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A conceptual analysis of collaboration in information literacy librarianship

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A B S T R A C T

Collaboration is a widely used term in academic libraries to describe different types of interaction with campus partners. The library literature presents an extensive history of publications that feature academic library collaboration with discipline faculty in the context of teaching. While the outcomes of teaching librarians' collaborative practices are well documented, the lack of clarity in distinguishing collaboration from other forms of workplace interaction has impeded a comprehensive understanding of teaching librarians' experiences. To improve the understanding of librarians' collaborative practices, and to build a foundation on which further research can be generated, a Pragmatic Utility concept analysis is conducted through an integrative study of peer-reviewed literature. The analysis presents an examination of collaboration between teaching librarians and discipline faculty through five dimensions including *definitions, antecedents, attributes, boundaries, and outcomes*. An additional dimension, *social dynamics*, was further identified and applied as a lens for analysis. The conclusion is that collaboration remains a partially immature concept in the library literature, and more studies are needed to establish a clear definition and a solid theoretical framework to guide professional research forward.

Introduction: Collaboration in academic librarianship

It is a core principle in academic librarianship that teaching librarians engage in collaborative working relationships with discipline faculty (American Library Association, 2006). The respective missions of academic librarians and discipline faculty intersect at the points of learning and research, and librarians have identified their role in contributing to successful outcomes in these areas, as well as in other high-impact educational practices (Association of College and Research Libraries, 2010; Kuh, 2008). The attention given to librarian-discipline faculty collaboration in the library literature, and through professional discourse, provides evidence that academic librarians remain strong advocates for librarians' collaboration with discipline faculty and advocate the value it brings to teaching, learning, and research. It is also clear from the literature that academic librarians have long been concerned about a perceived disconnect in their working relationships with discipline faculty, as librarians continue to publish illustrative case studies and develop new strategic practices to establish, understand, and improve their collaborative relationships with discipline faculty (Arp et al., 2006; Brasley, 2008; Keeran & Forbes, 2018; Meulemans & Carr, 2013; Reale, 2018; Stöpel et al., 2020).

The American Library Association, the Association for College and

Research Libraries, and the Association for Research Libraries all provide a foundation and philosophy for the collaborative roles assumed by teaching librarians, but none provide a clear definition of what collaboration means and what skills and competencies are required to engage in collaborative practices with discipline faculty. A lack of rigorous conceptualization about what collaboration is reduces the ability to study it consistently, thereby reducing its usefulness as a variable in research studies. Despite the valuable contributions of prior research, much of it lacks standardized conceptualization, definition, and operationalization of collaboration. The interchangeable use of the terms 'collaboration,' 'liaison,' 'embedded,' and 'partnership' is widespread in the library literature. This results in a loss of the conceptual richness of the constructs, and the potential for ambiguity and misinterpretation in practice.

There are also practical concerns in the way the concept of collaboration is used by academic libraries. Library administrators and librarians should be prepared to ask important questions about collaborative effectiveness, and outcomes. Furthermore, library administrators and supervisors should have a framework for determining the relevant skills, competencies, and other knowledge and behavioral sets that are important for training, professional development, and assessment of teaching librarians engaged in collaborative practices. A

lack of conceptual agreement also weakens the establishment of best practices of collaboration between librarians and discipline faculty. It is important for librarian researchers to recognize how the concept is being used and how the concept is being treated with varying levels of abstraction by their library colleagues.

To bring further clarification to the term collaboration, this paper aims to identify current conceptualizations of collaboration and examine its attributes from the perspective of teaching librarians. A concept analysis was conducted using the pragmatic utility approach (Morse, 2000, 2004, 2016) to provide library researchers with a clearer understanding of collaboration for use in the creation of operational definitions, guiding frameworks, and tools for performance evaluation. The result of this effort is not to present a new definition, but to synthesize and analyze the use of the concept of collaboration in the academic library literature and refine the features of the concept in the context of librarian-discipline faculty dyads.

Methodology

Pragmatic utility concept analysis

Concept clarification is an essential step in developing applicable knowledge that contributes to the research and study of academic librarianship. It further advances the understanding of a concept and elucidates any ambiguity surrounding it. Clarification also allows for the assessment of its strengths and weaknesses as well as an examination of how the conceptual definition aligns with its operationalization. Well-developed concepts not only provide the ontological building blocks of a theory, but also serve as the foundation from which our arguments are presented.

Pragmatic utility (PU) concept analysis was selected as the methodology to analyze the concept of collaboration between discipline faculty and librarians who teach information literacy. Developed by Janice Morse (2000, 2004, 2016), PU is a meta-analytic and interpretive method for eliciting meanings from how concepts are presented in the literature and recognized as useful to researchers (Morse, 2000). It is widely used in nursing, a profession similar to librarianship in that it is heavily practice-based and increasingly relies on evidence to inform decision-making and best practice. Rather than synthesizing the literature, PU advances inquiry forward by examining and appraising the way the concept has been pragmatically oriented and used by researchers and authors in their publications. It is an appropriate methodology for concepts that are well-represented in the literature but demonstrate vague or inconsistent usage (Weaver & Morse, 2006).

When conducting PU analysis, we systematically examined five dimensions that form a typology for PU analysis: Definitions, Antecedents, Attributes, Boundaries, and Outcomes. The analysis from the data set indicated that social dynamics are a prevalent aspect of librarians' collaborative experience, so we distinguished Social Dynamics separately from Attributes. This decision supports Morse's assertion that PU is a method that aims to provide analyses that are relevant for the context under study. Furthermore, Morse (2016a) states that successful PU concept analysis allows for the concept to be recontextualized; that is, the concept can be removed from its applied context of academic librarianship and checked for relevancy in other contexts or situations (p. 108). We determined that social dynamics is a dimension in which collaboration, regardless of context, allows for an effective recontextualization. For this reason, we created an additional dimension Social Dynamics to distinguish the attributes we identified in the data set.

To facilitate our exploration of collaboration through the lens of the PU dimensions, we developed an analytical question guide (see Table 1).

Based on the examination of the dimensions, PU analysis also determines the maturity level of a concept, including how well it has been defined by researchers and the degree to which Antecedents, Attributes, Boundaries, and Outcomes are ambiguous or delineated (Morse, 2016). Morse explains that a concept "must be mature before it is

Table 1
Working questions to guide analysis.

Pragmatic utility dimension	Working questions
Definitions	· How do teaching librarians define collaboration?
Antecedents	· What has to happen for collaboration to occur?
	· What factors allow a collaboration to occur?
	· What role do librarians play in antecedent conditions?
Attributes	· What are the attributes of collaboration between teaching librarians and discipline faculty?
	· What attributes are identified as important for success?
	· What happens if the expression of attributes is weak?
Social dynamics (new dimension identified during analysis)	· What are the demands on teaching librarians as part of their collaborative experience?
	· What does collaboration look like as a social process?
Boundaries and allied concepts	· What is collaboration? What is not collaboration?
	· Are there instances in which collaboration could be Identified as another concept?
	· What are the connections between collaboration and its allied concepts?
Outcomes	· What outcomes are identified from collaborations between teaching librarians and discipline faculty?
	· Are there instances of positive and negative outcomes?
	· What are the challenges that impede positive outcomes?

operationalized" and its features should be well-defined (Morse et al., 1996, p.387). Generally, the more a concept is empirically examined in the literature, the more it becomes refined and mature as its dimensions are increasingly delineated. Concepts found in the literature can represent a range of maturity levels from one without definition and lacking identifiable attributes, to one that is partially articulated and mature, and to one that is clearly articulated with well-defined boundaries (see Table 2).

For a concept to be pragmatically mature, it should be recognizable to members of the discipline or profession where the phenomenon is encountered. The utility of the concept of collaboration is significant for teaching librarians, as evidenced by the frequent use of the term 'collaboration' in multiple contexts of teaching librarian-discipline faculty relationships. Despite the use of collaboration as an important part of professional practice, there have been few attempts to define its attributes and study it as a relational phenomenon. In this research, we aim to identify how the professional literature approaches the conceptual components of collaboration and assess its overall level of maturity.

