

Article

Moving beyond anxiety: The emotional research experiences of first-year students

<http://dx.doi.org/10.11645/18.1.33>

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Abstract

Information Professionals are avid users of data points to inform their practices, but have we flattened the data to such an extent that we have lost the emotional side of research that students experience? In this article, we will discuss our findings regarding student emotions and information beliefs and share ways in which this data can give depth to our practices. In this qualitative study, we used twenty interviews conducted in 2019 to uncover student information beliefs. Through exploratory data analysis we discovered students expressing a variety of emotions beyond anxiety, not all of which were negative.

It is only when we examine student perceptions that we reveal the emotionally fraught process of research. Recommendations based on our findings fall into three categories: encouraging information professionals to find paths to removing access barriers, find ways to move into faculty development, and acknowledging the aspects of research that can make it hard but rewarding for students. Our findings and recommendations focus on how to establish practices that allow students to use their persistence in ways that enhance their learning rather than using cognitive energy on the intricacies of a library specific task.

Keywords

information behaviour; information literacy; research methods; undergraduate students; US

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1. Introduction

Students experience complex emotions as part of their information seeking behaviour, spanning all aspects of their research process. Mellon (1986) uncovered some of the emotions surrounding student research, but subsequent work has focused primarily on library anxiety. While it's a natural step for information professionals to focus their efforts on sense-making, the focus on student anxiety alone focuses the problem on fixing the student, rather than the systems that could cause these reactions (Dervin, 1999; Maluski & Bruce, 2022). Giving students space to experience a range of emotions can mitigate discomfort and uncertainty within the research process.

The findings in this article are drawn from an ongoing study focusing on the information assumptions of Generations Z students (Blocksidge & Primeau, 2023); interviews conducted as part of this research revealed the positive and negative emotions experienced by students throughout their research process. The emotional responses stemmed from interest in their research topic, a lack of transparency in assignments, and recurring barriers to information access, giving librarians new insight on how to revise library services and information literacy (IL) instruction.

2. Literature Review

2.1 Emotions and Research

The role of affect as it relates to information behaviour was raised by Dervin & Nilan (1986) in their overview of the state of information research; identifying that researchers should focus on the information user instead of the information system, Dervin et al. proposed three approaches: user-values, sense-making, and anomalous states-of-knowledge. While distinct, each approach held the view that humans are actively involved in constructing information and are not passive recipients or consumers. This change in focus encouraged researchers to look beyond their professional observations towards a holistic view of users.

Building from Dervin's sense-making approach, Kuhlthau (1991) identified an information search process (ISP) that considered physical, affective, and cognitive activities, arguing that the totality of users' experiences inform and affect their information use. Uncertainty played an important initiating role in later evolutions of the ISP, and feelings of anxiety were to be expected (Kuhlthau, 2004). Exploration into the range of emotions experienced by information seekers continued with the rapid growth of available information (Nahl, 1998), as well as the formal development of a theory of sense-making (Dervin, 1999). Affect was seen as an integral part of the knowledge construction process, but specific emotions held greater weight.

2.2 Library Anxiety

Mellon (1986) used Grounded Theory and qualitative data to name "library anxiety" as a frequent roadblock to students addressing their research needs. This phenomenon was identified following the review of search journals completed by undergraduate students as part of their composition classes; students described feelings of fear, confusion, and helplessness when faced with the library itself and the research process. While Mellon intended to identify better ways of teaching one-shot instructional sessions in her original study, library anxiety emerged as a robust avenue for librarians to explore. Bostick (1992) developed the Library

Anxiety Scale (LAS) to quantitatively measure the qualitative data gathered by Mellon, allowing practitioners to explore how specific areas of the library contributed to library anxiety; the LAS was tested by other researchers for validity and reliability, and accepted as a useful method for measuring library anxiety (Onwuegbuzie, Jiao, & Bostick 2004). Van Kampen (2004) built upon the LAS to explore the changing attitudes of doctoral students as well as the impact of off-campus library access and electronic resources on library anxiety. The underlying causes of library anxiety were also investigated to address student concerns before they disrupted their learning experience (McAfee, 2018; Shehata & Elgllab, 2019). However, the negative framing of library anxiety can create instances where higher education and librarians may subscribe to deficit thinking, placing an additional burden on students.

