian mentors provided valuable disciplinary insights informed by their own scholarship and professional experience.

Relational Engagement

How librarians served as mentors and collaborators, creating a sense of connection, legitimacy, and trust.

- **Time as Currency in Academic Institution** - Students viewed librarians' sustained engagement as a signal that their research was valued and worthy of deep attention. Students saw their librarian mentor as someone who was invested in their success for its own sake.
- **Disrupting Power Dynamics through Collaboration** - While faculty mentors were often perceived as disciplinary authorities with evaluative power over students' work, librarians played a fundamentally different role, one defined by approachability, open-mindedness, and accessibility.
- **Feeling Seen, Supported, and Valued** - Librarians served as mentors who provided emotional scaffolding, validation, and confidence-building guidance. Librarians not only supported students' academic success but also strengthened their sense of belonging within the university, ensuring they felt recognized, valued, and empowered in their research process.

How Does Librarian Mentorship Foster Belonging?

- Findings indicate that students consistently positioned the library not as a passive resource but as an **active partner in their research experience**.
 - In their team essays, students expressed gratitude for the **comprehensive support provided by their librarian mentors**, who guided them through all stages of the research process, from developing and refining research questions to crafting well-structured scholarly proposals.
 - Librarians also played a key role in **refining research questions** and ensuring that students' methodologies were **grounded in empirical research**.
 - Beyond research guidance, students described their librarian mentors as **trusted collaborators**, emphasizing their approachability, responsiveness, and investment in student success.
 - Through sustained engagement, **librarians became more than research guides; they fostered confidence, intellectual curiosity, and self-efficacy, ensuring that students felt supported and empowered throughout their research journey.**
- 

Takeaways

The findings from this study suggest that librarian mentorship fosters belonging in two key ways:

1. Providing a **consistent and reliable support system throughout students' research journeys**. Team essays indicated that librarian mentors filled a critical mentorship gap, offering iterative feedback and sustained engagement that helped students feel supported and recognized as emerging scholars.
2. **Legitimizing students' place within the research community**. By treating students as capable researchers, guiding them through academic challenges, and connecting them with institutional resources, librarian mentors reinforced students' identities as legitimate contributors to scholarly discourse.





Thank you! Any questions?

Citations

Bowers, M.E., Tobin, L.K., Lee, J., Skendall, K.C., & Coale, F.J. (2020). Increasing campus sense of belonging through LLC participation: To Gems camp we go. *Learning Communities Research and Practice*, 8(1), 4-19.

Brownell, J. E., & Swaner, L. E. (2009). High-impact practices: Applying the learning outcomes literature to the development of successful campus programs. *Peer Review*, 11(2), 26–30.

Gemstone Honors Program. (2025). Honors College Gemstone. <https://gemstone.umd.edu/>

Kuh, G.D. (2008). High-Impact Educational Practices. Association of American Colleges and Universities.

Murray, A. (2015). Academic libraries and high-impact practices for student retention: Library deans' perspectives. *portal: Libraries and the Academy*, 15(3), 471–487. <https://dx.doi.org/10.1353/pla.2015.0027>

Spanierman, L.B., Soble, J.R., Mayfield, J.B., Neville, H.A., Aber, M., Khuri, L., & De La Rosa, B. (2013). Living learning communities and students' sense of community and belonging. *Journal of Student Affairs Research and Practice*, 50(3), 308-325. <https://doi.org/10.1515/jsarp-2013-0022>

Stamatoplos, A. (2009). The role of academic libraries in mentored undergraduate research: A model of engagement in the academic community. *College & Research Libraries*, 70(3), 235–248. <https://doi.org/10.5860/0700235>

Strayhorn, T.L. (2012). *College Students' Sense of Belonging: A Key to Educational Success for All Students*. Routledge.

