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Reducing Hardships: Student Motivations, Educational Workflows, and Technology Choices in Academic Settings
Réduire les difficultés: motivation des étudiants, les flux éducatifs et les choix technologiques

Ruby Warren et Joshua Herter

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Résumé de l'article

Objectif - Cette étude examine l'attitude des étudiants de l'Université du Manitoba à l'égard du rôle de la technologie dans les espaces d'étude de l'université et dans leurs propres flux éducatifs dans un contexte universitaire. Méthodologie - Une série d'entrevues de groupe semi-dirigées ont été menées auprès d'étudiants au premier cycle et aux cycles supérieurs à l'Université du Manitoba. Trois entrevues de groupe ont été menées pour connaître l'utilisation individuelle de la technologie et des espaces pour l'étude à la bibliothèque, et trois entrevues de groupe ont porté la collaboration de groupe et de son utilisation de la technologie et des outils dans les espaces d'étude pour les groupes. Les transcriptions ont été codées de manière itérative et séparément par les chercheurs, analysées pour la fiabilité interévaluateur, catégorisées et révisées en utilisant un codage axial pour identifier les thèmes principaux. En examinant continuellement ces thèmes et les données, une théorie unique a émergée. Résultats - Les participants ont exprimé un besoin important d'indépendance et un sentiment de contrôle sur leurs flux de travail, leurs outils technologiques et leurs environnements. Ils ont discuté de la manière dont les préoccupations et les inquiétudes interpersonnelles motivaient leurs choix de flux de travail et ont reconnu les forces de la motivation (souvent contradictoires) de la nécessité personnelle et de la préférence personnelle. En examinant les motivations derrière la sélection des technologies et des pratiques de travail, il était clair que les participants de la bibliothèque prennent des décisions en matière de technologie et de flux de travail dans le but de minimiser leur expérience des difficultés perçues. Ces difficultés perçues par les étudiants peuvent être de nature sociale, émotionnelle, éducative, environnementale ou temporelle, et le poids de toute difficulté potentielle sur la prise de décision varie selon l'individu. Conclusions - Les bibliothèques doivent être conscientes de la motivation fondamentale des usagers et faire des choix en conséquence - en identifiant et en minimisant les difficultés dans la mesure du possible, à moins qu'elles ne soient nécessaires pour atteindre des objectifs d'apprentissage ou des objectifs spécifiques au service. Des recherches supplémentaires sont nécessaires afin de mieux comprendre les nuances vécues par les étudiants de certains groupes démographiques. Les bibliothécaires et les futurs chercheurs devraient également envisager d'étudier la déconnexion potentielle entre les attitudes des bibliothécaires et des utilisateurs vis-à-vis la technologie, la priorité accordée à la prise de décision centrée sur l'usager, et si les groupes sociaux qui ont été systématiquement défavorisés ou non ont des attitudes différentes vis-à-vis la technologie et sa place dans les espaces de la bibliothèque et au sein du travail universitaire.

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Reducing Hardships: Student Motivations, Educational Workflows, and Technology Choices in Academic Settings

Ruby Warren
User Experience Librarian
University of Manitoba
ruby.warren@umanitoba.ca

Joshua J. Herter
Assessment & Communications Librarian
University of Winnipeg
j.herter@uwinnipeg.ca

Abstract

Objective

This study examines University of Manitoba student attitudes toward technology's role in University study spaces and in their own educational workflows.

Methods

A series of semi-structured group interviews were conducted with current undergraduate and graduate students at The University of Manitoba. Three group interviews were conducted with questions about individual technology and space use while studying in the library, and three group interviews were conducted with questions about group collaboration using technologies and tools in group study spaces. Transcripts were coded iteratively and separately by the researchers, analyzed for interrater reliability, categorized, and reviewed using axial coding to identify major themes. Through continued examination of these themes, a single theory emerged.

Results

The participants expressed a strong need for independence and feelings of control over their workflows, technological tools, and environments. They discussed how interpersonal concerns and anxieties motivated their workflow choices and acknowledged the (often conflicting) motivational forces of personal necessity and personal preference. When examining the motivations behind the selection of technologies and work practices, it became clear that the respondents make technology and workflow decisions in an attempt to minimize their experience of perceived hardships. These perceived hardships could be social, emotional, educational, environmental, or temporal in nature, and the weight of any one hardship on decision making varied according to the individual.