2.3 Beyond Anxiety

Deficit-based approaches to instruction occurs when instructors think learning only occurs in the classroom, and experiences of students outside of 'formal' learning environments are ignored (Heinbach et al., 2021). In his work on deficit thinking within library instruction, Tewell (2020) explains that how we define a problem informs how we try to solve it; in defining a problem, we can also obscure responsibility. Focusing on the perceived deficiencies of students distracts librarians from looking at structural barriers in libraries and from listening to the stated needs of students. By constructing library anxiety as a negative emotion, librarians are prevented from seeing how learning itself can be uncomfortable, and how anxiety might be a normal and expected aspect of that discomfort (Maluski & Bruce, 2022). By focusing on anxiety, we are hindered from exploring the many emotions people experience as part of research, and how these emotions influence all aspects of the research process (Kirker & Stonebraker, 2019; Dervin, B. & Reinhard C. D., 2007; Mehra, 2007). By expanding our view to all research-related emotions we can support students as they adapt their previous knowledge to new educational challenges.

3. Methods

3.1 Design

This generalized qualitative study focused on emotional experiences and is in reaction to a survey that was conducted at an open-access regional campus of a large state flagship university in the Midwest. Our revised survey was adapted from the original survey instrument created by Cole, Napier & Marcum (2017) with the intent to examine Generation Z's information beliefs as defined by Dervin's (1976) Ten Information Assumptions. The surveys were distributed to all first-year students in the autumn semester of 2017 via a first-year student email list; this distribution was done to distance the survey from any course grades. Following a review of the 2017 results, we created an interview protocol to collect student descriptions of their information behaviour in future iterations of the study. The institutional review board (IRB) determined the survey study and interview study to be exempt - study number 2017E0396 (survey) and study number 2019E1063 (survey and interview). In 2019 we reran the study, with surveys distributed to all first-year students in the autumn via the same student email list, with the addition of one question; asking if students would opt into an interview. The interviews consisted of 6 questions that delved deeper into students' practices and experiences with aspects of research.

3.2 Participants

Surveys were distributed to all first-year students in the autumn semesters of 2017 and 2019, eliminating students who were born before December 31st, 1993; this cutoff date aligned with the original survey tool as a marker of the Generation Z cohort (Cole, Napier, & Malcom, 2014). The survey demographics (Appendix A), “matched the campus demographics at the time of the survey within 5% for all but two categories, White/ European American in 2017 at 7% less in our survey data and Multiple Races in 2019 at 5.4% more in our survey data” (Blocksidge & Primeau, 2023). We selected twenty student interviewees through deliberate sampling, to recruit an interview sample that was representative of the 2019 survey respondent population (Appendix B).

3.3 Research Methods

In addition to basic demographic data, students in the 2019 survey could opt-in to an interview pool, with the possibility of a \$25 visa gift card if selected. When selected they were emailed, informing them of the opportunity and the times available. Once scheduled, we conducted the interviews in a private campus library room, recording for later transcription. We did not have roles that directly affected student’s grades at the time of the interview. Students were asked to give us a pseudonym for anonymization of their interviews, allowing us to keep their identities intact while utilizing direct quotes. See Appendix C to view the interview instrument. Surveys were distributed via a listserv to all first-year students in the autumn of 2017 and 2019, with a link to a Qualtrics survey (Appendix D). In 2017 we raffled off two \$30 bookstore gift cards for participation, and in 2019 we raffled off two \$30 Visa gift cards for participation.

3.4 Analysis

Inductive Thematic Analysis Coding, as established by Braun and Clark (2006) and expanded by Nowell, Norris and White (2017) was how we approached the data. Each interview response was stripped of its identification data, reassigned with the interviewee’s chosen alias, with questions one through six and the associated responses, and sorted into its own individual sheet within Excel. Cells containing Aliases were then hidden, and the full question responses were then divided into individual statements, by either individual fullness of thought, as students occasionally went on a tangent, or fullness of response to a question (single statement yes/no responses).