Literature selection

Applying PU concept analysis is an iterative process comprising several phases: identification and selection of the relevant literature; organization of the selected works, detection of patterns and themes, analysis to identify the concept's usage by different authors and, finally, appraisal of how they present the concept's dimensions in their papers. The result is a qualitative assessment of the concept's maturity against the PU indices (see Table 2).

The PU method requires a substantial amount of data from both articles and studies. To ensure a comprehensive review of the relevant literature, we conducted separate systematic searches of six bibliographic databases: Library Literature and Information Science (LLIS); Library, Information Science and Technology Abstracts (LISTA); Library & Information Science Abstracts (LISA); Library Science Database (LSD); Education Research Complete, and ERIC. The literature was limited to English-language, peer-reviewed articles published between 2002 and 2022. This time frame was selected to capture the introduction of Web 2.0, which is recognized as a technological catalyst that influenced library usage patterns and redefined the nature of the collaborative work

Table 2

Indices of concept maturity.

Criteria	Immature	Partially Mature	Mature
1. Concept definition	Not defined beyond a dictionary definition	Lacks clarity; Competing definitions	Clear; Consensual for the group that operationalizes the concept
2. Antecedents	Not identified	Described, but unclear	Clearly described
3. Attributes	Not identified	Evident, but not examined	Described fully and demonstrated
4. Outcomes	Not identified	Evident, but not examined	Described fully and demonstrated
5. Boundaries	Not identified	Murky	Delineated

Adapted from Morse (2016, p.174).

between academic librarians and teaching faculty (Gleason, 2018; Xiao, 2008). Below is the summary of the inclusion and exclusion criteria for the articles' selection.

Inclusion criteria:

- Articles related to instruction collaborations between teaching librarians and discipline faculty at undergraduate and graduate degree-granting universities
- The term *collaboration* is used in the context of information literacy
- English language articles
- Peer-reviewed publications
- Dated between January 1, 2002 and December 31, 2022

Exclusion criteria:

- Articles from 2-year college environments
- Articles that describe collaborative contexts other than teaching (e. g., research)
- Articles that do not use the term 'collaboration' in a relational context
- Anecdotes, opinion pieces, book chapters, and commentaries

Search functions included the use of keywords, subject heading indices in EBSCO and ProQuest, and Boolean operators. Because of the possibility of other terms used interchangeably with collaboration, the search strategy included synonyms to describe collaboration and to improve the capture of relevant literature. It was a requirement that the term 'collaboration' appear in the abstract of the article even though other terms were used in the search strings including: *liaise, engage, connect, work with, cooperate, outreach, partner, network, establish alliances, and relationship-build.* In the review process, no articles were excluded on methodological grounds.

Consistent with a systematic review approach, a backward search was also conducted, including only those citations that fell within the 20-year publication time frame and met all other inclusion criteria. A subsequent search was conducted in Google Scholar to identify studies that may have been overlooked during the search in the proprietary database. Google Scholar was also used to conduct forward searches. The journal *Collaborative Librarianship* is indexed in EBSCO; however, the tables of contents for all volumes were cross-checked against the article list compiled from EBSCO to ensure no relevant articles were omitted. This process resulted in the discovery of seven additional articles. A PRISMA flow diagram reflects the literature review and selection process (see Fig. 1).

During the initial screening of articles, the authors reviewed the abstracts of the papers and excluded articles that discussed library collaboration in areas other than information literacy instruction (e.g. digitization of collections, partnerships with non-academic units, etc.).
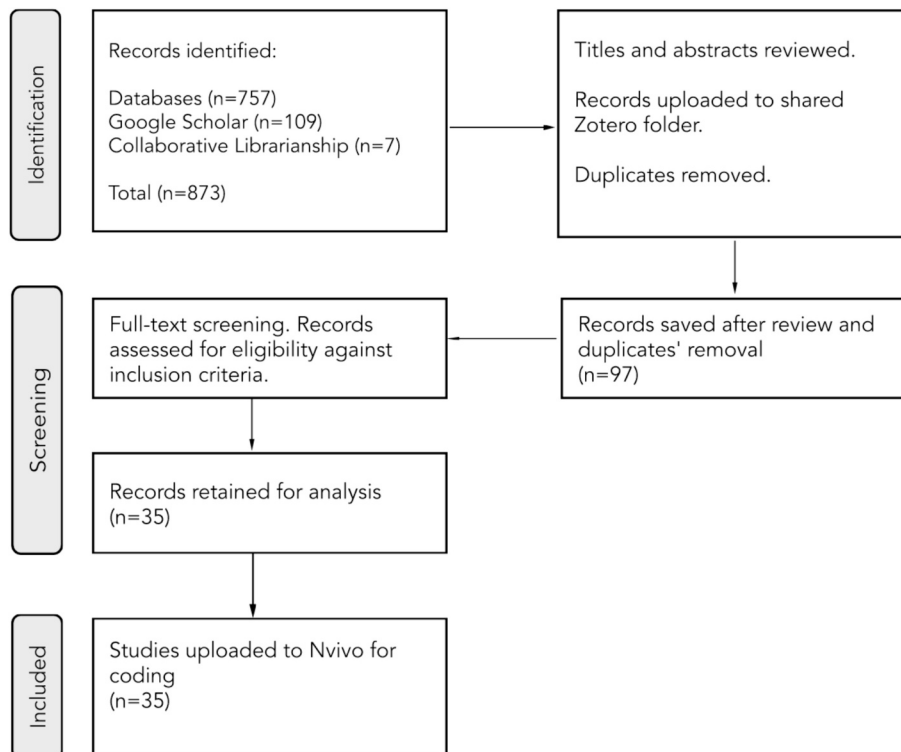

Fig. 1. PRISMA diagram: literature selection (adapted from Page et al., 2021).

All relevant articles were saved in Zotero, a citation management system, with duplicates removed. A second screening was conducted by reviewing the full text of the articles. Papers that treated at least one construct of the concept (definition, antecedents, attributes, outcomes, and boundaries) were retained. References not meeting these criteria were excluded. The final data set for the PU concept analysis included 35 articles. They were uploaded to NVivo (v.12) for coding (See Appendix: Summary of Publications used for Data Analysis).

To minimize bias, we coded the articles independently, using the PU typology as a set of pre-identified major codes. The coding progressed in four phases. In the first phase, a series of norming exercises was conducted to develop a baseline for coding. In the second phase, we coded approximately 25 % of the articles and discussed the need to align our respective codes. The third phase was similar to the second phase whereby the codes were compared, the coding language was refined, and similar codes were consolidated into a single category. This process was iterative throughout the fourth phase of coding when all codes were discussed and critically studied against Morse's definitions for the pragmatic utility typology before being refined into the final structure based on the findings presented below.

Findings: Dimensional analysis of collaboration in the library literature

The data analysis is a critical part of the pragmatic utility research framework, offering insights into five conceptual dimensions of collaboration experienced by teaching librarians and discipline faculty in collaborative projects. The five dimensions of pragmatic utility introduced by Morse include: Definitions, Antecedents, Attributes, Boundaries, and Outcomes. However, based on the interpretive findings, we identified an additional dimension related to collaboration labeled as Social Dynamics. It was determined during analysis that collaboration between teaching librarians and discipline faculty is a dynamic, socially constructed process that represents individual actions toward achieving optimal collaborative conditions (i.e., interdependence, shared goals, trust). It was important to expand the PU typology to account for teaching librarians' experience in their collaborative interactions with discipline faculty.

The characteristics that form each of the six dimensions are drawn from the literature analysis to assist with contextualization and critical evaluation on the use of the concept within the profession. The presentation of these findings is aimed at providing a substantive foundation upon which the study of collaboration, and its conditional, structural, and social processes, can be further examined, generating a more conceptually rich and rigorous understanding of collaboration as it applies to librarians and discipline faculty relationships within teaching contexts.

The discussion of the results is incorporated into this section to provide a brief context from existing research and to highlight key similarities and differences (Zawacki-Richter et al., 2020). This decision was also informed by the general structure of PU conceptual analyses, which focus primarily on how other researchers use the concept in their work rather than providing comprehensive comparative analyses (Morse, 2016).