Conclusions

Libraries should be aware of this foundational user motivation and make choices accordingly—identifying and minimizing hardships whenever possible, unless they are necessary to achieve learning or service-specific goals. Additional research is required to help articulate the nuances experienced by particular student demographics. Librarians and future researchers should also consider investigating the potential disconnect between librarian and user attitudes toward technology, the prioritization of user-centred decision making, and whether or not systematically disadvantaged social groups have different attitudes toward technology and its place in library spaces and academic work.

Keywords

Study Habits; Library as Place; Academic Libraries

Introduction

As available technologies expand, libraries must decide to adopt or ignore new technology services and effectively deploy these services throughout physical and virtual spaces. Although libraries are making strides in centring students in spatial decisions—for example, a library at the University of Cambridge that encourages undergraduates to customize and “own” semi-private secured group workspaces (Westbury, 2016)—the literature at large does not reflect a similar shift in how we set library service policy, structure technology access for users, or make major purchasing choices. Jones & Grayson argue that libraries have moved away from treating users like “guests” and applying “rules ... not set by or for them [that] often created barriers” (2016, p.121), but their description of this traditional attitude is close enough to the operational reality in our own libraries to make us distinctly uncomfortable. Despite some calls (Favaro & Hoadley, 2014) for research into user workflows to support technology integration and technological services, libraries facing resource constraints may adopt solutions based on budget requirements, a need to demonstrate innovation (Bengston & Bunett, 2012), or quantitative survey results that, while reasonable catalysts, are not constructed from a sympathetic understanding of the student experience.

In this study, we set out to determine the attitudes and motivations behind student study workflows at the University of Manitoba. Particular attention was given to the role of library spaces and the various types of information technology these students use to complete academic work on a regular basis. Beginning with simple choices such as selecting a seat in the library, picking a software tool, or choosing to work from home, our definition of "workflow" is deliberately broad, and includes the complex interpersonal dynamics of working with classmates, faculty members, and library staff alongside the social, economic, and cultural contexts in which these workflow decisions exist. In short, we wanted to "get inside the head" of our students and explore the myriad of factors that surround a decision to use technology tools in their daily lives.

Literature Review

To understand the impact education-related technology on our users—what shapes their attitudes toward technology and their technological needs—we first need to examine how they use library spaces, as this environmental context will dictate the scope of technologies expected and required by the student at the point of need. Although ethnographic studies on space usage are a relatively recent development in library literature (a notable example being Tewell, Mullins, Tomlin, & Dent's 2017 study), library researchers have a history of conducting surveys into self-reported student activity. A 2015 Cengage Student Insights Survey reported that 34% of student respondents use library spaces for meeting study groups, while 77% reported using the library for solo study sessions (Strang, 2015). Because their institution does not have policy restrictions on individuals using private study rooms, Ruleman and Kaiser reported a surprisingly similar figure of 73% of respondents reporting individual study as their reason for reserving private study rooms (2017). It follows that when considering purchasing and coordinating technology for public use, libraries must consider the technological needs of users to accomplish both individual and collaborative workflows in every space.

Although library spaces can be difficult to research accurately, because those who use them often use them so frequently that they cannot fathom an alternative mode of working (Beys & Michaels, 2014), we can draw some conclusions from the available literature on user space preferences. Research into spatial preferences suggests that private study spaces are strongly preferred (Applegate, 2009; Jones & Grayson, 2016; Tewell, Mullins, Tomlin, & Dent, 2017), and that users pursue physical seclusion in any way possible—be that finding study rooms on higher and less populated floors (Applegate, 2009) or leaving empty chairs next to others to provide a barrier between work spaces (Hillman, Blackburn, Shamp, & Nunez, 2017). There is also evidence that situational or demographic factors can influence user study space preferences. For example, Applegate indicated that female students studying alone are more likely to prefer study locations easily visible to staff or other users (2009). This leads us to conclude that student study needs are far from homogenous (Fallin, 2016), and these differences in circumstance and preference should be noted and investigated.

