Jubication, Portal 23.A. Student Preferences for Reference Services at a Remote Biological Station Library

Thomas Gerrish and Scott Martin

abstract: During the 2020 and 2021 summer semesters, the University of Michigan Biological Station (UMBS) transitioned to hybrid classes that were primarily distance learning with two-week inperson sections. The library offered both synchronous and asynchronous reference assistance over the summer term. An analysis showed that students favored using the UMBS LibGuide over synchronous virtual reference help via Zoom. Students further preferred face-to-face interactions over virtual formats, and their preference for LibGuide assistance may carry into the post-COVID-19 classroom. This finding suggests that students prioritize convenience and immediacy over personalized assistance in the Zoom platform. Thus, in providing reference assistance to student populations in the field sciences, balancing face-to-face interactions with convenience and immediacy should be a priority. Recommendations based on the success of the 2020 and 2021 field seasons were suggested for reference interactions in future field courses.

Introduction

he purpose of this study is to examine the changes in library services at a remote field station library in response to COVID-19 and to measure the successes of these adaptations for potential future inclusion in the library's operations. This project also investigates how students use information in field science courses. The goal is to identify any successes that can be implemented in the post-pandemic service model.

During the COVID-19 pandemic, the field station library at the University of Michigan Biological Station (UMBS), like most other institutions, was forced to adapt to social distancing measures that included virtual instruction. The shift to an online Service model also presented an opportunity to experiment with online delivery of reference and library resources to a field science community and compare it to the traditional in-person model. At the outset, the intention was to measure the successes of the virtual model and then implement the successful policies and procedures in the post-pandemic learning environment. The Station Library's COVID-19 adaptations

portal: Libraries and the Academy, Vol. 23, No. 4 (2023), pp. 637-653 Copyright © 2023 by Johns Hopkins University Press, Baltimore, MD 21218. were examined through interviews with course instructors, Likert scale surveys sent to students, and usage numbers.

This research may seem focused and useful only to the library in question. However, many field stations have libraries-particularly field stations that emphasize undergraduate education. Further, while not all field stations have an associated library ortal 23.A. like the UMBS, most universities have students undertaking field research in biology, ecology, and geology. Thus, information on how the field library operates can add to an understanding of the information use of field students, instructors, and researchers.

Background

Libraries at field research stations are an understudied type of special library. Field station libraries serve students, faculty, and researchers engaged in science research, and typically

Ecology research emphasizes longitudinal study, particularly in areas of climate change and human impact on the environment, increasing the importance of regional, historic, and place-based information that may not be available electronically.

occur at field research stations that include an educational mission in addition to their research focus. The University of Michigan Biological Station (UMBS) in Pellston serves a field station community actively engaged in ecology research and education. As on the main campus, the library provides students, faculty, and researchers access to electronic collections of journal articles, monographs, and data sets. At a more subject-specific level, the Station Library provides access to non-digital journal articles, books, unpublished student research, and place-specific data sets. Ecology research emphasizes longitudinal study, particularly in areas of climate change and human

impact on the environment, increasing the importance of regional, historic, and placebased information that may not be available electronically. Unsurprisingly, COVID-19 protocols affected the delivery of library services during the 2020 and 2021 sessions.

Founded in 1909, the University of Michigan Biological Station has provided a unique opportunity for students and researchers to engage with the natural world. The UMBS's 10,000-acre property, on land that was heavily deforested by the lumber industry in the late nineteenth and early twentieth centuries, supports a wide variety of interdisciplinary research. Its students and faculty investigate some of the most pressing issues facing the natural sciences today, such as human impact on the environment, climate change, invasive species, and maintenance of biodiversity. Undergraduate students come to the UMBS from the University of Michigan and across the United States for intensive two-, four-, and eight-week academic courses, taught by leading researchers. The courses emphasize field learning through exploration. An original student-led research project at the end of the course combines classroom learning with experiment design, data collection, analysis, and scientific writing. Typically, students use the library at the beginning of the project when they identifying a topic, methods, location information, and rationale. Later, they return to the library to flesh out their literature reviews and conclusions.