Definitions of collaboration

According to Morse, a mature concept is consistently defined within the disciplinary or professional literature, with each typological dimension both well-delineated and understood by practitioners (2016, 2016a). Although the library literature presents extensive use of the term 'collaboration,' many studies and articles rely on a broad application of the term and do not offer a well-defined and consensual description of the concept.

The study revealed, with few exceptions, that the articles used for data analysis did not provide an explicit definition of collaboration, or

used the term 'collaboration' interchangeably with other terms that suggest similar joint working or cooperative initiatives. In the articles that provided a working definition, there was a significant variation. Pham and Tanner (2015) conducted a comprehensive review of definitions from multiple authors but chose to develop their own: "a joint working, learning and sharing process that specifically focuses on the activities of teaching, learning and researching among educational participants, in which knowledge can be activated and transferred" (p.3). The article by Farrar et al. (2007) offers a definition from Mattessich and Monsey (1992), the one often cited in higher education literature: "a mutually beneficial and well-designed relationship entered into by two or more [individuals or] organizations to achieve common goals" (p.23). Owens and Bozeman (2009) rely on a dictionary definition of collaboration: "working jointly with others or together especially in an intellectual endeavor" (p.32), and Donham and Green use an etymological explanation to establish a basic understanding of what it means: "collaboration means working together [co (together) + laborare (to work)]" (2004, p.314).

Our review of the library literature for definitions of collaboration indicates that definitions are provided infrequently, inconsistently, and lack a theoretical foundation. For these reasons, the Definition dimension was classified as partially mature in its understanding and application. It is possible the authors of the reviewed articles did not believe a definition of collaboration was necessary because its meaning is generally understood or, in the instances of case studies, the authors decided that a definition was not relevant to the articles' context and outcomes. From a more theoretical lens, it is possible that no definition of collaboration is provided if the authors believe a single definition would challenge a critical perspective.

Antecedents

Within the pragmatic utility methodology, antecedents are defined as conditions that precede all instances of the concept and allow it to emerge (Morse, 2016, pp.99, 105). In some cases, antecedents are described in abstract terms and may not be connected to a specific context in which the concept exists (Morse, 2016, p.106). However, four highly contextualized antecedents for collaboration to occur between teaching librarians and discipline faculty were identified for this study: *recognized need for collaboration, institutional support, librarian or faculty impetus, and relational investment.* Each of the antecedents, and its fundamental importance for establishing collaborative relationships, is described below.

Recognized need for collaboration

Many universities recognize information literacy as an essential undergraduate competency that, depending upon an institution's curricular structure, may require discipline faculty to extend classroom teaching beyond the scope of their subject instruction. With the prevalent understanding in academia that students need academic support to become proficient users of information, information literacy presents a critical opportunity for librarians to collaborate with discipline faculty. Librarians contribute their expertise in information literacy, while faculty have the subject expertise that provides the disciplinary context for embedding and aligning information literacy concepts. Our analysis demonstrates that the need to build student information competencies is often driven by institutional expectations, which are commonly triggered by factors external to the library such as departmental requirements, curricular assessment plans, and accreditation standards (Lampert, 2005; Palsson & McDade, 2014). In these cases, the collaboration that occurs between teaching librarians and discipline faculty is seldom in the form of a single-session instruction session; instead, it is recursive, involving planning and ongoing assessment through mutual levels of engagement.

In the absence of institutional or departmental mandates to embed information literacy credit courses into the curriculum, the need for

collaboration would, ideally, arise from a commonly shared purpose to address students' information competency skills. However, our analysis indicates that teaching librarians are often faced with the challenge of demonstrating the links between their expertise, information literacy concepts, and student learning. This means that, in non-mandated collaborations, the recognized need for collaboration is often influenced by librarians' outreach efforts.

As an antecedent, the recognized need for collaboration is essential in all cases, but it develops differently based on whether its pathway is found through institutional support or librarian/faculty impetus.

Institutional support: required, incentivized, and encouraged

From across the social sciences literature, collaborations have been identified as emerging from mandated, informal, and voluntary conditions (Fan & Robertson, 2011; Kristiansen, 2014; Huxham, 1993; McNamara, 2012; Patel et al., 2012; Terman et al., 2020). Institutional requirements, incentives, and other forms of support surrounding information literacy education often become the leverage for discipline faculty to collaborate with teaching librarians. In the case of institutionally supported collaborations, responsibilities are assumed by the teaching faculty and librarians with outcomes that are, in most cases, pre-determined. Our data analysis reveals instances in which universities or schools established formal information literacy requirements that set a collaborative structure between teaching librarians and discipline faculty. We observed that when there is an institutional commitment and support for the integration of information literacy into the curriculum, the collaborations between librarians and discipline faculty benefit from formalized expectations for the collaborative process and the success of its outcomes. The data also demonstrates that institutional support can help librarians facilitate collaboration in situations when cross-boundary relationships may otherwise be difficult to establish.

Librarian or discipline faculty impetus

When there is no institutional mandate for collaborations, there is still an opportunity for informal or voluntary collaborations between librarians and discipline faculty who identify value in working with each other to achieve student learning outcomes. Libraries cannot fulfill their information literacy mission without partnering with discipline faculty, and partnering requires librarians to learn about faculty needs and develop faculty awareness of their contributions so that library assistance is sought (Zaugg & Child, 2016). While teaching librarians remain strong advocates for collaboration, its implementation, without mandates, is often challenging:

> …until institutional support in the form of resources and rewards for faculty prove that information literacy is an institutional priority, librarians will continue to experience challenges in collaborating with faculty to design, develop and implement integrated instructional strategies. (Farrar et al., 2007, p.12)

Bennett and Gilbert (2009) also speak to the difficulty experienced by teaching librarians who aim to work with discipline faculty: "Librarians are constantly on the lookout for creative strategies to expand their liaison activities in order to consolidate productive relationships with faculty and to increase opportunities for relevant information literacy instruction" (p.131).

Generally, the relationship is voluntary for discipline faculty, whereas for teaching librarians the expectation for collaborative work is embedded in their job description. For some librarians, there may also be an additional requirement to demonstrate the educational impact of their work through formal assessment measures or key performance indicators. It is unknown to what extent librarians' collaborative performance contributes to their performance reviews, but voluntary collaborations between librarians and discipline faculty can be formed without a mutual set of intrinsic and extrinsic motivations.

Without the benefit of institutional structure to guide collaborations,

librarians' ability to build and maintain collaborative relationships depends even more on the perceptions and understanding that discipline faculty have for their roles and the relevance of those roles to teaching and research. Furthermore, without formalized mandates that provide the expectations and norms for the process and its outcomes, collaboration between autonomous entities can be challenging, time-consuming, and characterized by tensions related to conflicting priorities and unmet expectations (Bedwell et al., 2012; Bruns, 2013; Huxham, 2003; Thomson et al., 2009).

Relational investment

Our findings indicate that cultivating relationships is fundamental for librarians to develop and sustain collaborations with discipline faculty. The criticality of relationship-building cannot be understated, particularly if collaboration is expected to emerge within non-mandated conditions.

As an antecedent for collaborations between teaching librarians and discipline faculty, this analysis indicates that investing in professional relationships relies upon the interplay of three components: active networking, communication, and the cultivation of mutual trust and respect. While each of these components should continue to be viewed as a distinct competency that contributes to relationship-building, the use of a sociological lens suggests that the collective aim of these competencies is to develop a form of social capital that enables librarians and discipline faculty to work together (Adler & Kwon, 2002; Schlak, 2016).

