

Understanding Academic Library Virtual Reference at Scale: A Multi-Institutional Content Analysis of Chat Transcripts

Supplemental Materials

Authors: Meg Brown-Sica, Rebecca A. Croxton, and Jennifer Church-Duran

Contents

Supplemental Table A. Intercoder Reliability Statistics	2
Supplemental Table B. Codebook.....	4
Supplemental Table C. Codes, Frequencies, and Quartiles (Qtl)	13
Supplemental Table D. Complexity Propensity per Code and University	17

Supplemental Table A. Intercoder Reliability Statistics

Statistic & Codes	Round 1 (4 raters)	Round 2 (3 raters)
Krippendorff's α (nominal) (agreement across all Study IDs and Codes)	0.564	0.610
Macro-averaged Fleiss' κ (agreement among coders across the entire set of codes)*	0.261	0.347
Pairwise Cohen's κ (overall agreement between rater pairs)	0.480-0.674	0.517-0.689
Krippendorff's α (nominal)** (code-level agreement)		
Abandoned Chat (new for Round 2)	***	0.31
Borrow Technology	0.73	0.49
Campus Services	0.00	0.38
Campus Wayfinding	0.00	0.00
Citations / Citing Sources	0.00	0.00
Connectivity & Remote Access Issues	0.21	0.00
Course Reserves (new for Round 2)	***	0.49
Database Search Skills	0.79	0.49
Develop your research topic	0.00	0.00
Evaluating Information	0.00	0.00
Faculty Instructional Support (new for Round 2)	***	0.00
Fees & Fines	0.65	0.79
Find a Known Item: Audiovisual (e.g., physical, digital, or streaming videos, recordings, music) (new for Round 2)	***	0.00
Find a Known Item: Books	0.55	1.00
Find a Known Item: Journals, Periodicals, or Articles	0.21	0.86
Find a Known Item: Other (e.g., kits, maps, tools, games, slides, or non-traditional items)	***	0.00
Find a Known Item: Theses or Dissertation	0.66	1.00
Find Items by Author	0.00	0.00
Finding relevant sources	0.79	0.00
Hold Request	0.85	0.00
Interlibrary Loan	0.72	0.73
Library Hours	0.00	0.00
Library Navigation & Wayfinding	0.00	0.00
Library Services	0.12	0.00
Lost & Found	0.00	0.00
Lost Items	0.00	0.00
Managing & Organizing Information	0.00	0.00
Noise Issues	0.00	0.00
Other	0.46	0.13
Patron Accounts	0.32	0.91
Physical Accessibility	0.00	0.00

Statistic & Codes	Round 1 (4 raters)	Round 2 (3 raters)
Policies & Procedures	-0.03	0.49
Printing & Scanning	0.00	-0.01
Renewals	0.88	0.00
Research Strategies	0.00	0.00
Safety & Security	0.00	0.00
Software	0.00	0.49
Study Rooms & Reservations	1.00	0.00
Tech Support	0.14	-0.03
Website	0.21	0.00

*Codes not assigned to any transcripts were excluded from the macro-averaged Fleiss' *K*.