Until 2021, most undergraduates attended the field station in person for eight weeks during the summer or four weeks during the spring. In 2020, all field courses moved to virtual instruction, though some research still happened on site. During the 2021 session, the courses were eight weeks in length, with six weeks of virtual instruction and two weeks of in-person field experience. Each eight-week course culminated in a student's original research project on an aspect of the northern Michigan environment. As of 2022, all courses moved to four-week, intensive, in-person field courses during either the spring or summer. In this model, the original place-based research project was optional depending on the instructor and the course learning outcomes. The four week schedule was implemented to bring the field station's course offerings in line with university degree requirements, student needs, and course offerings at similar field stations. Graduate students and researchers come to the UMBS all year to complete their research projects as needed.

The UMBS Library provides on-site library materials and services to support the station's research and educational mission. The current collection encompasses approximately 10,000 print volumes from the twentieth and twenty-first centuries, with the principal focus on the station's core research areas, as well as the natural history of the Great Lakes region. The library also holds the primary copies of un-digitized station research, including work from previous classes and unpublished master's and doctoral dissertation work conducted at the UMBS. Students and researchers also have access to the University of Michigan Library's full complement of electronic resources, including online journals, databases, and other data sources. The UMBS Library is supervised by the biological sciences librarian at the Ann Arbor campus, who is responsible for collection decisions. In-person reference and instructional services are historically provided on site by a summer librarian during the eight-week summer term, which typically runs from mid-June to mid-August. The Station Library does not lend materials, but the physical collection is available to on-site researchers and students on a walk-in basis 24 hours a day when the station is open. As a student space, the UMBS Library offers an ample work area that has historically been a popular study location in the afternoons and evenings.

Literature Review

The effects of COVID-19 on operations in special libraries are still being felt, though discussions on the topic began appearing in library literature as early as fall 2020. One of the foremost challenges faced by academic libraries during the global pandemic was the sudden and necessary transition of physical spaces and in-person services into online virtual spaces and interactions. By March of 2020, libraries began to move away from in-person reference to virtual and telephone-only models as social distancing measures were put into place.¹ One of the first documented cases where a special library transitioned to virtual services because of COVID-19 occurred in an architecture library.² This is a significant starting point because an architecture library collection has more physical media, much like the collection in the UMBS Library, which includes older non-digitized articles, gray literature, manuscripts, and monographs. As the number of online reference interactions surged for many libraries, virtual reference service became the standard and, in many cases, the only way for academic libraries to interact with their university communities.³

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An emergent theme of the academic library during the pandemic was the rapid adaptation of libraries' connection with their communities through policies, procedures, and increased online access. At many universities, the pandemic offered an opportunity for libraries to rethink older service models and adapt with new services.⁴ Academic libraries began to modify their policies and procedures around staffing levels, circulation, interlibrary loan, course reserves, and reference services to accommodate COVID-19 restrictions.⁵ In particular, reference services were forced to rethink how questions would be answered in light of the barriers faced by the community.⁶ Beyond reference services, scholarly communication adjusted to the COVID-19 era through increased open-access publishing and by shortening the time between acceptance and publication for investigations dealing with COVID-19.⁷

By 2021, most libraries were poised to switch to an online chat model for reference, and online chat had already become the dominant mode for reference services for many academic libraries.⁸ The UMBS Library was not alone in transitioning its synchronous reference services to Zoom. Other special libraries also moved their reference services to such platforms as Zoom, Webex, and Skype in response to social distancing requirements.⁹ At least one study showed an increase in the perceived difficulty of the transactions after transitioning away from in-person reference interactions.¹⁰

Patron preference plays a large role in the success of any library service. Pre-COV-ID-19 literature points to a user preference for in-person reference over virtual services such as chat, texting, and e-mail.¹¹ By 2016, evidence showed that chat reference had become popular with patrons and recommended that libraries develop chat services broadly.¹² More specifically, face-to-face interaction provided a sense of personalization that patrons valued as part of the reference service.¹³

Immediacy, time spent on task, and convenience were among the most valued qualities of a reference transaction.¹⁴ Indeed, patrons chose chat reference because of an expectation for a quick solution.¹⁵ They also identified convenience and immediate access as important factors in the reference transaction.¹⁶

Station Library Response to COVID-19

Before COVID-19, the UMBS summer librarian's function blended elements of a traditional reference services librarian position with an embedded librarian model. The

By 2016, evidence showed that chat reference had become popular with patrons and recommended that libraries develop chat services broadly. librarian's responsibilities included physical collection management, one-on-one reference consultations with regular office hours, and traditional classroom bibliographic instruction. Most reference interactions and instruction occurred in person, and the summer librarian maintained close contact with the community. The librarian lived and worked alongside the UMBS's summer researchers 23.A

and students, which provided not only traditional reference desk interactions but also serendipitous exchanges that could occur anywhere in camp. Reference interactions might just as likely happen during meals or after-hours relaxation time as during office hours. Similarly, communication between the librarian and the community might happen via an in-person announcement during lunch or at an all-camp lecture. The result was a deeper connection between the community and its branch library and librarian.