By investing in building a network of faculty contacts, teaching librarians gain multiple benefits, including increased trust, access to course information, opportunity to cross into faculty "jurisdiction" (Abbott, 1988, pp.60, 87), and an improved understanding of their role; i.e., what librarians can contribute (Huxham, 1993; Phelps & Campbell, 2012). Pham and Tanner further elaborate on the importance of communication and interpersonal skills:

> …there was evidence that the success of a collaborative venture was strongly influenced by individual characteristics of participants… the nature of the personal relationship between participants was an important factor. For this, well-developed interpersonal and communication skills were crucial, as were personalities that meshed well. (2014, p.12)

Listening actively and trying to understand the language and needs of the other constitutes a key collaborative behavior (Adams et al., 2016). Sustained dialogue leads to a more meaningful interaction and a greater alignment in achieving mutual goals. While our data indicates that librarians experience role misperception, it is not clear if academic librarians engage a specific strategy to mitigate perceptions about what they do and how they contribute to student learning. Numerous articles within the dataset, such as those by Gupta et al. (2016) and Korsgaard et al. (2015), document building interpersonal trust as a critical subprocess in the formation of mutual relationships, mentioning some challenges associated with this process: "The first collaboration may ultimately require a leap of faith, since little opportunity for building trust will have developed at that point" (Zaugg & Child, 2016, p.26).

In the context of an embedded librarian structure, "Collaboration occurs after the subject librarian gains the trust of faculty, staff, and students "(O'Toole et al., 2016, p.532). Consalvo et al. offer an insight as to why this happens:

> Faculty must build up trust in the librarian before a collaboration can take place. After all, students do not distinguish between the librarian and the faculty-provided content when filling out the course evaluation, and therefore faculty have much to lose by bringing in another person. (2022, p.125)

When trust is established, librarians find new opportunities to be integrated into the courses, which includes the initial design, delivery, and assessment of final course products (Zaugg & Child, 2016).

As an antecedent, relationship-building is overall a well-developed,

proactive strategy for librarians to generate and sustain collaborations with discipline faculty. If the value of teaching librarians as collaborators is well established, it can also contribute to the effectiveness of the collaborative structure and, hypothetically, be used as a predictor for positive outcomes.

Attributes

Morse's work on the identification of conceptual maturity (2016, pp.154–155), makes it clear that a mature concept must have attributes that are common in every instance of that particular concept (pp.100–101). Five attributes were identified from the analysis: *shared goals, sustained engagement, communication, interdependence, and mutual trust.* The findings also indicate that the interplay of all these attributes contributes to successful collaborations and collaborative outcomes. But there are also instances in which the attributes are not equally shared or understood between collaborators, and librarians find themselves in a position to compromise their agency as a contributor. Each of the five attributes is discussed below.

Shared goals

When librarians and department faculty collaborate, they are united by a common purpose and understanding of why they work together. Shared goals represent librarians' aspiration to "teach students core skills and support their cognitive growth toward information and research" (Zanin-Yost, 2018, p.154).

A clear understanding of collaborative expectations and a shared focus on common interests facilitate the work. As noted by Owen and Bozeman, "A shared goal… can bind an instructor and librarian together in a collaborative pursuit" (2009, p.33–34). Librarians often map program goals to ACRL information literacy standards, so there is a curricular integration of the ACRL frames, which helps demonstrate to discipline faculty how students can benefit from librarians' participation in the teaching process. To achieve a productive synergy, it is crucial for the librarian's goals and the course objectives to align. That alignment will lead to forming mutually desired and agreed-upon learning outcomes. When this level of mutuality exists between teaching librarians and discipline faculty, a collaborative relationship is primed to uphold (Kezar, 2005; Scripps-Hoekstra & Hamilton, 2016).

Sustained engagement

The previous section indicated that teaching librarians engage in articulating shared outcome-related goals with discipline faculty as part of their collaborative pursuit, which distinguishes it from work that might be described as service. Service work is unidirectional and can occur without a joint effort toward a common goal. Mattessich et al. (2001) further distinguish collaboration from other forms of shared work by addressing the depth of the interaction in the relationship, and there was sufficient evidence from our data to suggest that sustained engagement is an attribute of collaborations between teaching librarians and discipline faculty:

> Genuine excitement about a common goal can help ignite the relationship-building process, but cultivating it requires sustained engagement with individuals over time, and being open to learning from each other. (Chung, 2010, p.165)

By interacting with other faculty over time, librarians can emphasize opportunities for building information literacy into courses. (Bowles-Terry & Sobel, 2022, p.4).

Other scholars also stated the positive impact of investing time in successful collaborative relationships that reflect continued motivation and mutual trust. However, the research data does reveal inconsistency in this area, with some authors identifying both single instruction sessions and "more involved" team teaching, part of embedded and programmatic models, as collaborations:

Whether the collaborations result in single, well-timed instruction sessions related to class assignments, or become more involved with team teaching, they achieve the goal of integrating information literacy into academic programs. (Lindstrom & Shonrock, 2006, p.20)

The relationships that librarians build and sustain with the faculty over time allow them to be assertive in explaining what they can and cannot do in one session (Horne & Tritt, 2017, p.189) and to push for being embedded in the course to foster information literacy in students (Adams et al., 2016; Lampert, 2005).

Communication

Effective and frequent communication is identified by teaching librarians as an essential component of successful collaborations. Teaching librarians highlight the criticality of both face-to-face and online communication at the beginning of collaboration because it helps develop trust and understanding, and to advance mutual engagement. Regular communication allows collaborators to cultivate that special "chemistry" that is so important in working together. Communication makes a difference in how faculty view librarians' knowledge and skills, and how open they are to connect. Without personal interaction, faculty may not realize that librarians want to help and may feel ashamed to ask for help because it might appear "unscholarly" (Øvern, 2014, p.42).

Several authors stress that collaborative projects do not happen overnight and require a sustained effort from both collaborators, in which communication plays a vital role:" The process of implementing a common assignment for FYC information literacy has not been easy, as it has involved nearly two years of cultivating a professional partnership based on trust, effective communication, and shared goals" (Palsson & McDade, 2014, p.204), and "…it will remain imperative for EPC faculty and librarians to continue to meet and maintain open communication and appreciation for how information literacy research enriches both of our disciplines (Lampert, 2005, pp.20–21).

Our analysis also identified cases where reduced communication weakened collaboration. In those cases, the librarians' role, not clearly defined as a co-collaborator from the beginning, shifts to that of a service provider who is then introduced as "a teaching assistant, a guest speaker or, in one humorous moment (at the end of term, no less!), a student in the course" (Murphy et al., 2020, p.12).

Although communication is recognized by teaching librarians as a necessary attribute of positive and successful working relationships, the degree of its effectiveness is inconsistent. Communication styles and professional jargon may differ between teaching librarians and discipline faculty. Farrar et al. (2007) remark: "Like ships passing in the night, hospitality educators and library faculty have been trying to achieve the same goals, while using different language to describe their desired outcomes" (p.9). Our analysis demonstrates that little is known about the complexity of collaborative interactions including joint problem-solving and resolving differences.

Interdependence

Interdependence refers to the mutual reliance between teaching librarians and discipline faculty toward identifying shared or complementary goals and the process of achieving them. Our literature analysis illuminates the importance of faculty and librarians finding shared understandings, purposes, and a place to start. "The goal is to identify and integrate each other's strengths, without negating each other's expertise or judging one another" (Rath & Cimbricz, 2015, p.49) and to understand what each party wants to achieve. Librarians and instructors bring diverse perspectives that need to be recognized and reconciled to create a stronger outcome. The success of collaborative work depends on "the degree to which the participants understood and respected competing epistemologies and blurred traditional professional boundaries to achieve true collaboration: shared responsibility for the negotiation and design of a new curriculum." (Adams et al., 2016, p.717). Meetings and discussions extend the understanding between instructors and

librarians. Frequent conversations help them find common ground and increase their ability to "speak the same language." For librarians, it is important to understand course objectives and content so they can convey to discipline faculty how they can contribute to student learning outcomes. Collaboration with a library colleague can help faculty members overcome concerns that a librarian's involvement will interfere with course grades or impact student evaluations of their teaching. Thus, regular contact helps to work out the best plan for co-teaching, eliminate fears, and clarify roles and responsibilities that leverage each other's expertise. The lack of regular contact can result in faculty continuing the course on auto-pilot and having a weak desire to collaborate with librarians (Yu et al., 2019).