Qualitative investigations into how students of all demographics think about and justify their spatial preferences are underrepresented in the literature.

When configuring a workspace for students, research into student needs indicates that the most prominently desired and used items are PCs (Ruleman & Kaiser, 2007; Tewell et al, 2017; Thomas, Van Horne, Jacobson, & Anson, 2015; Walton, 2006) and outlets (Applegate, 2009; Hillman et al, 2015; Tewell et al., 2017). Users also desire some mode of reliable internet access (Dryden & Goldstein, 2013; Jones & Grayson, 2016; Tewell et al, 2017; Thomas et al, 2015; Walton, 2006) for devices and library computers. Although libraries may also provide a variety of tools and technologies, observational studies at seven academic libraries in the U.K. found that active tool usage in the library never exceeded 50% of current users, and that books, computers, and phones were less frequently used tools than pen and paper (Gensler Research, 2015). This usage trend has also been reported elsewhere, with Thomas et al noting that users in their learning commons use provided monitors only 15% of the time, being far more likely to have "multiple devices in addition to pen and paper" (2015, p.807). Even further, a survey of 2000 students in Manchester concluded that students do not want "fancy stuff" and have no real interest in smart boards or advanced technologies (Jones & Grayson, 2016).

That this preference for simplicity remains true in flexible, highly promoted spaces like learning and information commons, which are designed to provide multifaceted, technologically advanced workspaces (Adams & Young, 2010) makes it even more striking. These spaces that "shifted toward providing 21st century literacies" (Colegrove, 2015) (i.e., technological literacies) still have students complaining primarily of the same basic needs: space, power, and wifi data allowances (Dryden & Goldstein, 2013; Jones & Grayson, 2016; Thomas et al, 2015). Further, assessment work by Dryden and Goldstein seemed to indicate users seldom needed technical equipment, and when they did want equipment, they requested equipment that circulated (2013).

The circulation of technology, however, may also be a niche service of dubious necessity. For example, although most of the available literature in the area of technology circulation seems to rely on satisfaction surveys rather than qualitative interrogations (Summey & Gutiérrez, 2012; Hsieh & Holden, 2008), the results of one such study indicates that the vast majority of users take advantage of technology lending services for convenience rather than out of necessity (Wang, Dermody, Burgess, Wang, 2014). Limited uptake of new technologies and technological lending services may not simply be solved by greater promotion, either: Other studies, like the post-survey of participants in Mallett's pilot ereader lending project, indicate that even after trying a technology lending service, students may remain uninterested in borrowing technologies like ereaders from the library (2010).

This disinterest may be attitudinal more than anything else. University student attitudes toward technology have been examined in the literature in the context of the Technology Acceptance Model, where the adoption of new technology requires a "balance between believed usefulness and usability" (Davis, Bagozzi, & Warshaw, 1989). Possibly as a result of this need for usefulness and a limited learning curve,

student academic technology use can be considered “widespread but not deep” (Dahlstrom, Walker, & Dziuban, 2013). This may also be behind why students report a greater desire for their classes and workshops to incorporate technology in ways that require less of them (lecture recordings and simulations) and report low levels of desire for the in-class use of technologies that require mastery or content creation on their part (in-class smartphone use or ePortfolios) (Brooks & Pomerantz, 2017). It is not impossible to motivate students to learn unfamiliar technology, however, Edmunds, Thorpe, and Conole did find that motivation to gain technological mastery was greater in students when mastery was connected to paying work (2012).

Something to consider as we move forward in designing our spaces and services is that user *preferences* may not reflect their *actual usage patterns*. For examples of this in the literature, see research into initiatives like the extension of library hours or into student preferences in library-provided media. Hillman, Blackburn, Shamp, and Nunez conducted a short survey with findings that, although 50% preferred the library to have longer hours, under 40% self-reported that they already used available evening hours (2017). Similarly, Phinney’s examination of library usage habits included results that “showed that [students] would rather use a print book when in actuality they are not [using them]” (2013). The reasons for this divide between user preferences and usage realities are something our study hoped to illuminate.