Like most areas of higher education, the UMBS Library underwent rapid changes as COVID-19 protocols began in 2020. Shortly after on-site operations at the University of Michigan ended in March 2020, UMBS made the decision to offer only a subset of its previously scheduled spring and summer term classes and to do so via fully remote synchronous instruction on Zoom. This shift necessitated that library support for those classes also be provided remotely. In response to this decision, the biological sciences librarian redistributed the hourly funding for the summer librarian position. Rather than planning 8.5 40-hour weeks covering only the summer term, synchronous reference hours were scheduled for 13 26-hour weeks covering both spring and summer. With fewer classes being offered, the reduced weekly hours for summer consultation would not be a significant drawback, especially when weighed against the opportunity to also provide services for spring students, who formerly had no resident librarian during the station's spring term.

Students also needed remote access to relevant library materials. The majority of the University of Michigan Library's scientific journal holdings were already available electronically, but access to books would be required. The UMBS Library is deliberately maintained as a duplicate collection, meaning that the items in its holdings are also represented in the library on the Ann Arbor campus. The main library's physical collections were systematically scanned and deposited in the HathiTrust Digital Library as part of the university's partnership with Google Books in the early 2000s. In response to the pandemic, HathiTrust's scanned copies of in-copyright materials were made the "active" library copies and could be "checked out" for a limited number of concurrent short-term uses by authorized University of Michigan users under the Emergency Temporary Access Program (ETAS). Circulation of print copies was temporarily discontinued while this access was available, effectively "swapping" the scanned versions with their print originals.¹⁷

Using the recent lists of reserve materials for individual courses, the investigators searched the library catalog to determine which materials could be provided electronically. Most of the pre-2005 materials were available via ETAS. A significant number of the post-2005 resources were already available electronically, due to individual-title purchases or purchase agreements with publishers. When titles were not already available electronically, the biological sciences librarian reviewed the current offerings via ProQuest OASIS, the library's main English-language vendor, and strategically selected additional materials for purchase. The library added electronic availability information and catalog links to the reserve lists and distributed them to the teaching faculty, who could then direct their students to resources via their course learning management system.

Conditions changed somewhat during the 2021 season: while the spring classes were still entirely remote, the summer classes were offered in a hybrid remote and in-person format. The summer classes were scheduled in three overlapping six-week sessions, with each session consisting of a pair of classes; students in a particular session were enrolled in both classes. Each session was scheduled for two weeks of in-person instruction at UMBS, following appropriate COVID-19 quarantine protocols, with the 23.0

remainder of the instruction carried out remotely. The in-person portions of the three sessions were kept separate to accommodate social distancing requirements. Under these circumstances, with much of the instruction happening remotely and most of the in-person teaching occurring simultaneously with remote instruction, the biological sciences librarian opted to continue providing library services in an entirely remote format. This arrangement spared the summer librarian from having to split attention between in-person and remote queries, and contributed to keeping the staff at the UMBS as small as possible. As in 2020, the summer librarian provided services to students during both spring and summer, and library materials were accessible via ETAS as well as the usual suite of University of Michigan Library electronic resources. Updated reserve lists were provided for classes that had not been taught in 2020. Summer 2021 students also had unsupervised walk-in access to the on-site physical library during their two-week tenure at the field station, in keeping with normal Station Library access policies.

The changes implemented for the 2020 and 2021 seasons were generally conceived as temporary measures. Putting the in-person processes largely on hold for the duration of the pandemic provided an opportunity to examine the temporary measures and identify any process or access point that worked particularly well. If a measure taken

If a measure taken because of COVID-19 protocols worked better or met an unmet need, then that process could be adopted into the service profile of the Station Library. because of COVID-19 protocols worked better or met an unmet need, then that process could be adopted into the service profile of the Station Library. There was particular interest in understanding student willingness to use virtual modes of contact with the library. Thus, adaptation to COVID-19 was also an opportunity to try new models and evaluate their effectiveness. 23.A.