In an ideal scenario, the process of working toward goals and outcomes includes dedicated time to discuss collaborative goals, joint ownership of decisions, and respect for the other collaborator's professional expertise (Gray, 1989; Thomson & Perry, 2006). However, our data analysis indicates that the levels of interdependence in librarian-discipline faculty collaborations are variable and influenced by different factors, including faculty understanding of librarians' roles, expertise, and potential contribution, as well as their willingness to dedicate time to collaboration.

The implications of an asymmetrical interdependence in librarian-discipline faculty collaborations are unknown after our analysis. How do librarians respond? Is there a tipping point in which the effectiveness or the success of the collaboration is at risk? If the perception of asymmetrical interdependence is perceived only by the librarian, there may be specific responses required to adjust to the disparity or to try to improve its balance (Thomson & Perry, 2006).

Mutual trust

Trust has already been identified in the antecedents section of this analysis as a prerequisite to relationship building, critical for librarian-faculty collaborations. However, trust is also a necessary attribute of collaboration and one that must be maintained throughout the collaborative process. As a basis for new collaborative relationships, trust involves a sense of risk because one relies on the expectation that the other person will contribute and perform their part. As the collaboration progresses, trust evolves into an attribute.; collaborators cultivate knowledge of the other's behaviors and actions and gather information that enables them to rely (or not) on that person (Serva et al., 2005). O'Toole et al. expand this point by referring to the temporal aspect of building trust: "A longer time can imply a stronger relationship and more trust, which translates into willingness for faculty to collaborate with the librarian" (2016, p.551) This idea was also highlighted in another case study: "Through this collaboration it was clear that we were learning to trust each other" (Rath & Cimbricz, 2015, p.51). Elsewhere in the data, this point was emphasized by other authors:

> The process of implementing a common assignment for FYC information literacy has not been easy, as it has involved nearly two years of cultivating a professional partnership based on trust, effective communication, and shared goals. (Palsson & McDade, 2014, p.204)

Although several articles have identified mutual trust as an important factor in successful collaborations, our analysis of trust in librarian-faculty relationships accounts only for librarians' perceptions and experiences. There is evidence in the library literature that discipline faculty, in general, find librarians to be trustworthy (Weng & Murray, 2020), but future research could focus on the discipline faculty's perception of the trust model that exists between them and teaching librarians.

A summary review of the five collaborative attributes frames the ideal set of operational aspects for librarian-discipline faculty collaboration and, it could be argued, establishes a measure of maturity toward its conceptualization; however, the described attributes are not always mutually shared among collaborators. The result is that collaborative conditions are often compromised for librarians. There are multiple instances in which a lack of time, connection, or mutual understanding prevented the level of engagement that many librarians would like to have in collaboration (Bennett & Gilbert, 2009, p.141).

It was observed during the data analysis that the trade-off made by librarians was an acquiescence to the preferences of the discipline faculty member when they discussed collaborative outcomes, or an undesired compromise due to conditions that were beyond the control of the librarian (e.g., discipline faculty member's schedule).

The attributes characterize the concept and determine what it is and what it is not. Although the presence of conceptual attributes is critical for a shared understanding of how the concept exists in a given context, attributes may have variable levels of salience. Morse explains that the variability of attributes' "strengths" does not change how the concept is defined, but may contribute to different forms of how the concept is operationalized (p. 99).

Social dynamics

The original dimensions comprising the structure of the Pragmatic Utility analytic method support Morse's emphasis on the importance of understanding how a concept works within a particular context. They provide a categorical framework for identifying delineating facets of a concept, so its abstraction can be minimized and those who share the concept can identify common ground in understanding and applying it within professional practice (2004, 2016). Not surprisingly in a study about collaboration, the data analysis indicates that social aspects of collaboration serve as critical signifiers for teaching librarians who collaborate with discipline faculty. As a result, Social Dynamics was identified as an additional dimension of the concept analysis.

While the literature on collaboration is diverse, scholars across disciplines agree that social processes in collaboration are multidimensional and complex, with progress and outcomes affected by differences in the participants' working styles, communication patterns, visions for outcomes, and time management skills (Huxham & Vangen, 2004; Kezar, 2005; Patel et al., 2012; Thomson et al., 2009; Wood & Gray, 1991). Rather than place the social signifiers identified through analysis within existing PU categories, we expanded the PU framework by establishing an additional dimension. By placing the social aspect of collaboration into a distinct category, we highlighted its salience within the analysis and captured its important features.

A perception of librarians as service providers does exist, and it can contribute to a perceived subordinate role in institutional hierarchy (Farrar et al., 2007; Gardner & White-Farnham, 2013; Meulemans & Carr, 2013; Pham & Tanner, 2015). This problem is flagged by Øvern: "One of the most repeated issues in the literature is that faculty staff [sic] tend to not regard librarians as their academic equals and this taints the relationship between the two groups" (2014, p.42). The problem was also addressed by Pham and Tanner: "Traditional perceptions, stereotypes of librarians and the low respect for librarians' knowledge in the disciplines and in education more broadly are still experiential barriers to the initiation of collaborative activities" (2013, p.16).

The undervalued role of librarians surfaced in a large number of articles and was the strongest theme to emerge from our data analysis. Yet the degree of respect shown to librarians and the openness to acknowledging their academic work differ from institution to institution. As Bowles-Terry and Sobel point out, "Some university faculty willingly accept librarians as equals; others question our equivalence with an open mind; an unfortunate number seem to see librarians as a notch below traditional classroom faculty" (2022, p.3). A team-teaching partnership necessitates equal status. Librarians cannot be perceived as being subordinate to faculty, otherwise, their contributions are at risk of being relegated to service functions, hindering the potential for genuine academic collaboration.

Our analysis demonstrates that to gain recognition for their expertise and position themselves as valuable teaching partners, teaching librarians take the following actions as collaborators: be proactive in

relationship-building, establish their expertise, and exercise agency in collaborative decision-making.

Being proactive

The literature indicates that more often than not librarians take the lead in starting collaborative projects and introducing information literacy into curricula. The onus is usually on a librarian to approach instructors and provoke their interest in working together. In an article describing collaboration between three university literacy faculty and a subject librarian, the authors note:

> Proaction on the part of the librarian goes a long way to bridging the gap between a supplemental one-shot session to a fully embedded librarian who, ultimately, can be a significant catalyst for student learning and improved course design. (Consalvo et al., 2022, p.125)

Several authors point out that librarians who collaborate with faculty should be proactive with their strategies, and recommend several of them, including keeping up-to-date with changes in liaison areas (Farrar et al., 2007), developing a marketing plan for their services (Owens & Bozeman, 2009), pursuing any opportunity to partner with faculty (Bennett & Gilbert, 2009) and progressing from passive liaison to the consulting models (Donham & Green, 2004). These authors advise librarians to look for contact with faculty whenever possible and be visible through committees, task forces, campus activities, and events.

Since faculty rarely initiate contact with librarians, by default it becomes a librarian's responsibility to conceptualize a collaborative project, suggest possible course involvement, and convince instructors of the value of their input (Yu et al., 2019). Offering something compelling to the faculty requires thorough preparation such as studying course syllabi, learning outcomes, and assignments. Without that effort, and without taking the lead in building relationships and demonstrating capacity to assist faculty in achieving their goals, collaboration is doomed to be nothing but a wish. "Proactivity is one aspect of asserting the librarians' professionalism, thereby moving beyond the service model to collegiality with faculty" (Bennett & Gilbert, 2009).