**Code not assigned to any transcript in the Round.

*** Code not in Round 1

Supplemental Table B. Codebook

Cluster & Code	Definition	Example Questions
Access and Circulation		
Borrow Technology	Questions or requests related to borrowing technology/ equipment such as laptops, chargers, and calculators. Questions may include those related to where and how to borrow technology.	<p>Can I borrow a laptop for the weekend?</p> <p>Do you loan out phone chargers?</p> <p>Can I check out a calculator for my exam?</p>
Fees and Fines	Inquiries about overdue fines, lost item charges, or payment procedures. (NOTE: Fines & fees apply to any item that can be borrowed/checked out and may include, but is not limited to books, media, equipment, and more.)	<p>I got a fine for a late book—how do I pay it?</p> <p>Why did I get fined for a book I returned?</p> <p>Is there a way to appeal a library fine?</p> <p>What will I be charged if I keep a laptop beyond the loan period?</p>
Hold Requests	Questions about placing or managing holds on library materials, including requesting a physical item in the library's collection be pulled.	<p>How do I place a hold on a book that's currently checked out?</p> <p>How do I know when my hold is ready for pickup?</p> <p>Can I place a hold on a book that's listed as currently available in the catalog?</p>
Lost Items	Questions about items borrowed and lost by the patron.	<p>I lost a book I borrowed—what should I do?</p> <p>What happens if I can't find a book I checked out?</p>
Patron Account Questions	Questions about user accounts, including login questions, account access, or account status. (NOTE: This may include inquiries about "library cards.")	<p>I can't log into my library account—can you help?</p> <p>How can I see what books I have checked out?</p> <p>How can I sign up for a library card?</p>
Renewals	Requests about extending the borrowing period for checked-out materials.	<p>Can I renew my books online?</p> <p>Can I renew my books more than once?</p>

		Why won't the system let me renew my item?
Known Item Retrieval		
Find a Known Item: Audiovisual (e.g., physical, digital, or streaming videos, audio recordings, music)	Requests for specific audiovisual materials, such as physical DVDs, streaming videos, or audio recordings.	Do you have the film Moonlight available to stream? Where can I find the audiobook version of Educated? Is The Social Dilemma available on DVD at the library?
Find a Known Item: Books	Inquiries about specific books by title, call number, or ISBN.	Do you have To Kill a Mockingbird in your collection? I need a copy of 1984 by George Orwell—do you have it? Where can I find the textbook for my biology class?
Find a Known Item: Journals, Periodicals, or Articles	Inquiries about specific journal, magazine, newspaper, or other titles or individual articles.	Can you help me find an article from The New England Journal of Medicine? Do you have access to The Economist? I'm looking for a specific article from Nature published last year—can you help? My professor mentioned an article from The New York Times about climate change and coral reefs—how can I find that specific article?
Find a Known Item: Theses or Dissertation	Inquiries about specific academic theses or dissertations.	How can I access a dissertation written by a former student here? How do I find a thesis written by a student from 2010? Can I access dissertations from other universities?

<p>Find a Known Item: Other (e.g., kits, maps, tools, games, slides, or non-traditional items)</p>	<p>Requests for specific non-traditional library items such as kits, maps, tools, games, or other physical objects.</p>	<p>How do I check out the Human Anatomy bone box?</p> <p>I heard you lend out board games—do you have Catan?</p> <p>How can I check out the State Parks pass?</p> <p>Do you have a trail map for Rocky Mountain National Park?</p>
<p>Find Items by Author</p>	<p>Inquiries about works by a particular author.</p>	<p>Do we have any books or articles written by Rachel Carson on environmental science</p> <p>Do you have any books by Toni Morrison?</p> <p>I'm looking for recent journal articles by Dr. James Tour—how can I find everything he's published in the last five years?</p>
<p>Discovery and Research Support</p>		
<p>Citations / Citing Sources</p>	<p>Questions about citation styles (APA, MLA, etc.), tools, or avoiding plagiarism.</p>	<p>How do I cite a website in APA format?</p> <p>Can you show me how to use EndNote to manage my citations?</p> <p>I'm writing a history paper and need to use Chicago style—how do I format footnotes for a primary source like a letter or diary?</p>
<p>Database Search Skills</p>	<p>Help with using databases effectively, including search techniques and filters.</p>	<p>How do I search for peer-reviewed articles in JSTOR?</p> <p>How do I use Boolean operators in a database search?</p> <p>What's the best way to limit my search to only peer-reviewed articles?</p> <p>How do I determine what topics the databases cover?</p> <p>How can I search several databases at the same time?</p>