Once these steps were completed, we reviewed the data and individually identified recurring themes throughout the entirety of the responses. After we compared findings, defined themes, and combined our results, thus moving from nine themes and forty-two codes to nine themes, a miscellaneous category, and thirty-four codes as seen in Table 1. At this point we had solidified, but not finalised, our codebook with detailed definitions and corresponding examples in a shared document.

Table 1: First code book with initial Emotional Codes

Theme	Code
Web Above All	Google First
	Databases
	Wikipedia
What is Credible?	Age of Document .org, .edu, .gov
	Ambiguously Reliable
	Peer-Reviewed
Indicators of Authority (What fits the checklist?)	Name or Type of University
	Experienced
	Other people agree with them
	Cross reference articles to confirm authority
Time and Space and Stress	Databases are Confusing
	Informed Rejection
	Changes topic if finding resources too difficult
	Research is Time Consuming
Assignment Redesign	Reviews Assignment
	Text based Resources
	Assignment prompt drives the direction of research
Problem-Solving	Advanced Search Techniques
No Loyalty	Find Completely Different Source
	Find Source a Different Way
Finding Help	Talked to Family
	Talked to Peers
	Talked to Professors
	Talked about Library
Emotional	Frustration
	Passion/Joy
	Confusion
	Discouraged
	Guilt
Miscellaneous	Mentions High School
	Evidence was shown of self-checking knowledge
	Deeper knowledge of publishing cycle
	Answered Q5 Affirmative

Once more we independently coded, this time utilizing this finalised codebook. We returned to compare results, discussing item by item where we deviated. We returned to the dataset for additional coding to explore the surprising emotional aspects that rose to the surface during the last coding. We then refocused our efforts on the two questions with the highest frequency for emotions:

Question 5: Has there ever been a situation where you were searching for information for your academic studies and couldn't find a resource? Tell me about it.

Question 6: What about a situation where you think you found a resource you need for an academic project but couldn't access it? Can you tell me about that situation?

Between February and December 2020, we completed three rounds of coding by reviewing the responses separately for common emotional themes, pulling example responses, and regrouping to compare findings. We reviewed and compared our new findings to better define our new Emotion codes and confirm that we weren't extrapolating from student statements, and then separately reviewed and recoded the transcripts. We completed a final codebook in 2021, leading to the final recode, only examining the emotional data present in the interview transcripts.

From this last analysis, seven main emotional codes, as seen in Table 2, were discovered within the 2019 interview results. Within those categories, two had sub-categories applied to them attempting to delineate between the types of emotional responses and accurately capture student expression. We discovered an inordinate amount of the disappointment responses came from a single student and thus removed them from our final codebook.

Table 2: Finalized emotional codes

Code	Sub-code
Frustration	time-related frustration- F1
	frustration at road blocks-F2
Disappointment	
Self-Doubt	
Confusion	
Give up	
Persistence	problem-solving persistence
	passionate persistence
Challenged	

4. Limitations of Study

While both the cohort for the surveys and interviews were demographically representative for the campus, the interviews had a smaller population. This isn't problematic if we examine the data as a whole, but it is if we try to examine individual student demographics alongside their emotional responses to research based assignments. We encourage any future researchers interested in demographic data paired with emotional responses to the finding and access of information to have a more expansive pool of interviewees. Finally, while many students spoke of previous research experiences, we acknowledge that opportunities to do research before reaching college may not map onto every population.

5. Findings

We identified six codes within our interview data: Frustration, Self-Doubt, Confusion, Give Up, Persistence and Challenged. Within those codes both Frustration and Persistence had sub-codes: Frustration was divided into time and roadblocks, with “Time related frustrations” coded when students explicitly spoke of time, while “Roadblock Frustrations” was associated with instances where students had to halt their research. Persistence’s subcodes were divided into problem-solving and passionate: “Problem-Solving Persistence” when students showed their problem-solving skills, describing a multitude of approaches to a problem, while “Passionate Persistence” identified students expressing clear interest in the topic. We determined these unique subcategories could be useful to note for future information professionals looking at how students interact with the process of research and have made our best effort to delineate between them to further codify the data.