Methods

The assessment of the changes to the UMBS Library consisted of post-semester interviews with instructors, a survey sent to students, and the review of key usage data at the end of the summer session. Faculty were asked to participate in a semi-structured qualitative interview to discuss how they incorporated library resources into their course, how well student outcomes met their expectations, and how the summer 2021 distance learner experience compared to previous in-person versions of the course if applicable.

The qualitative interview data were coded for key points such as the instructor's perception of student success in information use as well as any emergent trends that appeared over the course of the interview. The complete IRB-approved interview script appears in the Appendix. Instructors were asked to examine how well the remote library environment integrated into their course compared to previous in-person iterations of the course. This assessment was then compared to the quantitative usage metrics for a more complete picture of information use during the in-person and virtual components of the session. The usage data included the number of reference questions asked and the number of visits to the UMBS LibGuide for 2017 through 2022.¹⁸ Usage data for physical items in the UMBS Library could not be gathered during the summer 2021 session because the librarian worked entirely online and off-site.

Results

During the spring and summer sessions, the teaching faculty consisted of 10 instructors and 2 Research Experience for Undergraduates (REU) program managers. In all, 6 instructors and 1 REU program manager agreed to be interviewed. Interviews were conducted via Zoom during the last week of the summer session and the following week. All interviewees discussed the condensed format of the classes, the difficulties associated with online instruction, managing student time, and similar changes to the course because of the format.

Of the six course instructors interviewed, five indicated that they reduced their expectation that students search, use, and cite literature. In these five cases, the reduction of the literature as well as other parts of the in-person version of the course was justified to manage the faculty and student workload. These five instructors reported that they provided a set of predetermined research materials for the students, required the citation of literature without giving instructions on how to locate it, or furnished exact search terms for a given database. The remaining instructor who retained the traditional literature search component within the distance learning portion of the course reported that outcomes were generally good and in line with what students would typically produce in a normal year. The instructors agreed that the removal of the research literature emphasis was most likely temporary. The future return to in-person instruction would presumably restore this aspect of field science instruction.

Given the reduced information requirements in the courses, the instructors reported few problems accessing information. The course that kept its information requirement unchanged reported no difficulties, though the research component was described as more time-intensive for the instructors in this iteration of the course. This increased time requirement was due to the asynchronous nature of the course and the slow backand-forth negotiation between the student and instructor when constructing the initial annotated bibliography, project goals, and methodology.

Interestingly, some instructors independently brought up that their classes communicated via Slack, GroupMe, and WhatsApp. These instructors mentioned that undergraduate students connected via these platforms even on topics outside the classroom and that graduate assistants had set up channels for discussions, music, and interests independent of the course. One instructor noted that the class made extensive use of Slack for class discussion but also for music and socialization. In the virtual field science environment, these platforms offered a substitute for the in-person community that the students would normally have had.

Only four reference questions were asked during the summer session. These questions consisted of deeper level inquiries on literature in the field and research methodologies. On the READ (Reference Effort Assessment Data) scale, three of the questions were graded as a 3 and one as a 4. While these questions were asked by undergraduate students engaged in course-based research, the interaction was prompted by an instructor rather than initiated by the students themselves. All reference interactions were conducted via Zoom.

The student survey consisted of a mix of multiple choice and Likert scale questions. The survey was designed in Qualtrics and intended to be completed in five minutes or

less. Only 4 of the 167 students (2.40 percent) completed the survey; consequently, the data were not included in this analysis. The survey was sent out late in the semester after the library work had been completed in all courses. The lateness and the heavy workload during the last two weeks of classes may account for the strikingly low response rate. Future student experience investigations will likely be conducted through semi-structured interviews rather than Qualtrics-type surveys.

The authors next examined the quantitative data regarding student interactions. The UMBS Library reference desk converted to a Zoom service for the 2020 and 2021 field seasons. Reference hours were set similar to a normal in-person season, with the reference librarian available via Zoom during scheduled periods. Students asking a reference question or seeking a reference consultation were invited to "drop in" via Zoom during any open time. This analog to an in-person service was seldom used by the student population. For the 2020 field season, no students used the reference drop-in hours. In the 2021 field season, four reference questions were initiated via the librarian's Zoom

The number of students contacting the librarian with reference questions dropped markedly following the onset of COVID-19 even with the implementation of synchronous Zoom reference hours.