Develop your research topic	Assistance with brainstorming, narrowing, or refining a research topic.	<p>Can you help me narrow down my topic on climate change?</p> <p>Can you help me turn my question into a research topic?</p>
Evaluating Information	Guidance on assessing the credibility, relevance, and quality of sources.	<p>How do I know if a source is credible?</p> <p>How do I know if this article is scholarly?</p> <p>Is this website a reliable source for my paper?</p> <p>How can I determine the quality of an article posted on the Web?</p>
Finding relevant sources	Assistance identifying high-quality, topic-specific materials.	<p>I need scholarly articles about social media and mental health—can you help?</p> <p>I'm not finding anything useful—can you help me refine my search?</p> <p>What are the best databases for psychology research?</p> <p>Where can I find sources for my sociology project?</p> <p>Where can I find background info on my topic?</p> <p>I need a mix of books and articles—can you help me find both?</p> <p>I'm researching the impact of microplastics on marine life—can you help me find a variety of sources like journal articles, government reports, and maybe some recent news coverage?</p>
Managing & Organizing Information	Help with managing and structuring research materials or notes.	<p>What is the best way to organize my research notes?</p> <p>Do you have tips for keeping my sources organized?</p>

		Is there software that can help me track my references and notes?
Research Strategies	Broad questions about how to begin or improve research processes.	<p>What's the best way to start researching a history paper?</p> <p>Can you help me figure out how to structure my research?</p> <p>I'm supposed to write about recent advancements in quantum computing—what's the best way to approach the research, so I don't get overwhelmed by the technical details?</p>
Technical and Connectivity		
Connectivity & Remote Access Issues	Problems accessing library resources off-campus or connecting to Wi-Fi.	<p>I'm off campus and can't access the databases—what should I do?</p> <p>Is there a VPN I need to use to get into JSTOR off campus?"</p>
Software	Questions about software availability, installation, or use (e.g., SPSS, Adobe).	<p>Can I use Photoshop on the library's computers?</p> <p>Do you have SPSS on library computers?</p> <p>What software programs do library laptops have?</p>
Tech Support	Help with using library computers, software, or equipment.	<p>The computer I'm using just froze—can someone help?</p> <p>I'm having trouble logging into the library computer.</p>
Website	Issues or questions related to navigating or using the library's website.	<p>How do I find the library catalog on your website—can you send me the link?</p> <p>How can I schedule an appointment with a librarian on the website?</p>
Physical and Operational		
Campus Services	Inquiries about non-library services offered on campus (e.g., tutoring, writing support, IT help, counseling, dining).	<p>Do you know where I can get help with my student ID?</p> <p>Is there a notary service on campus?</p>

		Where can I get help with financial aid questions?
Campus Wayfinding	Questions about how to find buildings or locations elsewhere on campus.	How do I get to the health center from the library? Can you tell me how to get to the student union from here?
Library Hours	Questions regarding the opening and closing times of the library or specific departments.	What time does the library close tonight What are your weekend hours? Is the Library open during winter break?
Library Navigation & Wayfinding	Questions about how to locate specific areas, collections, or services within the library.	Where are the restrooms located in the library? Can you help me find the library classrooms? Where's the fiction section located? Where are the call numbers posted in the stacks?
Lost & Found	Questions about lost personal items or where to retrieve or report found items.	I think I left my water bottle in the library yesterday—do you have a lost and found? I left my headphones in a study room—has anyone turned them in?
Noise Issues	Concerns or complaints about noise levels in the library, or questions about designated quiet areas.	Is there a quiet floor where I can study without distractions? Can I report someone being disruptive in the quiet zone?
Physical Accessibility	Inquiries about accommodations for individuals with disabilities, including building access, elevators, restrooms, and adaptive technologies.	Is there an elevator in the library for wheelchair access? Do you have accessible restrooms on every floor? Does the library have or provide adaptive technologies for users/patrons to use?
Printing & Scanning	Questions about how and where to print, scan, or copy documents using equipment in	Where can I print my paper in the library