Aims

This study explored attitudes toward technology of student library users enrolled at The University of Manitoba and the place of that technology in their educational workflows. Qualitative investigations of how students think about these two topics were underrepresented in the available literature. We collected this information to help The University of Manitoba Libraries better understand usage patterns in study spaces by providing the *why* and the *how* to our usage statistics’ *what*, and provide context for future decisions regarding library technology acquisitions and the design of study spaces. Our research sought to explore the question: *how* do students at The University of Manitoba use technology in their academic workflows?

Methodology

This study used semi-structured focus group interviews of undergraduate and graduate students in small groups. Focus groups were chosen in order to allow for depth of questioning while providing students with peer thoughts to reflect and build upon (or contradict). We determined that this would better allow students to consider and explain their own workflows from an outside perspective. Workflows and personal tool preferences are often hard to articulate and explain because they are so normalized by the frequency with which we use them. Because of the group environment, interview facilitators were careful to ensure that all participants answered each question and were provided opportunities to share follow-up thoughts on the comments of others.

Informed consent forms were gathered for every participant, with procedures and information disclosure adherent to institutional Joint Faculty Research Ethics Board and

Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2) standards. Two separate semi-structured interview question lists were created, with one targeted to the role of technology for students working individually, and one to students working in groups (see Appendix A). In small groups, a total of 16 people were interviewed about their use of technology in a solo workflow, while 21 people attended interviews about technology in group collaborations. The table below shows the number and level of participants in each focus group.

Table 1

Interview Participants

Interview Session	Undergraduate	Graduate	Other	Total
#1- Individual Study	3	-	-	3
#2- Individual Study	-	-	1	1
#3- Individual Study	-	12	-	12
#4- Group Study		12	-	12
#5- Group Study	4	-	-	4
#6- Group Study	4	1	-	5

The second individual session was conducted with a single mature student in an integrated studies program designed for mature students returning to school. Five of our undergraduate participants self-identified as international students—none of our graduate students self-identified as international students.

Students were self-selected volunteers recruited via advertising through University departmental email lists, student group email lists, and posters placed in university areas frequently used for studying. All were compensated with a $15 University Bookstore gift card. Once recruited, participants were encouraged to participate in both a group-oriented interview and an individual study-oriented interview—15 participants chose to do so. Participants were no longer recruited once we had reached the point of saturation, and no new concepts were emerging in the interview transcripts.

Interviews were jointly facilitated by the principal researchers, each session alternating the roles of lead interviewer and observational note-taker. Interviews were recorded via dictaphone software, transcribed by a contracted typing service, and then anonymized by the principal researchers.

The data were analyzed using a grounded theoretical approach. Without consulting with one another, the researchers separately coded each interview transcript using descriptive coding (Saldaña, 2011, p. 104), cycling through transcripts using a process of constant comparison (as defined by Corbin & Strauss, 2008, p. 65). Once all transcripts had been coded to individual satisfaction, the researchers compared our code lists, identified each researcher’s unique concepts, and agreed on acceptable codes for similar concepts. Using the new unified code list that this created, the

transcripts were again independently coded. This second round of independent coding was then compared using Cohen's kappa coefficient (Salkind, 2010), achieving a value of 0.789 or "good" agreement. The limited instances of coder disagreement appeared to be primarily related to one coder selecting multiple codes for a section that the other had labelled with a single code.

Once we had confirmed adequate interrater reliability, the researchers sorted the unified code list and determined that all coded concepts fit comfortably into five categories that arise naturally from the data itself. Using axial coding, the data was once again reviewed using these categories in order to identify major themes, and reviewed again through the lens of those major themes until a central, unifying theme had emerged.

Results

The raw results after coding are provided in the chart below. The associated concepts in the first column are the unified codes applied in the final stage of transcript analysis. The second column outlines the coding categories that were established as unified codes were formed. This includes a summary of the attitudes that were expressed most often by the majority of participants in the sessions. The sample is skewed in favor of a high number of international undergraduate students, as well as two graduate student groups that were deliberately recruited for this study. When appropriate, the researchers have specified when a particular attitude or theme applies to a particular demographic (to the extent that they were accounted for), but otherwise the results represent the themes that occurred most often between all sessions in the aggregate. These attitudes reflect the most resonant of those interviewed and should not be assumed to be representative of the population of The University of Manitoba.