Establishing expertise

A frequently cited advantage of interprofessional or cross-boundary collaborations is that combining the expertise and knowledge from different disciplines maximizes creativity, problem-solving, and innovation (Caldwell et al., 2017; D'Amour et al., 2005; McNamara, 2012). In an ideal scenario, each collaborator is recognized for what they know best, and it is mutually understood how their expertise will contribute to the collaborative outcome (Mattessich & Monsey, 1992). However, it has been noted that teaching librarians' roles, skills, and competencies are not always well-understood by discipline faculty (Christiansen et al., 2004; Perez-Stable et al., 2020; Pham & Tanner, 2015). Murphy et al. (2020) provide an example:

> The vagueness surrounding roles in the course sometimes translated to less than optimal librarian-instructor interactions. Instructors had different perceptions of librarian roles and thus different expectations of librarian responsibilities. This resulted in varying levels of engagement with student work, such as whether librarians were responsible for the assessment of student work and blurred salient functional and administrative boundaries. (p.13)

The work undertaken by teaching librarians to counter role ambiguity or misperception is identified as establishing expertise. It was used as a code that centers on the librarian's view of their professional self and their efforts to address role misperception. The objective of this identity-based work is to realize and fulfill their professional aims as a contributor to the collaborative work. Owens and Bozeman note, "The librarian needs to show the professor how s/he will benefit when his/her students have better research skills and more knowledge of library resources,"

(2009, p.33) and "Librarians should not be hesitant to "toot their own horns" (p.35).

Gardner and White-Farnham (2013) shares this viewpoint: "Faculty culture in an institution may be resistant to librarian input on curriculum design, but the more librarians establish themselves as experts in scholarship and information literacy, the greater will be the opportunities for faculty-librarian collaboration" (p.240).

A theme within the code *establishing expertise* is the emphasis librarians place on situating their knowledge within the disciplinary domain of the faculty member, and on demonstrating their pedagogical skills. Several research articles support this theme.

Doskatsch (2003) presents a list of strategies for the effectiveness of librarians as educators, stating "this role requires the convergence of pedagogical knowledge, information expertise, technological competence, strategic skills and professionalism. Librarians involved in the teaching and learning process need… knowledge of a range of different learning styles and familiarity with a wide variety of teaching methods" (p.113). In addition to pedagogical expertise and professional skills, it is helpful when a librarian has discipline knowledge. Watts et al. (2021) touch upon that issue in their article about data literacy education: "Historically, subject expertise has played an important role in fulfilling the position responsibilities and building credibility with academic departments on campus" (p.257). Adams et al. reiterate that point: "If the librarian understands the educator's disciplinary approach to evidence, then true collaboration and boundary crossing will more likely occur" (2016, p.716).

Exercising professional agency

Exercising professional agency has been identified as a key social dynamic for teaching librarians who collaborate with discipline faculty. As a concept on its own, agency is not treated with consistent definitions across the disciplines (Emirbayer & Mische, 1998), including librarianship, which leads to confusion in how it is understood. For this reason, we relied on a definition by Eteläpelto et al. (2013) to provide us with a basis for understanding agency as a theme in data analysis. Their socially oriented definition of professional agency resonates with the relational aspect of our analysis: "professional agency [is] exercised when professional subjects influence, make choices, and take stances on their work and professional identities" (p.61).

Exercising professional agency is closely related to the attribute *interdependence* in that it connects directly to the aspect of mutuality that occurs within collaborative relationships. As a social dynamic, however, it is clear that teaching librarians are sometimes challenged when it comes to manifesting and sustaining their professional agency. Our analysis provides evidence that librarians' ability to exercise professional agency can be threatened by power imbalances (or perceived power imbalances) within the collaborative relationship. The result is that academic librarians compromise their agency to sustain the collaboration. Depending on contextual circumstances, some librarians do not feel comfortable "challenging" discipline faculty by offering a different point of view or asserting their ideas. Meulemans and Carr (2013) note that librarians who "offer on-demand instruction have found themselves receiving problematic or uninformed requests from professors" (p.81). For example, some were asked to teach a class while the instructor attended a professional conference or to visit the class simply to show the library website. Such requests are not ideal for librarians who aim for a more engaged collaborative relationship but may be accommodated by librarians who perceive this as a partial win or an opportunity to leverage the action into something more sustainable and meaningful.

The data indicates that librarians' professional agency has the capacity to evolve during the developmental phases of a collaborative relationship. It is not evident from our analysis how exercising professional agency is manifested by librarians in new relationships compared to established relationships. This is an area of research that could benefit from further exploration.

Boundaries and allied concepts

Within the PU method, the boundaries of a concept are broadly determined by the weakness of a concept's attributes. When attributes are weak or ambiguous, they are described as approaching the boundary of the original concept, and may overlap with other concepts. When attributes are no longer a part of the concept, or if they have significant overlap with other concepts, the question is asked: Is this still the original concept? Fig. 2 below shows that attributes are strongest the closer they are to the heart of the concept, and weaken as they extend to the boundaries; that is, where the concept loses its identity and overlaps with another concept, resulting in an allied concept. Allied concepts are those that are similar, and may share some attributes, but still remain distinct.

It was important as part of the analysis to focus on how teaching librarians distinguish between service and other types of relational or joint work, and to understand why librarians, both semantically and in the context of teaching, often conflate the term *collaboration* with other forms of work. Scholars emphasize different aspects of the terms, leaving some ambiguity about lines of distinction, but the level of collaboration is generally identified by the depth of interaction, the formality (or informality) of the relationship, and the complexity of the collaborative outcomes (Castañer & Oliveira, 2020; Mattessich et al., 2001).

This study found several allied concepts that were closely related to collaboration and used interchangeably in the literature, including partnership (Gaspar & Wetzel, 2009), liaison librarianship (Zanin-Yost & Dillen, 2019), and embedded librarianship (Kesselman & Watstein, 2009; Murphy et al., 2020; O'Toole et al., 2016). What are the shared attributes of each of these concepts? And what attributes distinguish them? Despite the general maturity of the attributes identified for collaboration, its poorly set boundaries and the frequent interchange of collaboration with its allied concepts led us to define collaboration as a partially immature concept.

The reality is that collaboration, as a concept, remains challenging for librarians to demarcate as a professional practice. While it has been well-established as a higher education practice, with its advantages heralded by university and college administrators, there are many examples in the library literature when the concept of collaboration is poorly defined and even misinterpreted. This analysis indicates that collaborative initiatives can encompass a range of teaching activities, from one-time information literacy instruction sessions to multiple sessions for a single class, to embedded librarian models. There have been efforts to define liaison librarianship and embedded librarianship and to establish defining frameworks (Brower et al., 2011; Church-Duran, 2017; Jaguszewski & Williams, 2013; Shumaker & Talley, 2009), yet our analysis shows that the continuous interchangeable use of the allied concepts suggests their boundaries have not been well-established. A consistent statement is seldom made as to what collaboration is *not*; also

lacking is identification of conditions that transform it into a service role or to a more in-depth engagement such as a partnership. To align with Morse's criteria for a mature concept, additional distinctions should be applied when using these terms to improve clarity and mutual understanding. To be well-established and well-defined, the boundaries of collaboration (showing what it is not) are important to establish if the concept of collaboration is to be further studied and understood.

Outcomes

Outcomes are generally recognized as the concept's end-points that occur when its antecedents and attributes (including, in this case, social dynamics) are present (Morse, 2016). Clear outcomes contribute toward conceptual maturity and, in the case of teaching librarians, outcomes were identified as the most mature dimension to emerge from the study. They are consistently well-defined in all disciplinary contexts represented in the data, and remain similar for all types of library collaborative initiatives including single instruction sessions, co-teaching, and both liaison and embedded librarianship models.

Outcomes related to engagement between teaching librarians and discipline faculty have been well-documented in the professional literature. Below are the three results of collaboration that emerged most frequently in the analysis:

Improved information literacy and research skills among students. "Due to the successful collaboration between the professor and librarian, the quality of student work has risen dramatically through the years." (Meulemans & Carr, pp.86–87). This outcome was referenced in several other studies including Atkinson, 2018; Callison et al., 2014; Corrall & Jolly, 2019; Goodsett, 2020; Lindstrom & Shonrock, 2006.

Positive student perception and increased access to resources. A collaboration provides librarians an opportunity to advocate for the library's services and collections. "Students expressed surprise at aspects of their work that librarians or the library could support. Opportunities to promote library services and spaces such as interlibrary loan, maker spaces, virtual reality, audiovisual editing suites, and study rooms in addition to traditional content such as searching, citing, and collections displayed the broad range of skill sets and resources available to students" (Murphy et al., 2020, p.9).

Increased credibility of teaching librarians, leading to improved collaborative relationships with teaching faculty. As Øvern (2014) points out, faculty "were impressed with the librarian's knowledge and they quickly became comfortable with team-teaching" (p.36).