	the library. Also includes reporting of issues/problems with printing, scanning, and copying equipment in the library.	How do I scan something? How much does it cost to print in color? Where can I scan a document to email? Do you have a 3D printer in the library? Can you help me set it up?
Safety & Security	Inquiries related to personal safety, emergency procedures, or the presence of security personnel.	What should I do if I feel unsafe while studying late? Is there a security guard on duty at night?
Study Rooms & Reservations	Requests to book or inquire about study rooms, including availability, policies, and equipment.	How do I reserve a study room for a group project? Can I book a study room for just myself? How far in advance can I reserve a room How many hours can I reserve a room for?
Referral and Administrative		
Policies & Procedures	Inquiries about library rules, borrowing limits, conduct policies, or service guidelines.	What's the policy on bringing food into the library? Can I bring my dog into the library?
Library Services	General inquiries about services offered by the library (e.g., reference help, workshops).	Do you offer one-on-one research help? Do you offer workshops on X, Y, Z? Is there someone who can help me with archival research? Does the library website have online tutorials or explanations on how to use the library? I have some questions about managing my data. Can you help?
Interlibrary Loan	Questions about borrowing materials from other libraries through interlibrary loan services.	How do I request a book (or article) from another library if you don't have it?

		<p>How long does it take to get an interlibrary loan item?</p> <p>How long can I keep an interlibrary loan item?</p>
Faculty Instructional Support	Questions from faculty or instructors seeking help with teaching-related resources, tools, or services.	<p>Do you offer instruction sessions for my students?</p> <p>How do I embed a library video into my Canvas course?</p> <p>Can you help me find materials to support my lesson on climate change?</p>
Course Reserves	Questions about materials placed on reserve for a course, including textbooks, readings, or media.	<p>My professor said they put a copy of the Psy 101 textbook on reserve. How can I borrow it?</p> <p>Where can I access the readings from Professor Lee's class?</p> <p>Can I check out the film assigned for my sociology course?</p> <p>I teach Soc 201 and want to put some materials on reserve. Can you help?</p>
Request a Purchase	Questions or requests for the library to purchase or acquire books or other materials not currently available in the library's collection. This may include books, journal subscriptions, databases, media, or other materials. The request may be for personal use, course support, or research purposes.	<p>I'm teaching a new course next semester and would like the library to purchase a copy of The Data Detective by Tim Harford for our students. How do I request that?</p> <p>I need a book for my research project, but it's not in the library catalog. Can I ask the library to purchase it?</p>
Other		
Abandoned Chat	Chats where the user initiates a conversation but does not respond to follow-up messages or leaves before the	Hi, I need help with... (no further response)

	interaction is complete.	<p>Can someone assist me with my assignment? (user disconnects before staff replies)</p> <p>(NOTE: If the chat is abandoned, but there is enough information in the transcript to assign another code, assign Abandoned Chat + other relevant codes.)</p>
Other	Any inquiry that does not clearly fit into the above categories.	<p>Is there a microwave in the library I can use?</p> <p>Do you know if the campus bookstore sells scantrons?</p> <p>Do you have any Blue Books that I can buy for my test?</p>
System Test	An internal test of the chat system by library or IT employees.	

Supplemental Table C. Codes, Frequencies, and Quartiles (Qtl)