Table 2

Summary of Coding Results

Associated Concepts (codes) in the Data	Coding Categories
• Physical Environment • Noise Continuum • Amenities • Accessibility • Privacy • Distraction	**Environmental Effects: *Aspects of the physical place of study*.** The participants expressed a desire for control over their study environments, and reported making deliberate decisions based on an idiosyncratic combination of needs and preferences (schedule, goals, amenities, location, etc.). They were aware of how space impacts their own and others' learning, and often choose an environment to attenuate their own or others' behaviour.
• Group Dynamics • Anxiety • Social • Independence	**Interpersonal Concerns: *Experiences between people.*** Participants experience many competing interests, expectations, and scheduling requirements in their academic life. They were hesitant to appear foolish in front of their classmates and sensitive to demands made on service providers (such as librarians). Socialization was a secondary concern for most, except in the case of particularly cohesive groups (such as medical or law students, who tend to work in cohorts). The interviewees reported that they actively identify, assess, and leverage others' strengths and weaknesses when engaging in group work.
• Service Preferences • Fatigue • Anxiety • Independence • Format Preferences • Policy • Finances • Service • User Interface	**Internal and External Factors: *Forces arising within or acting upon.*** The interviewees reported fatigue with the number of user interfaces, login credentials, and systems they must navigate, which was exacerbated in first year and international students. Service and format preferences varied, and the respondents made deliberate decisions that reflect their situation, comfort level, and learning style. Inconsistent and conflicting policies between the university, the library, and instructors were the focus of many of discussions; it seemed that many policies were designed without consideration for the students' workflows (or they were at least *perceived* this way). Our participants reported actively working around any service that costs them money and seemed well aware that they are paying for their education.

Associated Concepts (codes) in the Data	Coding Categories
• Time Management • Project Management • Spontaneity • Flexibility • Format Preferences • Convenience • Mobility • Sharing • Learning • Leisure	**Workflow: *Processes by which work is accomplished.*** Respondents preferred academic systems that aligned with the technologies they use in their personal lives. Mobile devices were often used to "grab snippets" of information, while in-depth work was accomplished on a workstation or laptop. Group gatherings were not particularly engaging or collaborative for the undergraduate participants; these students spent group time negotiating the division of labour, while the bulk of project content was produced on individual time. Only particularly cohesive groups—such as the graduate student sample—studied together or reported engaging in critical discussion.
• Tools • Library Resources	**Tools: *Physical and virtual means by which work is accomplished.*** Many of the participants saw the institution's printing systems as cumbersome and archaic. There was a clear desire for tools that are convenient, familiar, and simple. Communication and sharing were often done using whatever tool is close at hand, sometimes in defiance of academic policy, copyright restrictions, or proprietary licensing. Many of the interviewees desired a single, cloud-based solution that grants them access to what they need regardless of their location. While they were conscious of the distracting nature of technology, the convenience afforded by digital devices clearly outweighed this concern.

Major Themes

Three major themes were identified, each a generalized synthesis of concepts demonstrated throughout the categories presented above.

Independence, Certainty, and Control

Respondents valued their independence when choosing tools and when choosing a learning environment. A preference for study spaces where the participants can control light, noise, social interactions, and furniture was present in all of the sessions. Participants reported feeling frustrated with interpersonal barriers (such as group members' communication skills or schedules, professorial preferences, or rules they do not understand), and disliked not being able to choose their own tools or having to use an intermediary. When asked to describe an ideal technology tool or service, responses often revolved around increased control or flexibility. For example, all of the interview

groups described some form of technology that afforded consultation without the need for scheduling with people, such as “robot professors” who “can be up all night, it doesn’t really matter”. There was also some desire for a technology to give respondents greater control over group projects and negotiations, “something that can let other ones know what I think and they can agree what I, what my suggestions [are]”.