Our findings were arranged across three themes; the following quotes make use of student-selected pseudonyms.

5.1 Information Availability

Students expressed assumptions that original research is non-existent, multiple authors must have written about a topic, and all sources have high levels of authority and credibility. If information can’t be found in one place, another equally adequate location must have the same information. As Jane states below, there is no loyalty; her task is to find the information that fits her need.

If I need the information that bad, school library. If I need the information that bad, and it’s easily found, there’s probably a million other people that have already published something about it and it’s just, I can go elsewhere. No loyalty. (Jane)

In the excerpt below, Emma shares how she would keep trying one item after another until she hit the final tool in her tool belt, which in this case meant trying different devices before moving to a new source.

Well, in that case, I either one, find if I’m using my phone, and it’s not like on there, I would try to use my iPad. If it doesn’t work on my iPad, use a computer. And then if I can’t find the computer, then I’ll just find another source. (Emma)

Here our data shifts, with interviewees sharing the difficulty of incorporating their sources into a final product due to information (in)availability. Ashley speaks of being challenged in her assignment, sharing repeatedly how hard it was, adding that it was a struggle finding any source to help support her paper. Despite these stated challenges, she is persistent in her attempts.

So I think that’s a big struggle for me. Luckily I got the paper done, so it was pretty hard but I got it done. I had to use two articles in conjunction with each other and try to figure out what I wanted to say. It was really hard though. (Ashley)

These quotes speak to information availability, ranging from the idea that information exists in multiple equally scholarly locations, through the sense that a single source will suffice, to the belief that if an idea exists, it must also exist in a scholarly format. Each student shows some

level of indifference to the source itself but places a high priority on the information contained within. There is no anxiety expressed over this, only students showing frustration and persistence.

5.2 Frustration and Persistence

The most paired emotions were Frustration, time related and roadblock, and Persistence, passionate and problem-solving. In the following quote, the codes of Frustration and Persistence were present, and we can see how a roadblock triggers a student to persist in finding this article by other means.

And so I started looking on, it was on EBSCOhost and I clicked on "get the full text" or whatever in a PDF and then it didn't pop up. And I asked someone else to do it and they couldn't find it. So then it kind of got to shoot, you know, how can we have, him and I, how can we get around this because this would be the one really good piece of information. I was searching through pages of stuff that it would fit. (John)

Pitfalls of access issues don't always force students to stop and give up; those who expressed frustration at roadblocks were most paired with both types of persistence. Students refused to give up until all their venues for exploration were exhausted.

Yeah. What else do I do when I can't find it? Or you could even ask if anyone else has had that problem, and see if they have any sources because that's, with the amount of connectivity that you can get with other people online, go to Yahoo answers and be like, "Hey, I need you to do a study on this. I can't find any credible resources." People can respond and just give you. Then again, they can give you mumbo jumbo, so you got to have some common sense. (Jane)

While Jane is aware that the responses received could be less reliable, she perceived them as better than nothing. Alternatively, Andy spoke passionately about his research project in high school, a multi-part process that engaged him and his fellow students but ended up with them hitting multiple barriers before discovering that the desired data would cost them thousands of dollars to access because it was proprietary. In his quote below we find him at the end of his recollection, in which he found adjacent information and made it work.

So, in that case, we're just okay, well basically we're limited to the resources that the school offers us to do research. So we're, okay. So we found research and data about the literacy rate in Africa. So we were, okay, so this is good data, so we might as well just use this. (Andy)

Problems arise when the search strategies students developed in informal settings are applied in academic contexts. Jane was involved in a last attempt to find "any credible resource" before turning to Yahoo answers. While Andy knew about the resources his high school offered, he found them lacking, making do with what he and other students found. Had either student stopped at their library they would have been guided to more than one credible resource on their topic, but each student was either unaware of these resources available, or under a deadline requiring them to find any resource immediately.