Code	Overall (n=2,105 codes)		Arizona (n=1,049 codes)		Colorado State (n=348 codes)		Kansas (n=590 codes)		Utah (n=55 codes)		Utah State (n=63 codes)		Total Lib. in Q4 or Q3
	% of Total		% of Total		% of Total		% of Total		% of Total		% of Total		
	(n)	Qtl	(n)	Qtl	(n)	Qtl	(n)	Qtl	(n)	Qtl	(n)	Qtl	
Renewals	9% (195)	Q4	17% (180)	Q4	1% (4)	Q2	1% (7)	Q3	7% (4)	Q4	0% (0)	Q1	3
Find a Known Item: Journals, Periodicals, or Articles	9% (192)	Q4	5% (48)	Q4	9% (33)	Q4	17% (99)	Q4	7% (4)	Q4	13% (8)	Q4	5
Finding relevant sources	8% (165)	Q4	7% (72)	Q4	7% (26)	Q4	8% (49)	Q4	7% (4)	Q4	22% (14)	Q4	5
Interlibrary Loan	7% (139)	Q4	3% (32)	Q4	5% (16)	Q4	14% (84)	Q4	5% (3)	Q4	6% (4)	Q4	5
Find a Known Item: Books	7% (137)	Q4	3% (31)	Q3	4% (14)	Q4	14% (85)	Q4	4% (2)	Q3	8% (5)	Q4	5
Connectivity & Remote Access Issues	5% (108)	Q4	6% (68)	Q4	3% (10)	Q3	4% (25)	Q4	2% (1)	Q2	6% (4)	Q4	4
Borrow Technology	5% (108)	Q4	7% (77)	Q4	5% (16)	Q4	1% (6)	Q2	11% (6)	Q4	5% (3)	Q4	4
Patron Accounts	5% (108)	Q4	6% (65)	Q4	3% (11)	Q3	5% (30)	Q4	2% (1)	Q2	2% (1)	Q3	4
Abandoned Chat	5% (100)	Q4	4% (39)	Q4	11% (39)	Q4	3% (16)	Q4	7% (4)	Q4	3% (2)	Q4	5
Other	4% (74)	Q4	4% (43)	Q4	5% (16)	Q4	2% (12)	Q3	5% (3)	Q4	0% (0)	Q1	4
Library Services	3% (69)	Q3	3% (28)	Q3	5% (16)	Q4	3% (19)	Q4	4% (2)	Q3	6% (4)	Q4	4

Code	Colorado												Total Lib. in Q4 or Q3
	Overall (n=2,105 codes)		Arizona (n=1,049 codes)		State (n=348 codes)		Kansas (n=590 codes)		Utah (n=55 codes)		Utah State (n=63 codes)		
	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	
Policies & Procedures	2% (48)	Q3	2% (20)	Q3	3% (12)	Q3	2% (10)	Q3	11% (6)	Q4	0% (0)	Q1	3
Fees & Fines	2% (47)	Q3	4% (37)	Q4	1% (4)	Q2	1% (6)	Q2	0% (0)	Q1	0% (0)	Q1	1
Database Search Skills	2% (45)	Q3	2% (21)	Q3	4% (13)	Q4	1% (8)	Q3	4% (2)	Q3	2% (1)	Q3	5
Study Rooms & Reservations	2% (43)	Q3	3% (31)	Q3	2% (8)	Q3	0% (2)	Q1	2% (1)	Q2	2% (1)	Q3	3
Tech Support	2% (42)	Q3	2% (21)	Q3	4% (14)	Q4	1% (5)	Q2	2% (1)	Q2	2% (1)	Q3	3
Hold Request	2% (39)	Q3	2% (18)	Q3	2% (6)	Q2	3% (15)	Q4	0% (0)	Q1	0% (0)	Q1	2
Library Hours	2% (36)	Q3	3% (31)	Q3	1% (4)	Q2	0% (1)	Q1	0% (0)	Q1	0% (0)	Q1	2
Campus Services	2% (35)	Q3	2% (24)	Q3	2% (6)	Q2	1% (4)	Q2	2% (1)	Q2	0% (0)	Q1	1
Find a Known Item: Other	2% (35)	Q3	2% (16)	Q2	3% (9)	Q3	2% (10)	Q3	0% (0)	Q1	0% (0)	Q1	2
Citations / Citing Sources	2% (34)	Q2	1% (15)	Q2	2% (6)	Q2	1% (7)	Q3	2% (1)	Q2	8% (5)	Q4	2
Research Strategies	2% (34)	Q2	1% (10)	Q2	2% (7)	Q3	2% (12)	Q3	2% (1)	Q2	6% (4)	Q4	3
Faculty Instructional Support	1% (30)	Q2	2% (20)	Q3	1% (3)	Q1	1% (6)	Q2	0% (0)	Q1	2% (1)	Q3	2
Printing & Scanning	1% (26)	Q2	1% (8)	Q2	3% (11)	Q3	1% (4)	Q2	4% (2)	Q3	2% (1)	Q3	3