Many of the participants reported expending a great deal of energy contending with uncertainty. These individuals reported confusion about what library resources and related learning platforms can do and how they function, often suspecting that they are not getting the most out of particular technology, or expressing frustration when they discover that an assumed affordance does not exist. There were also a great number of discussions about library and university policies, with an emphasis on how inconsistent deployment and enforcement (often in regard to study room reservation procedures) creates an uncertain atmosphere. One user stated that when they are presented with conflicting policies, the uncertainty causes them to either default to the “devil they know” or abandon the effort altogether.

Desirability vs. Necessity

The researchers noticed a recurring discrepancy between the *perceived* desirability of a service or technology and its *actual necessity* as measured by the participants’ description of its use. For example, many of the interviewees noted that print materials are easier to read and afford certain learning benefits (such as reading comprehension or increased focus), but that remote and digital access is more conducive to their workflow (despite many who indicated that the library’s ebook platforms are cumbersome and frustrating to use). When asked to describe an ideal technology, one respondent desired the ability to write by hand within a word processor:

> Sometimes profs will like talk about an idea and then they’ll move on to something else but then they’ll go back to it and it, it makes notes kind of disjointed, where if you have like a computer you could sort of go like, like you can go back to it, like you know how, like I don’t know how to explain it, in Microsoft Word you don’t have to like start on a new page, you can sort of go in-between and type and then just move the other stuff down.

Several participants also mentioned that they struggle with the distracting nature of their personal technology, but that the flexibility and utility offered by mobile devices is simply too great to ignore.

A few of the respondents stated that they value the attention of an in-person circulation transaction in one way or another, but one discussion of automated services elicited conflicting feelings regarding the displacement of library workers and a decline in the quality of service. One participant preferred in-person service because “they make you feel better and happy,” but the same participant also expressed that if they knew how to use a self-service machine and there were “a lot of people in the, yeah in the store … maybe I try the machine.” Although the majority of participants in this session identified in-person service as desirable, the majority also noted that they would default to an

automated, less desirable system if convenience dictated. One participant indicated that they avoid using new technology they do not *have* to use, even if it's appealing, because "I've never tried it, I don't want to spend much time figuring out how the thing works."

The researchers noted a frequent disconnect between what the participants recognized as a healthy study support and the pragmatic necessities surrounding their work. Many of the interviewees desired to engage in what we would consider "good" study behaviours, but when confronted with the immediacy of an impending deadline, phone notification, or a change in schedule, these ideals are quickly displaced by the competing requirement.

Interpersonal Concerns and Anxieties

Social anxieties and interpersonal concerns occupied a lot of headspace for our study participants. The decision to use services or resources often involved an idiosyncratic calculus that differed depending on individual demographics and tolerance levels, but each deliberation involved social considerations. The selection of automated or personal services seems especially motivated by interpersonal concerns – either an enjoyment of social interactions or anxieties about them. Some of the participants felt anxiety about using in-person services at the library, contacting instructors, or speaking up in class, primarily for social reasons. When asked why a "robot" professor was ideal, one participant stated, "sometimes depending on the personality type the prof doesn't always like you". Some respondents were anxious to be seen as demanding or foolish and are sensitive to the perceptions and attitudes of service providers and peers. A different participant in another session expressed their desire for a robot professor:

> I would feel like such a, such an idiot like let's say I'm asking you a question and then after you explained it to me like three times… that specific question I still don't understand it and then I feel like such an idiot, why am I in university?

Interpersonal concerns also drove choices to book group study rooms; participants often cited desires for privacy, concerns about their impact on other people in a shared environment, and a preference to deliberately avoid or facilitate social interaction as desired. One of our participants summarized this nicely:

> For my, especially for my friends we like to talk loud, so we don't want to bother all the other people, so we book the room so we can talk as loud as we can in the room. And also we don't have other people bothering us 'cause I've noticed that 'cause I study at the Science Library all the time so I have a lot of friends that go there, so there's just people that come by and say hi and they want to socialize but I have to get the project done. So being in the room its, its hard for them to find me anyways, so it's closed off for my group.