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office hours. Additionally, four students made appointments for in-depth reference consultations. These consultations were all initiated by REU students as they formulated their methods, experimental design, and project location. The number of students using synchronous reference services decreased markedly compared to previous in-person years. In an in-person session, reference interactions totaled about 100 per season for a typical population of about 200 students, which includes both spring and summer terms as well as extension courses from main campus. The number of students contacting the librarian with reference questions dropped markedly 23.A.

following the onset of COVID-19 even with the implementation of synchronous Zoom reference hours.

The 2020 summer semester was completely virtual, and no reference interactions were initiated. This arrangement differed from main campus reference services, which experienced a marked increase in reference interactions for both the pandemic overall and summer 2021. During the last in-person session at the UMBS in 2019, a total of 0.23 reference interactions per student were logged. In 2018 and 2017, 0.61 and 0.53 reference interactions occurred per student, respectively. The year 2022 showed an increase in reference interactions compared to the previous year. While raw numbers have not returned to pre-COVID-19 levels, the number of students at the field station was markedly lower in 2022 compared to 2017 and 2018. Thus, the number of reference interactions per student in 2022 actually increased to 1.22. Reference interactions and yearly student population counts are summarized in Table 1.

The usage statistics for the UMBS Library Research Guide tell a much different story about library usage during the pandemic. For the 2021 field season (defined as May 1, 2021, through September 30, 2021), the LibGuide had a total of 555 interactions. For

Table 1. Reference interactions for the University of Michigan Biological

Station Library, 2017 through 2022

Station Library, 2017 through 2022									
Year*	Total students	E-mail reference interactions	Walk-in, in-person, or Zoom reference interactions	Total interactions	Questions per student				
					<u></u>				
2017	213	7	106	113	0.53				
2018	187	9	105	114	0.61				
2019	196	0	46	46	0.23				
2020	171	0	0	0	0				
2021	167	0	4	× 0 4	0.02				
2022	60	14	59	7 3	1.22				

*Instruction in 2017, 2018, and 2019 was in person, 2020 was completely virtual, 2021 had six weeks of virtual and two weeks of in-person instruction, and 2022 was taught in person over two four-week sessions.

comparison, the same research guide within the same period was visited 228 times in 2020 (a fully virtual year), 83 times in 2019, 132 times in 2018, and 164 times in 2017. In 2022, the UMBS LibGuide was visited 449 times during the same period (see Figure 1).

As of 2022, the UMBS had a single LibGuide divided by area of research (for example, Atmosphere & Climatology, Limnology & Wetlands, and Fish & Wildlife). It provided links to appropriate databases, journals, and external subject information from such sources as the National Oceanic and Atmospheric Administration (NOAA), the Michigan Department of Natural Resources, and the Canadian National Forestry Database. In addition, there are sections for quick access to the most commonly used databases at the UMBS, to subject area journals, and to the University of Michigan institutional repository Deep Blue, where station-specific research can be accessed.

The number of undergraduate students taking courses at the UMBS during the summer of 2021 did not dramatically change compared to previous years. During summer 2021, 167 students attended the hybrid in-person and virtual class. In 2020, which was a completely virtual session, 171 students were enrolled in UMBS summer courses. Before COVID-19, 2017, 2018, and 2019 had higher respective enrollments of 213, 187, and 196 students (see Table 2), though 2021 LibGuide interactions still exceeded the previous years. Only 60 students were enrolled for the spring and summer 2022 classes, due to a restructuring in how classes were offered.

Student Preferences for Reference Services at a Remote Biological Station Library



Figure 1. Visits to the University of Michigan Biological Station LibGuide from 2017 to 2022. The 2017, 2018, and 2019 sessions were taught in person, 2020 was completely virtual, 2021 had six copyedited, at weeks of virtual and two weeks of in-person instruction, and 2022 was taught in person over two four-week sessions.

Table 2.

LibGuide visits at the University of Michigan Biological Station summer session, 2017 through 2022

		5				
	Year	LibGuide visits	Total students	LibGuide interactions per student		
	2017	164	213	0.77		
~	2018	134	187	0.72		
. 6	2019	83	196	0.42		
× MIS	2020	228	171	1.33		
	2021	555	167	3.32		
	2022	449	60	7.48		

The LibGuide was clearly the preferred route for students seeking library information and assistance during the summer 2021 field season. It was not initially clear from the data or the faculty interviews what caused the increase in LibGuide usage for this virtual session over the previous year. The LibGuide was introduced to all instructors during faculty orientation but was not brought up as a major point in any of the

The LibGuide was clearly the preferred route for students seeking library information and assistance during the summer 2021 field season.

faculty interviews. At the beginning of the semester, an e-mail to the students introduced the library and the LibGuide, but no emphasis was placed on the LibGuide beyond this e-mail and the faculty orientation session. All instructors interviewed included the UMBS LibGuide in the course learning management system, which may have provided an access point for the UMBS student community during hybrid instruction.