Additional outcomes demonstrate that librarians consistently turn a reflexive eye on their professional selves and evaluate how their investment in collaborative work can be leveraged to grow their faculty network and cultivate new collaborative opportunities. It is also worth noting that, while the outcomes identified in this study are positive and enthusiastically supported by teaching librarians, the quality of the outcomes is a separate topic that can be addressed only through assessment review.

Summary of findings

We conclude that in the context of teaching librarianship, the concept of collaboration is partially mature. In the professional literature, the definition of collaboration is often assumed, with limited exploration of its characteristics. Following the PU typology of Morse (2016), we also conclude that there is variability among the maturity level of dimensions (see Table 3). As a result, the concept of collaboration, and all its characteristics and processes, remain ambiguous and open to interpretation. There is no clear consensus as to what collaboration is—or is not—within the context of teaching librarianship. Overall, collaboration does not refer to a singular type of teaching experience; instead, it is a concept that reflects a wide range of teaching engagements from a single-shot or a series of instruction sessions, co-teaching, and both embedded and liaison models of librarianship.
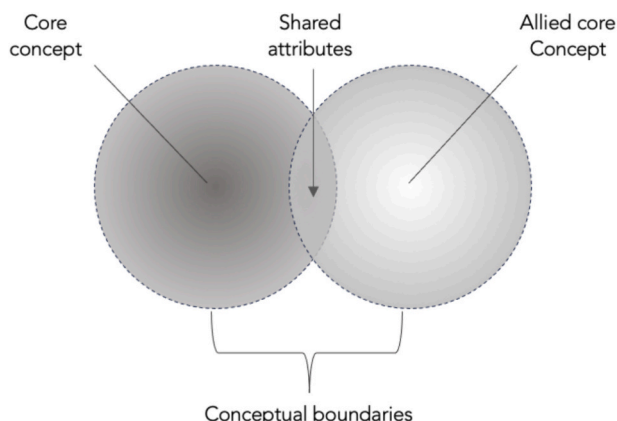

Fig. 2. The relationship of allied concepts to a core concept.

Table 3
Assessment of dimensions' maturity levels.

Criteria	Immature	Partially Mature	Mature
1. Definition of collaboration		Dictionary definitions; or inconsistent use of references to other authors	
2. Antecedents		Described, but unclear	
3. Attributes		Evident, but not examined	
4. Social Dynamics		Described, but unclear	
4. Outcomes			Described fully and demonstrated
5. Boundaries	Not identified		

The analytic presentation of the dimensions of collaboration should not be regarded as comprehensive. As previously mentioned, the goal of PU is not to establish a definition, but to explore how a concept is understood and operationalized in a specific context. As collaboration and partnerships within higher education continue to become a part of institutional culture, and collaboration remains a focus of teaching librarians' roles, further refinement of the concept can provide the profession with a more granular view of its complex nature. By making the dimensions of collaboration more explicit within the profession, there is an opportunity for researchers to explore collaboration further so it can become more theoretically enriched. Establishing a more rigorous study and classification of collaboration and its dimensions can better shape how future research is developed, how ideas are framed, and how collaboration is viewed as a social phenomenon.

Study limitations

The purpose of this work is to introduce specific dimensions of collaboration as presented in articles and studies published by teaching librarians. The analyzed data constitutes a small fraction of articles from the library literature, many of which represent illustrative case studies. Although case studies often bypass a theoretical framework to focus on the provision of practical and specific details, it is helpful when a relationship with an existing theory is made so the case study's contributions can be contextualized against what is already known (Rule & John, 2015). A search of the literature with different parameters may yield different results and generate additional perspectives on how collaboration is conceptualized and operationalized by teaching librarians. Additionally, the literature analyzed for this study is not limited by geography. Most of the articles included come from the United States, but there are some from Canada, Thailand, Singapore, and one that compares collaborative practice in Vietnamese and Australian libraries. A comparative study of how collaboration is perceived by librarians from across the world was outside our scope, but exploring this perspective could generate an advanced concept understanding from different regions of the globe.

Although there are inevitable shortcomings in our interpretation of the study findings, our data analysis was iterative and relied on critical appraisal of relevant literature against an established PU concept analysis.

Future research

In most cases, pragmatic utility research findings stop at the point of "propositional knowing," whereby the study culminates in the researcher's interpretation of the qualitative data (Heron & Reason, 2008, pp.368, 373). The intended outcome of this study was not to define collaboration but to present a synthesis and overview of a select set of dimensions to establish a conceptual "knowing" of collaboration from the perspective of teaching librarians' documented experiences. As an outcome of inquiry, this study provides new avenues for future researchers to use its findings to develop subsequent lines of research related to collaboration.

The pursuit of studying teaching librarians' collaborative experiences contributes to an improved understanding of how collaborative processes are perceived, and what attributes of the work are most valued. These findings can also lead to research projects based on related constructs, at different levels of analysis, and with the application of other methodologies. From what this study reveals about teaching librarians' collaborative experiences, more questions arise about collaborations that function in less-than-ideal conditions. Relevant scenarios could include those with varying levels of mutuality in areas related to trust, commitment to shared goals, and librarians' professional agency. The notion of collaborative compromise could be further studied in the context of librarians' willingness to make concessions in dyadic relationships with discipline faculty. The pattern of compromise, as it appears in one-time versus repeated or sustained collaborations, is another opportunity for exploration. Additionally, a review of how collaborative work impacts librarians' commitment, and when it leads to collaborative fatigue or burnout, could generate useful information about teaching librarians' work experiences.

This analysis also indicates that library scholars have not thoroughly studied the characteristics that distinguish institutionally or departmentally supported collaborations from non-mandated collaborations, including their respective attributes, how they function, and the collaborators' relational experience. Though it falls outside the limits of our research, a comparative analysis could be helpful to determine any differences in the collaborative attributes and social dynamics that exist between diversely supported collaboration types.

Finally, the data set used for analysis contained illustrative case studies that focused on discipline-specific collaborations in the context of teaching. From these studies, it was observed that discipline expertise plays an important role in collaborations between teaching librarians and teaching faculty. The field expertise held by subject librarians, liaisons, and embedded librarians is important for establishing and cultivating credibility with academic departments on campus. However, the collaborative experience and defining attributes of these established relationships may be further distinguished from ad hoc collaborations. Liaison roles generally evolve over time and through interaction and communication, so the collaborative constructs and challenges of these relationships could be identified and studied separately and further distinguished by discipline to develop a clearer understanding of how collaboration is conceptualized and operationalized, thereby contributing to a more mature understanding of collaborative work and paving the way for studies that are theoretically constructed.

The conceptual contributions from this study are general, but developed from the library literature to ensure their applicability to the context of teaching collaborations with discipline faculty. Further analysis and research are needed to determine if this conceptualization of collaboration is applicable and useful in non-teaching collaborative contexts in which antecedents, attributes, and outcomes may be identified differently.

As the study of collaboration improves and more rigorous fields of inquiry are adopted, there is an opportunity to use alternative lenses to examine the reasons why some teaching collaborations succeed and others struggle to progress. New information could propose alternative ways to facilitate collaborative effectiveness. Finally, a concept analysis of collaboration should not be regarded as static; instead, it should be viewed as dynamic and responsive to the needs of the university community. The concept of collaboration requires more work before it is codified as mature within the professional literature and relied upon as a rigorous, theoretical underpinning. It should also be continually revisited in the context of technological developments and library trends, and as the empirical work expands and contributes to improved understanding.

CRediT authorship contribution statement

Amy Andres: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Tatiana Usova:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

None.