Code	Colorado												Total Lib. in Q4 or Q3
	Overall (n=2,105 codes)		Arizona (n=1,049 codes)		State (n=348 codes)		Kansas (n=590 codes)		Utah (n=55 codes)		Utah State (n=63 codes)		
	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	
Develop your research topic	1% (26)	Q2	1% (15)	Q2	1% (4)	Q2	1% (6)	Q2	2% (1)	Q2	0% (0)	Q1	0
System Test	1% (23)	Q2	0% (3)	Q1	0% (1)	Q1	3% (19)	Q4	0% (0)	Q1	0% (0)	Q1	1
Request a Purchase	1% (22)	Q2	1% (8)	Q2	1% (5)	Q2	1% (8)	Q3	2% (1)	Q2	0% (0)	Q1	1
Software	1% (21)	Q2	1% (11)	Q2	2% (6)	Q2	0% (2)	Q1	2% (1)	Q2	2% (1)	Q3	1
Library Navigation & Wayfinding	1% (21)	Q2	1% (10)	Q2	1% (4)	Q2	1% (6)	Q2	0% (1)	Q1	2% (1)	Q3	1
Find a Known Item: Audiovisual	1% (19)	Q2	1% (8)	Q2	1% (3)	Q1	1% (7)	Q3	2% (1)	Q2	0% (0)	Q1	1
Course Reserves	1% (18)	Q1	0% (1)	Q1	3% (11)	Q3	1% (4)	Q2	2% (1)	Q2	2% (1)	Q3	2
Evaluating Information	1% (12)	Q1	0% (5)	Q1	1% (2)	Q1	1% (4)	Q2	0% (0)	Q1	2% (1)	Q3	1
Noise Issues	1% (12)	Q1	1% (10)	Q2	0% (0)	Q1	0% (2)	Q1	0% (0)	Q1	0% (0)	Q1	0
Website	1% (10)	Q1	1% (6)	Q1	1% (4)	Q2	0% (0)	Q1	0% (0)	Q1	0% (0)	Q1	0
Campus Wayfinding	0% (9)	Q1	0% (5)	Q1	1% (2)	Q1	0% (2)	Q1	0% (0)	Q1	0% (0)	Q1	0
Find a Known Item: Theses or Dissertation	0% (8)	Q1	0% (1)	Q1	0% (1)	Q1	1% (5)	Q2	2% (1)	Q2	0% (0)	Q1	0

Code	Colorado												Total Lib. in Q4 or Q3
	Overall (n=2,105 codes)		Arizona (n=1,049 codes)		State (n=348 codes)		Kansas (n=590 codes)		Utah (n=55 codes)		Utah State (n=63 codes)		
	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	% of Total (n)	Qtl	
Find Items by Author	0% (8)	Q1	1% (6)	Q1	0% (0)	Q1	0% (2)	Q1	0% (0)	Q1	0% (0)	Q1	0
Lost & Found	0% (4)	Q1	0% (3)	Q1	0% (1)	Q1	0% (0)	Q1	0% (0)	Q1	0% (0)	Q1	0
Physical Accessibility	0% (1)	Q1	0% (0)	Q1	0% (0)	Q1	0% (1)	Q1	0% (0)	Q1	0% (0)	Q1	0
Lost Items	0% (1)	Q1	0% (1)	Q1	0% (0)	Q1	0% (0)	Q1	0% (0)	Q1	0% (0)	Q1	0
Safety & Security	0% (0)	Q1	0% (1)	Q1	0% (0)	Q1	0% (0)	Q1	0% (0)	Q1	0% (0)	Q1	0