Discussion and Conclusion

Assuming that this change in community behavior is a specific reaction to the altered instructional environment necessitated by COVID-19, how do we understand what is happening here? One fruitful line of inquiry may be to consider research on student preferences for modes of interaction with librarians. We do not yet have a robust study of student preferences following the onset of COVID-19, but there is a substantial prepandemic literature examining preferences in more traditional, in-person educational settings. The research suggests that students have a lower preference for video chat refer-



Figure 2. Visits to the University of Michigan Biological Station LibGuide per undergraduate student in attendance. The 2017, 2018, and 2019 sessions were taught in person, 2020 was completely virtual, 2021 had six weeks of virtual and two weeks of in-person instruction, and 2022 was taught in person over two four-week sessions.

ence interactions compared to other remote modalities, such as e-mail or chat;¹⁹ a higher preference for website-based chat services compared to e-mail and SMS/MMS (short messaging service/multimedia messaging service) texting;²⁰ and a strong preference for

Studies also show that students generally prefer in-person, face-to-face reference assistance over virtual equivalents when both are available. website or Google searches compared to more interactive remote modalities generally.²¹ Studies also show that students generally prefer in-person, face-to-face reference assistance over virtual equivalents when both are available.²² Based on this body of research, we might hypothesize that pre-pandemic students had a rank-order preference for informational interactions with librarians that ran, roughly from highest to lowest: (1) face-to-face; (2) noninteractive Web searching; (3) text chat; (4) e-mail; and (5) video chat.

23.A.

In a remote educational environment, in which face-to-face interactions with a librarian are unavailable, we might predict that students would default to their next-most-favored form of interaction—in this case, the noninteractive LibGuide—rather than skip down the hierarchy to video chat. During the 2020 and 2021 virtual years, reference interactions moved to Zoom, and the numbers dropped significantly. In 2022, when the field station and the library returned to in-person teaching and face-to-face interactions, the numbers trended back toward pre-COVID-19 levels. On a per student basis, 2022 had far more reference interactions per student than any of the previous years for which there are data. This finding seems to point to a return to a normal interaction between students and the reference desk at the field station.

If reference interactions return to pre-COVID-19 norms, then the expectation should be that the UMBS LibGuide visits should drop back to the 2019 levels. Instead, the number of site visits per student jumped to 7.48, which far exceeds the previous rates.

The increase in LibGuide visits may represent a behavioral holdover from COVID-19 times, when students learned to rely more on asynchronous sources of assistance such as LibGuides. The increase in LibGuide visits may represent a behavioral holdover from COVID-19 times, when students learned to rely more on asynchronous sources of assistance such as LibGuides. This behavior was not replaced, but instead augmented, by the renewed availability of inperson library services in 2022, as evidenced by the high numbers of reference interactions per student for that year. Further monitoring of this trend will be necessary to determine if this student behavior will continue or if interactions will revert to something closer to 2017 levels.

This line of reasoning assumes that students'

preference hierarchy is generally consistent between in-person and remote instruction, or at least that two years of the latter were insufficient to reorder it. Our reasoning also ignores the existence of "Zoom fatigue" among students, as video chat already occupied the bottom rank of the preference hierarchy pre-pandemic.²³ Thus, it is reasonable to conclude that the adoption of video chat as the primary medium of reference is not tenable, though COVID-19 has shown that it is a useful alternative if the circumstances

warrant. Similarly, this conclusion does not consider the change in instruction that took place at the start of the 2022 session, when the courses moved from an eight-week model to two four-week sessions, and not all courses implemented research literature and library resources into the model.