Appendix A. Summary of publications used for data analysis

Reference	Publication year	Definition (if provided) and/or supporting description of collaboration in the source literature
Adams et al.	2016	"The effectiveness of the collaborations between librarians and educators depended on the degree to which the participants understood and respected competing epistemologies and blurred traditional professional boundaries to achieve true collaboration: shared responsibility for the negotiation and design of a new curriculum" (p.717).
Bennett & Gilbert	2009	"This process required a flexible outlook and …demanded exercise of effective problem-solving skills (p.135). […] the reference librarian needed to utilize strong communication while interacting with the various participants" (p. 135).
Bowles-Terry & Soble	2022	"[…] the work is, by its nature, collaborative as it leverages the librarian's and the faculty's expertise to make pedagogical changes; scholarly as the librarian is utilizing and potentially co-creating scholarship with faculty to improve pedagogy; contextual, grounding conversations and decisions in the disciplinary and institutional contexts of the faculty; and reflective, striving to help faculty think broadly and purposefully about their practice" (p. 2, citing Fundator & Maybee, 2019).
Chung	2010	"[…] case studies tend to primarily focus on the success of collaboration rather than the relationship-building processes that likely preceded and lay the foundation for the successful outcome in the first place" (p.163).
Consalvo et al.	2022	"[…] it is difficult for many librarians to get buy-in from faculty and to have influence at the curricular and assignment level" (p.112, citing Wishkoski, 2018).
Donham & Green	2004	"[…] collaboration means working together [co (together) + laborare (to work)]" (p. 314) "Collaboration is surely a human effort or labor. Collaboration between a librarian and a faculty member has several important attributes: mutual goals, mutual respect, advance planning, and substantive contributions by both parties for designing instructional goals and activities and then carrying them out" (p. 314, citing Donham & Rehmke, 2002).
Doskatsch	2003	No definition or description.
Fagan et al.	2021	No definition or description.
Gandhi	2005	No definition or description.
Gardner & White-Farnham	2013	"[…] mutually supportive, engaged, and collaborative theories of blended IL and writing instruction [requiring] composition specialists to partner with information specialists in order to facilitate initiatives, pedagogies, and linkages that extend beyond disciplinary, physical, and institutional boundaries" (p. 236, citing Artman, 2010).
Gaspar & Wetzel	2009	"Dick Raspa and Dane Ward outline the tenents of successful collaboration with emphasis on communication, persistence, and a shared project" (p.579, citing Raspa and Ward, 2000) and "[…] better understanding of expectations could benefit the partnership" (p.583).
Hines & Hines	2012	No definition or description.
Horne & Tritt	2017	No definition or description.
Kesselman & Watstein	2009	No definition or description.
Lampert	2005	"The collaborative factors that continue to make this graduate information literacy program flourish include flexibility, creative curriculum planning, and the active and equal participation of discipline and library faculty" (p. 20).
Lindstrom & Shonrock	2006	"The importance, and yet, difficulty, of engaging in successful collaboration has been well documented" (p. 18). "Ivey […] defined four behaviors essential for successful collaborative teaching partnerships: shared understood goals; mutual respect, tolerance, and trust; competence for the task at hand by each of the partners; and ongoing communication" (p. 19, citing Ivey, 2003).
Meulemans & Carr	2013	"[…] Ivey (2003) found four behaviors that are essential for success in collaboration: a shared, understood goal; mutual respect, tolerance, and trust; competence for the task at hand by each of the partners; and ongoing communication" (p.82).
Murphy et al.	2020	"[…] collaboration between faculty members as instructors and embedded librarians as IL experts achieves common goals of student engagement and learning, IL development, and cross-institutional collaboration" (p. 6, citing Coltrain, 2015; Li, 2012) and "[…] a working relationship in a learning space built on collaboration, trust, and collegiality" (p.17).
Olivares	2010	No definition or description.
O'Toole et al.	2016	"Collaboration occurs after the subject librarian gains the trust of faculty, staff, and students. Collaboration for embedded librarians usually refers to taking part in academic endeavors, particularly teaching and research, in which the librarian serves as a major partner" (p. 532).
Øvern	2014	"According to Cook (2000), Mattessich and Monsey defined collaboration as 'a mutually beneficial and well-designed relationship entered into by two or more [individuals or] organizations to achieve common goals' (p. 23). Although most of the articles cited in this review use the word 'collaboration', it is not always clear what is meant by the term. Where descriptions of specific collaboration cases occur, none describe situations that could match all the core words ('mutually beneficial', 'well-designed' and 'common goals') of this definition. The term 'mutually beneficial' seems particularly overlooked" (p.41).
Owens & Bozeman	2009	"Collaboration is defined as working "jointly with others or together especially in an intellectual endeavor" by Merriam-Webster's Dictionary. A definition of collaboration, as a "mutually beneficial and well-designed relationship entered into by two or more [individuals or] organizations to achieve common goals," by P.W. Mattessich and B.R. Monsey is cited in several articles on the subject" (p. 32, as cited by Cook, 2000). "Collaboration between two or more people involves the developing of common goals, the searching for solutions, and the building of trust" (p. 32, citing Kouzes & Posner, 1995).
Palsson & McDade	2014	No definition or description.
Pham & Tanner	2014	"A broad definition of collaboration: Collaboration is an interactive process among internal and external stakeholders who work together to communicate their knowledge, skills, resources and authority in planning, designing, decision-making and problem-solving process for the achievement of a mutual goal. In the context of collaboration between academics and librarians in the university environment: Collaboration is an educationally innovative process among academics, librarians and other relevant parties who are working together to share knowledge and expertise to support the enhancement of teaching, learning and research experiences for the university community" (p.23) and "Collaboration requires trusting, committed relationships, mutual respect for the competence brought by different professional groups and well-developed social skills to foster effective communication across professional boundaries" (p.35).
Pham & Tanner	2015	"[…] collaboration is a complex concept, representing a high level of human relationship" (p.2) and "Collaboration is defined as a joint working, learning and sharing process that specifically focuses on the activities of teaching, learning and researching among educational participants, in which knowledge can be activated and transferred" (p.3).

(*continued*)

Reference	Publication year	Definition (if provided) and/or supporting description of collaboration in the source literature
Rath & Cimbricz	2015	"[…] four pieces of advice: (1) Move what you offer closer to end users and make it 'just right'; (2) unite around similar purpose; (3) create wins for all; and (4) leave them wanting more" (p.47) and "[…] the importance of faculty members and librarians finding shared understandings, purposes, and a place to start. The goal is to identify and integrate each other's strengths, without negating each other's expertise or judging one another" (p.49).
Scripps-Hoekstra & Hamilton	2016	"In reflecting on their collaboration, the authors emphasized the importance of an open, trusting partnership between librarian and professor, one in which both are able to innovate and experiment together with new instructional methods" (pp. 8–9).
Simons	2017	No definition or description.
Smith & Dailey	2013	No definition or description.
Thomas & Saib	2013	"True collaboration between librarians and academics sees both parties working toward a common goal which embodies respect, tolerance, trust, competence and ongoing communication" (p.6, citing Ivey, 2003; Meulemans & Carr, 2013).
Watts et al.	2021	"[…] the success of the collaboration was brought to bear by the reciprocal benefits of those involved" (p.263).
Yu et al.	2019	"With respect to the faculty-librarian collaboration, several crucial elements are involved according to the definitions and concepts of Mattessich and Monsey (1992), Raspa and Ward (2000), and Cook (2000). They are: (1) collaborative relationship: this is the first step, in which both librarians and faculty members are willing to establish a formal or informal collaborative relationship; (2) common goal: understanding the reasons and objectives involved in a collaborative project is needed; (3) shared responsibility: clarifying the duties and tasks between librarians and faculty required for a collaborative project; (4) mutual benefit: both librarians and faculty can obtain benefits in a collaborative project; (5) collaborative process: collaboration must be a well-structured process of action for achieving a common goal; and (6) organizational performance: improving organizational effectiveness is the final goal (e.g., improvement of teaching and learning)" (pp.100–101).
Zanin-Yost	2018	"Collaborations with faculty range from redesigning a course, imbedding information literacy skills, developing grading rubrics,and helping with grading" (p. 152).
Zanin-Yost & Dillen	2019	No definition or description.
Zaugg & Child	2016	"The largest challenge to this type of collaboration is building and maintaining trust between the librarian and the faculty member. Each has specific needs and goals'(p. 12) and 'A successful cross-disciplinary collaboration hinges on trust among all parties involved" (p. 26).

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