5.3 Students are not Blank Slates

Students enter higher education as more than blank slates: they are using their experiences in secondary education and outside of the classroom to search for information and make meaning out of their results. Describing their research processes, students identified how they met and overcame challenges; they did not describe feelings of anxiety or failure but were engaged in solving the problem. In the excerpt below, John describes how he considered the context of his research question and looked for similar scenarios to centre his research question; while he admits that this project was difficult, he does not describe that difficulty in terms that centre anxiety or distress. John is aware that research is iterative and looks for information that he can build on for his own topic.

I had a research paper last year in high school...like CBD [Cannabidiol] products and some of the positive and negatives behind it and current regulations. And you know, I found that when an issue is I guess fairly new, a year or less old, it's extremely difficult to find any information on it whatsoever...I had to find some stuff that aligned with it similarly. And had to go way back in history and view what other places or countries did on regulating different things that were brand new. One of the, one part of that was the industrial revolution. How do you regulate a market as a whole that wasn't there five years ago or something like that. I viewed a lot of that sort of information kind of converted, you know, what would help my side being there needs to be more regulation. (John)

Emotional responses to research are not negative, nor do we need to steer students away from their responses; these emotions can spur students to adjust their research process. In the excerpt below, Angeline took steps to brainstorm additional search terms when faced with information she couldn't find:

Typically, I keep looking for a little bit longer. Cause I find that sometimes I can find something after, which sometimes means I do take a break and then try thinking of different ways to phrase what I'm trying to look up. (Angeline)

The actions students take when facing research challenges run counter to the narrative of library anxiety where students are unable to or afraid to problem-solve their way out of a situation. Students may feel discomfort or uncertainty when engaged in research, but experiencing emotions is not a detriment to their learning experience. In the final excerpt below, Dio describes feelings of frustration, but also displays the persistence necessary to locate information in a challenging research project.

Actually, with the project I'm working on now, it's very difficult because it's talking about militarized and toxic masculinity and how it affects men. Where we have a lot of it ... A lot of research and articles on how it affects women and how ... What the actions of it are but not how it negatively impacts the male psyche and so trying to find that ... Like resources for that have just ... It feels like I'm going on a wild goose chase, quite frankly. (Dio)

What have been your steps (Interviewer)

Mostly reading through...I go through the gender studies database, type in anything that could be related to that. Because this has definitely gotten way more broad than I ever intended it. Then I'll go through, read the articles. If I like it, I'll print it out and then I'll go through and just highlight it. Currently, the article I'm...I most recently printed out and going through is venereal diseases, prostitution and militarized masculinity in the Third Reich. Trying to relate that back to Kylo Ren. (Dio)

Instead of leading to paralysis or abandonment of research, the emotions described by students provide meaning to their work. These responses indicate students select topics of personal importance, and describe the steps taken to continue researching when information is unavailable or challenging to locate. If emotions strengthen the ability of students to research, librarians must encourage the use of everything that students bring into higher education; anxiety can't be the only emotion we allow ourselves to observe.

While interview questions 5 and 6 focused on the access of information, students often spoke of the *availability* of information as well. This encompassed not just if they could read or access an entire resource, but also the existence of any information they needed in a particular moment. Students often expressed expectations that what they needed must exist in multiple locations, and if one venue failed, another would bring them the same information. We also found that Problem-Solving Persistence was often paired with Passionate Persistence, with students refusing to give up on a topic or resource until all avenues had been exhausted. Finally, students regularly referenced earlier experiences, often from secondary education, showing how their research knowledge, and expectations of experiences for future research, build upon past experiences.

6. Discussion

The intent of our analysis is to explore the emotions experienced by students throughout the research process; we found the emotions experienced and described by students were more nuanced than anxiety and influenced all aspects of their research process. These emotions influenced their choice of research topic, encouraged them when they faced barriers, and provided a sense of pride when the work was complete. Rather than hindering their research, emotions played an active role in how students constructed their knowledge. Information behaviour frameworks exist for describing how people experience emotions as part of their research process and make meaning out of an informational environment containing both order and chaos; there is also preliminary research describing how students describe the work of research as including emotional and intellectual aspects (Dervin, 1999; Kuhlthau, 2004; Kirker and Stonebraker, 2019). Our work aligns with these findings, and supports further inquiry into the student's emotional experience of research. Our findings will hopefully aid in debunking an anxiety only mentality, and help expand our understanding of the average student, including our roles in how to best assist them.