Supplemental Table D. Complexity Propensity per Code and University

Cluster & Code	Complexity Propensity: Simple Moderate, Complex (% of Codes in Category)					
	Overall	Arizona	Colorado State	Kansas	Utah	Utah State
Access and Circulation						
Borrow Technology	Simple (44%)	Simple (45%)	Mixed: Simple (44%) Moderate (44%)	Simple (67%)	Moderate (50%)	Moderate (67%)
Fees and Fines	Complex (57%)	Complex (62%)	Moderate (75%)	Mixed: Complex (50%) Moderate (50%)	NA (no coded items)	NA (no coded items)
Hold Requests	Complex (54%)	Complex (61%)	Simple (50%)	Complex (53%)	NA (no coded items)	NA (no coded items)
Lost Items	Complex (100%)	Complex (100%)	NA (no coded items)	NA (no coded items)	NA (no coded items)	NA (no coded items)
Patron Account Questions	Complex (44%)	Complex (54%)	Simple (45%)	Simple (40%)	Complex (100%)	Complex (100%)
Renewals	Simple (45%)	Simple (46%)	Moderate (50%)	Mixed: Complex (43%) Simple (43%)	Mixed: Moderate (50%) Simple (50%)	NA (no coded items)
Known Item Retrieval						
Find a Known Item: Audiovisual	Complex (53%)	Complex (75%)	Mixed (33% for all levels)	Moderate (57%)	Simple (100%)	NA (no coded items)
Find a Known Item: Books	Complex (50%)	Complex (52%)	Complex (71%)	Complex (45%)	Mixed: Moderate (50%); Simple (50%)	Complex (100%)
Find a Known Item: Journals, Periodicals, or Articles	Complex (48%)	Complex (56%)	Complex (52%)	Complex (41%)	Complex (50%)	Complex (75%)

Cluster & Code	Complexity Propensity: Simple Moderate, Complex (% of Codes in Category)					
	Overall	Arizona	Colorado State	Kansas	Utah	Utah State
Find a Known Item: Theses or Dissertation	Moderate (50%)	Simple (100%)	Moderate (100%)	Moderate (60%)	Simple (100%)	NA (no coded items)
Find a Known Item: Other	Complex (40%)	Complex (63%)	Complex (44%)	Moderate (60%)	NA (no coded items)	NA (no coded items)
Find Items by Author	Complex (63%)	Complex (67%)	NA (no coded items)	Mixed: Complex (50%); Moderate (50%)	NA (no coded items)	NA (no coded items)
Discovery and Research Support						
Citations / Citing Sources	Complex (59%)	Complex (67%)	Complex (50%)	Complex (43%)	Moderate (100%)	Complex (80%)
Database Search Skills	Complex (67%)	Complex (81%)	Complex (62%)	Moderate (50%)	Complex (50%)	Complex (100%)
Develop your research topic	Complex (77%)	Complex (73%)	Complex (75%)	Complex (83%)	Complex (100%)	NA (no coded items)
Evaluating Information	Complex (58%)	Complex (80%)	Mixed Complex (50%); Simple (50%)	Moderate (50%)	NA (no coded items)	Complex (100%)
Finding relevant sources	Complex (59%)	Complex (74%)	Complex (42%)	Complex (41%)	Complex (50%)	Complex (86%)
Managing & Organizing Info.	NA (no coded items)	NA (no coded items)	NA (no coded items)	NA (no coded items)	NA (no coded items)	NA (no coded items)
Research Strategies	Complex (71%)	Complex (70%)	Complex (43%)	Complex (83%)	Moderate (100%)	Complex (100%)
Technical and Connectivity						
Connectivity & Remote Access Issues	Complex (60%)	Complex (62%)	Complex (70%)	Complex (48%)	Moderate (100%)	Complex (100%)
Software	Simple (62%)	Simple (55%)	Simple (83%)	Mixed: Moderate (50%) Simple (50%)	Simple (100%)	Complex (100%)