The vast majority of our undergraduate participants described group meetings that sounded like project management sessions; labour gets divided and assigned to individuals before the participants go their separate ways, sometimes never to meet

again before the project is finished. One participant described their group projects as a process of "[dividing] into sections and then assign[ing] like division of labour and just assign[ing] people to do this and that." The primary role of technology in group workflows was to exchange pieces of completed work.

Interestingly, the graduate medical and law cohorts reported the inverse of this trend, citing a daily reliance on their fellow students to help them study, relieve stress. These groups demonstrated a high degree of group cohesion in general during the sessions. Participants in these groups reported using technology to maintain group chats or collaborative documents of various kinds, citing situations like "if one of us has a medical question we'll post it and then everyone kind of puts input." Regardless, all of the interviewee groups—both graduate and undergraduate—at some point reported actively assessing, cataloguing, and leveraging each other's strengths and weaknesses in order to manage interpersonal relationships and streamline their workflows.

Discussion

Emerging Theory: Minimizing Hardship

In compiling the results of our interviews into major themes, it became apparent that a unifying construct was beginning to emerge; that preferences and attitudes were motivated by a fundamental desire to minimize a variety of perceived hardships. Being forced to learn something new, to interact with others, to coordinate or synthesize alternate viewpoints, to adjust to the surrounding physical environment, to cope with unexpected actions from a tool, or to adapt to workflows enforced by tools were all hardships encountered by our respondents. This could explain the frequency with which they reported abandoning an "ideal" or desired technology tool/workflow in favour of something they are more familiar with or find more convenient.

The researchers noticed that an individual choice to use a technology, service, or resource occurred at an intersection of social, bureaucratic, academic, and personal pressures that may not be well understood or properly considered by the decisionmakers. Many of our conversations highlighted that the interviewees had a fundamental misunderstanding of the library's role, its relationship to instructors or the larger university structure, and the breadth of support it affords. Library policies that serve operational needs before student needs created additional hardships for our respondents and distorted their perceptions of the library, often in a negative way.

Careful attention to the social and interpersonal implications of policies, services, and spaces is of critical importance when deciding to adopt new technologies or services, as our interviews revealed just how easy it is to alienate them with a poorly thought-out decision. For example, inadequate spaces were often cited as reasons for not using the library even when respondents wanted to—as one stated:

> … unless I get there early there's no spots and then I have to go and find like a dungeon spot as I call them where there's like no light and so, so that's sort of a

> limitation. Or sometimes if I need an outlet and I can't find a spot that's also an issue.

Another participant referred to unclear and inconsistent room booking policies and the formal system necessary to book a room as a barrier to library use:

> I know there is some sort of minimum amount of people that you need to […], if I'm like just with another person [or] two, I don't know whether that would meet the requirement or not, so then like rather than going through, booking the room I could probably like, just [go elsewhere].

The role of mild hardships was a critical factor in our respondents' decision making. As a result, the researchers theorize that the greater the degree to which respondents anticipated a mild hardship, the less likely they were to use a library space, service, or technology.

This theory should not be misconstrued as a call to remove all barriers for library users, nor should it be interpreted as a suggestion that library leaders avoid developing new technologies, services, or spaces. University students should assume agency in the pursuit of their own education, and these *perceived* hardships are intersectional in nature. In some cases, hardships may be unavoidable, a critical part of the learning experience, or necessary for growth. The question is whether these challenges are properly considered and scaffolded into the overall student experience, or simply the result of inadequate assessment and planning on the behalf of decision makers.

Limitations

This study is not without its limitations. First, the interviews only represented a narrow segment of the overall student population, as researcher availability, time, financial resources, and the interview methodology limited the number of participants. Participants were recruited primarily via self-selection in a convenience sample, with some intentional recruitment of particular student groups (the graduate student contingent). International students accounted for a large percentage of the participant base (undergraduates in particular), which likely influenced the degree to which social anxieties and interpersonal concerns weighed the results. Respondents were also not asked to report their commuter status, so differences between students who live on and off campus were not considered. Overall, the recruitment process could have benefited from a more comprehensive accounting and reporting of student demographics.