The students' adoption of communication platforms like Slack, WhatsApp, and GroupMe was an unexpected outcome of summer 2020 and 2021. In the absence of

regular in-person meetings, these platforms became focal points for community building and interaction. Because students seem comfortable on these platforms, establishing a library presence in Slack, WhatsApp, or GroupMe may be a worthwhile expansion of reference services. Moreover, these platforms preserve immediacy and convenience while still allowing for personalization of the reference interview. The use of social media as an extension of the reference desk is already represented in the

Social media may be a new tool for the reference desk that the library can use to expand services to meet the needs of field science students.

literature, both as a general measure and in response to COVID-19 social distancing.²⁴ One or more of these platforms could function as surrogate reference platforms if care is taken to ensure that information privacy can be maintained. Social media may be a new tool for the reference desk that the library can use to expand services to meet the needs of field science students. As of summer 2022, however, in the aftermath of social distancing, students used these social media platforms with markedly less frequency within courses. Instead, they opted for face-to-face interactions and group texts for communication with multiple persons. This finding may be related to general Zoom fatigue, or it may represent a new trend to be explored with field science students.

Another unexpected benefit of this project was the contact with the faculty. The faculty interviews used a semi-structured qualitative protocol that allowed the researcher to pursue topics that arose organically during the interview process. While the initial intent was to broadly explore student success at using information in the field courses, other issues were brought up. Library planning for summer-term field courses typically occurs early in the winter semester, as instructors begin preparing for the course. In this setting, where the biological sciences librarian contacts instructors via e-mail, there is little or no discussion of problems and successes from the previous summer. During summer 2021, in contrast, contact was made with the faculty during the last week of courses, when instructors had the experience of course in mind as they were asked about it. In addition to specific issues targeted by the interview questions, other topics were raised as well as opportunities to expand library information literacy instruction. The inclusion of debriefing-style interviews at the end of term should be investigated for future sessions. This study ultimately serves as a reminder of the importance of lines of communication between instruction partners and students and of regularly assessing how information is accessed.

Some interesting findings came out of the UMBS Library's adaptation to social distancing under COVID-19, but they beg the question on how long the observed differences will be sustained. A change may have already begun prior to COVID-19 restrictions in 2020, and the pandemic only exacerbated the trend. If so, we may expect a partial

rebound, but the COVID-19 reality will become the new reality, at least in the Station Library. Alternatively, if the observations resulted only from the circumstances of the pandemic, then a more robust rebound can be expected. Still a third possibility is that these effects are specific to the setting and to how the UMBS population interacts with the library and information. The research done here suggests these routes of investiga-

- Recommendations
 Based on what the authors learned during summer 2021, the instructor interviews, and
 the usage statistics, the following recommendations resulted.
 1. Keep the LibGuide revised and up to date the
 tion with the state and specificity of information. It provides a contact point for the library within the learning management system for individual field classes. The library needs to maintain close connections with the courses and instructors to continue to identify resources relevant to the instruction.
 - 2. Based on these observations, Zoom is not a preferred substitute for in-person reference services at the field station. However, the library should continue to offer Zoom appointments even after returning to in-person classes, since little is lost by continuing to offer reference in this mode. Even though the number of Zoom reference interactions was low compared to synchronous reference interactions in previous years, it should remain a viable option for field students because of its easy accessibility.
 - 3. Provide an alternative means of initiating a reference interaction, including Slack and WhatsApp. While students have apparently moved away from these social

The library should continue to offer Zoom appointments even after returning to inperson classes, since little is lost by continuing to offer reference in this mode.

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media platforms with a return to in-person instruction, this may change. These platforms may provide a surrogate reference chat environment where students may be willing to communicate within the UMBS community. The library should also have a presence on these apps as the field community develops and preferences change. Importantly, this assumes that students will still seek synchronous interactions with the library in the emerging post-COVID-19 world.

Usage data may provide insight into student behavioral changes resulting from the pandemic. Close monitoring of student preferences for reference mediums will be necessary.

4. Continue to invite faculty to debrief at the end of the season. Such debriefing was an unexpected resource on library integration into the course, student behavior, and information usage. Continuing these interactions should improve library integration into the field courses and the summer research community. It will be especially important to follow up with instructors teaching their first course at the field station.

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Appendix

Interview Scheme

- 1. How do you incorporate library resources into your UMBS course?
- 2. How are students required to make use of library resources or library research skills in your class?
- 3. Is there any other resource or information source that you use in the course beyond what the library provides?
- 4. Which library resources do you use or expect your students to use in your class?
- 5. How does the library research component in your remote course compare to the inperson version?
- 6. What difficulties did you or your students experience in accessing library information?
- 7. Where do you expect your students to learn about searching and accessing library materials?
- 8. How do you feel your class went with respect to library materials?
- 9. Do you feel that students were successful? Anything to add?

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