The most paired emotions were Frustration, with subcodes of time related and roadblock, and Persistence, with subcodes passionate and problem-solving. If we examine Frustration as a standalone emotion, the complexities within it are lost, and could be perceived by outside observers from a deficit mindset. The focus on negative emotions alone as they relate to research decentres the strength student researchers derive from their emotions. Folk (2019) argues that students find research meaningful, particularly when it aligns with their interests or identities, something that can be seen with the emotional pairing of persistence. By exploring

the ways problem-solving persistence is often paired with passionate persistence, we can observe that students with a deeper connection to their research are more likely to utilise their problem-solving skills in order to persist in their research process. The roadblocks described by students are opportunities for librarians to join them in the act of knowledge construction; strength-based frameworks of instruction, such as funds of knowledge, centre the student experience and encourage students to bring their own interests and skills into higher education (Folk, 2018; Heinbach, Fiedler, Mitola, & Pattni, 2019). Our findings demonstrate how students have developed information behaviours in previous learning environments and outside of the classroom, providing an established roadmap students can adapt to overcome research barriers.

By illuminating spaces where we can eliminate roadblocks for students, partnering with teaching faculty as they construct curricula and assignments, and encouraging and supporting the affective aspects of the research process, our findings have practical implications for the work of librarians within and outside the classroom. In instances where the roadblocks are related to accessing the needed information, we recommend finding ways to partner with our colleagues in other areas of the library and beyond to make resources visible, and methods of access transparent. This may include a marketing plan that emphasizes the support students can expect from their institution, as well as working with first year instructors to embed access points within a learning management system. Addressing the barriers preventing students from finding and accessing information reduces the structural and cognitive roadblocks students encounter.

Embedding IL instruction throughout a student's academic journey has a greater chance of meeting a student when they are encountering new situations and frustrations; working with faculty to develop instruction and assignments that make the challenges of research more transparent can reduce the barriers students face in their information seeking process. The one-shot instruction model is not feasible when working across an entire institution; however, moving our focus towards faculty development expands our reach. Partnering with faculty to integrate IL throughout their courses and assignments provides students with needed instruction throughout their research process instead of at a single moment (Hammons, 2020).

Looking beyond instructional faculty, collaborating with student success departments to implement outreach to the campus community extends our reach into the informal learning spaces where students spend much of their time. Students are engaged in formal and informal learning as they move between different IL contexts (Lloyd 2005); making this process transparent to students allows them to adapt their current search behaviours to a new environment while providing space to build upon their foundational search practices.

Our goal should not be to alleviate emotions but to validate for students how emotions are normal. Feelings of frustration, confusion, and persistence provide meaning to the work of research, and motivation to address and overcome obstacles. By highlighting emotions within the research process and asking students to share the emotions they experience, we can normalise this work for students and allow them space to experience and use their emotions in ways that meet their needs.

7. Conclusion

In their own words, students describe the frustration they feel when unable to find research, their problem-solving approaches to challenges, and how they use information from other parts

of their lives to inform their academic research. These are not moments of anxiety, but moments where students start identifying where their assumptions did not meet their reality, leading to the construction of new knowledge. They also shared scenarios where information is unavailable or appears to not exist, creating an opening for librarians to create IL instruction that makes those barriers more transparent and provides context for the power structures that underlie information creation and use.

This study allows the experiences expressed in student interviews to become data that tells a story, providing a robust illustration of the undergraduate research process and the emotional experiences that guide student-researchers. If our goal is to work with students as they develop their research mindset, we must examine all emotional aspects of their research process in a multitude of contexts. We encourage future researchers to repeat this study at their own institution, increasing our collective knowledge of the emotional components of research on different continents, and with unique cohorts.

Declarations

Ethics approval

The IRB determined that the study ID of 2019E1063 was considered exempt on 11/9/2019. Verbal informed consent was obtained for anonymized student information to be published in this article. The Authors declare that there is no conflict of interest.