There are also well-documented weaknesses regarding social pressures exerted in focus group settings. The moderators did their best to facilitate an unbiased discussion, avoid leading questions, and make sure that all interviewees were given a chance to respond, but no focus group is free from social pressures and their potential to influence responses. The researchers noted a significant difference between groups that had pre-existing relationships versus those that did not. For example, the medical student group showed a great deal of honesty, camaraderie, and their session was easier to facilitate because it required less warm-up time. This high degree of cohesion, however, may

have elicited a fair amount of groupthink. Nonetheless, the intimacy of the session was helpful in illuminating the dynamics of this particular group's use of the library, even if some individual experiences may have been less prominently featured. This distinction is critically important when planning a focus group.

Further Research

Given the difficulties in recruiting a representative sample, further studies would be helpful to test the synthesis of major themes as well as the emerging theory identified by the researchers. The scope of the research question was intentionally broad, but a more focused interrogation of the individual themes (such Environmental Factors, or Interpersonal Concerns), using mixed methods would help test and validate the theories stated above.

The available literature suggests that students do not have a particularly strong desire to see new technologies in the library. If student needs are in fact rather basic, and motivated primarily by convenience or the desire to minimize hardships while doing what they are required to do, why do libraries frequently feel pressure to acquire new or experimental learning technologies? Are those with technological purchasing power versed in user perspectives and if they are, what other factors motivate them to pursue integrating further technologies? Are quantitative library surveys that report student "needs" only collecting one side of the story?

Another interesting question is the degree to which library and university systems departments are properly resourced, equipped, and recruited to implement robust user-centred solutions in the first place. Modern hardware and software systems undergo robust user testing on behalf of well-resourced private firms, and students come to the academy with these seamless interactions close at hand. Our conversations indicated that when a tool or service did not meet some standard degree of usability, our participants quickly abandoned the tool in favor of whatever alternative is more convenient (sometimes despite their better judgement), or tool a with which they are more comfortable. Are library leaders aware of this phenomenon, and to what degree does it influence their decision making?

Finally, it is important to consider which groups are using which resources at the library. According to research by Kot and Jones, there are differences in how users from different ethnocultural backgrounds or genders use library equipment and resources (with, for example, greater computer workstation use among Asian and Black students at Georgia State University than their Hispanic or White counterparts) (2015, p 574). Before reacting to interview insights and usage statistics, libraries and librarians need to consider whether some overall less popular services need to be maintained in order to provide assistance in pushing back against systemic inequalities. This study revealed that participants experienced significant social and internal pressures that influenced their workflows; further demographic delineation would increase the accuracy of the results, and additional research into the attitudes and motivations of users that specifically recruits minority, marginalized, or disadvantaged populations could prove illuminating.

Conclusion

Through semi-structured focus groups, this study examined the academic work processes of students attending The University of Manitoba to better understand how these students use information technology within academic spaces; the contexts, motivations, and attitudes behind their workflows. The results indicated that respondents desired to avoid or mitigate perceived hardships stemming from a mix of interpersonal anxieties, a need to control the study environment, and a fundamental desire for convenience. Participants were well aware of the impact of their choices, and consistently expressed that they made decisions based on immediacy or efficiency rather than what they considered to be a "correct" or healthy study behaviour. The examination of hardships within specific situational and demographic contexts may help decisionmakers tailor their offerings and allocate resources more appropriately.

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Appendix A

Planned Interview Questions

Interviews: Individual

Prompts:

- What are the top three things you do while working in the library/at school?
- Tell me about a time when you wanted to work on something at the library but couldn't. Or if you don't want to work at the library, why is that?
- What kind of technology can you use to do projects, papers, and studying?
- What kind of technology do you **need** to do most of your school work and studying? List it.
    - Pick your top three technologies that you need to do work.
    - As a group, let's rank the list.
- If you could imagine a tool or technology to make your individual studying/writing easier, what would it be?

Interviews: Group Collaboration

Prompts:

- What kind of things do you do when you work on a group project?
- Have you booked rooms to work on group projects in? Why or why not?
- What are some technologies or tools you can use to study, work, or collaborate with others?
- What kind of technology do you **need** to use for group work? List them.
    - Pick your top three.
    - As a group, let's rank the list.
- If you could imagine a tool or technology to make group work easier, what would it be?