Cluster & Code	Complexity Propensity: Simple Moderate, Complex (% of Codes in Category)					
	Overall	Arizona	Colorado State	Kansas	Utah	Utah State
Tech Support	Simple (45%)	Complex (43%)	Simple (57%)	Simple (60%)	Simple (100%)	Complex (100%)
Website	Complex (50%)	Complex (67%)	Simple (50%)	NA (no coded items)	NA (no coded items)	NA (no coded items)
Physical and Operational						
Campus Services	Simple (49%)	Simple (50%)	Mixed (33% for all levels)	Simple (75%)	Moderate (100%)	NA (no coded items)
Campus Wayfinding	Mixed: Simple (44%) Moderate (44%)	Mixed: Simple (40%) Moderate (40%)	Mixed: Simple (50%) Moderate (50%)	Mixed: Simple (50%) Moderate (50%)	NA (no coded items)	NA (no coded items)
Library Hours	Simple (64%)	Simple (65%)	Simple (75%)	Moderate (100%)	NA (no coded items)	NA (no coded items)
Library Navigation & Wayfinding	Mixed: Moderate (38%) Simple (38%)	Simple (50%)	Moderate (50%)	Moderate (50%)	NA (no coded items)	Complex (100%)
Lost & Found	Mixed: Complex (50%) Simple (50%)	Complex (67%)	Simple (100%)	NA (no coded items)	NA (no coded items)	NA (no coded items)
Noise Issues	Simple (42%)	Mixed: Moderate (40%) Simple (40%)	NA (no coded items)	Mixed: Moderate (50%) Simple (50%)	NA (no coded items)	NA (no coded items)
Physical Accessibility	Simple (100%)		NA (no coded items)	Simple (100%)	NA (no coded items)	NA (no coded items)
Printing & Scanning	Simple (58%)	Simple (50%)	Simple (64%)	Simple (50%)	Mixed: Moderate (50%) Simple (50%)	Simple (100%)
Safety & Security	Simple (100%)	Simple (100%)	NA (no coded items)	NA (no coded items)	NA (no coded items)	NA (no coded items)
Study Rooms & Reservations	Complex (44%)	Complex (48%)	Simple (75%)	Complex (100%)	Moderate (100%)	Simple (100%)

Cluster & Code	Complexity Propensity: Simple Moderate, Complex (% of Codes in Category)					
	Overall	Arizona	Colorado State	Kansas	Utah	Utah State
Referral and Administrative						
Policies & Procedures	Mixed: Complex (38%) Simple (35%)	Complex (60%)	Simple (58%)	Simple (50%)	Simple (50%)	NA (no coded items)
Library Services	Mixed: Complex (36%) Simple (36%)	Complex (39%)	Simple (44%)	Simple (42%)	Complex (100%)	Mixed: Complex (50%) Simple (50%)
Interlibrary Loan	Complex (49%)	Mixed: Complex (44%) Moderate (44%)	Complex (56%)	Complex (49%)	Simple (100%)	Moderate (100%)
Faculty Instructional Support	Complex (53%)	Complex (65%)	Simple (67%)	Moderate (50%)	NA (no coded items)	Complex (100%)
Course Reserves	Complex (50%)	Complex (100%)	Complex (64%)	Moderate (100%)	Moderate (100%)	Complex (100%)
Request a Purchase	Simple (45%)	Simple (46%)	Moderate (50%)	Mixed: Complex (43%) Simple (43%)	Mixed: Moderate (50%) Simple (50%)	NA (no coded items)
Other						
Abandoned Chat	Simple (96%)	Simple (97%)	Simple (92%)	Simple (100%)	Simple (100%)	Simple (100%)
Other	Simple (43%)	Complex (40%)	Simple (56%)	Simple (58%)	Simple (67%)	NA (no coded items)
System Test	Simple (100%)	Simple (100%)	Simple (100%)	Simple (100%)	NA (no coded items)	NA (no coded items)