Funding

This project received funding from the Dean's Office of Ohio State University at Newark.

AI-generated content

No AI tools were used.

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Appendix A

Survey and Campus Demographics

	Campus 2017		Survey Responses 2017		Campus 2019		Survey Responses 2019	
African American/Black or African descent	395	15.1%	33		472	16%	31	11.9%
Asian American/Asian	98	3.7%	18	8.2%	132	4.5%	17	6.5%
Hawaiian/Pacific Islander	1	0.0%	2	0.9%	2	.1%	0	0%
Latinx/Hispanic	91	3.5%	11	5%	136	4.6%	7	2.7%
American Indian or Alaska Native	4	0.2%	0	0%	4	.1%	0	0%
Multiple Races	116	4.4%	10	4.5%	159	5.4%	28	10.8%
White/European American	1,818	69.3%	137	62.3%	1955	66.4%	168	64.6%
Unknown	100	3.8%	1	.5%	83	2.8%	4	1.5%

Middle Eastern/North African	Unknown		18	3.6%	Unknown		5	1.9%
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Appendix B

Interview Demographics

Table 1: Demographic Information (n = 20)

	<i>n</i>	%
Gender		
Male	7	35
Female	13	65
Race		
White	13	65
African American	2	10
Asian American	2	10
Others	1	5
Multiple	2	10

Appendix C

Interview Instrument

1. Tell me a little about how you search for information when you have a research assignment or project for class. That is, what steps do you take when you are looking for information?
2. When looking for resources for an academic project, do you ever run into situations where you find a large amount of useful sources or information? How do you decide what information will work best for your need?
3. What does the word credible mean to you when an instructor asks for a “credible resource”?
 - a) If they do not have a definition; What does it mean if someone said to you a resource was authoritative?
4. How do you decide for yourself what is a “credible resource” when searching resources in your academic studies?
5. Has there ever been a situation where you were searching for information for your academic studies and couldn’t find a resource? Tell me about it.
6. What about a situation where you think you found a resource you need for an academic project but couldn’t access it? Can you tell me about that situation?

Appendix D

Survey Instrument

1. Date of birth
 - a. Before December 31, 1993
 - b. After January 1, 1994
2. Gender
 - a. Female
 - b. Male
 - c. Non-binary/third gender
 - d. Prefer to self-describe
 - e. Prefer not to say
4. Race/Ethnicity [select one or more]
 - a. African American/Black or African decent
 - b. Asian American/Asian
 - c. Hawaiian/Pacific Islander
 - d. Latinx/Hispanic
 - e. Middle Eastern/North African
 - f. Multiple Races
 - g. Native American/Alaskan Native
 - h. Other
 - i. Prefer Not to State
 - j. White/European American
5. Age you began using a computer for school-related activities.
 - a. Between the ages of 0-5
 - b. Between the ages of 6-10
 - c. Between the ages of 11-15
 - d. Between the ages of 16-20
 - e. Between the ages of 21-25
6. Age you began using a computer for non-school-related activities.
 - a. Between the ages of 0-5
 - b. Between the ages of 6-10
 - c. Between the ages of 11-15
 - d. Between the ages of 16-20
 - e. Between the ages of 21-25
7. Only information backed up by research is credible
8. When doing research, it's okay to ignore information that contradicts your opinions
9. I can always find exactly what I need when searching for information through the library.
10. There is an answer to every question – you just have to find it.
11. Sometimes the information I need might not exist in one place – I might have to use several sources to answer one question.
12. As long as the author is a credible expert on the topic, there is no need to read an entire book or article beyond the abstract or introduction.
13. You should keep searching even when the first couple of sources you locate seem to answer the question or help complete an assignment.
14. When I encounter information that differs from what I believe, it makes me want to research more.
15. I can always find and access the information that I need.

16. I should be able to find at least one source to answer any question I might have.
17. I accept information that is “good enough” if it is easily accessible, not necessarily the best information.
18. Sources found through the library are all you need to answer your question.
19. I use Google for research more than the library databases.
20. It is sometimes difficult to choose what information to keep or what information to discard when searching through the library.