Bridging the Digital Divide: Wi-Fi Hot Spots as a Means of Digital Equity

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abstract: Many areas of the United States still fall short of digital equity and inclusion, defined as the ability of individuals to access and use information and communication technologies to participate fully in society, democracy, and the economy.[1] This is especially true in Montana, the authors' rural state. Only 63.6 percent of Montana citizens have broadband access, and the average cost of the Internet is $91.54 per month—the third highest in the nation.[2] The seven American Indian reservations in the state face even more barriers to access, with some having as low as 23 percent of the population with access to broadband.[3] The lack of high-speed Internet coupled with the increase of remote learning (and remote work) added stress to many college and university students' lives as they struggled to complete their coursework during the COVID-19 pandemic.

Though no campus entity gathers information about student Internet access, the Montana State University Office of Planning & Analysis reports that 61 percent of the university's students are Montana residents, and so many face access challenges similar to the rest of the state's population.[4] To ease the digital divide and improve students' academic success, two Montana State University librarians wrote a successful grant proposal to purchase Wi-Fi hot spots to loan to students with poor or no Internet access. The hot spots were offered to students with high need on medium- to long-term checkouts and were initially marketed to programs and services on campus that work closely with underrepresented students.

Introduction

When colleges and universities across the country moved to emergency remote learning for the spring 2020 semester, it became clear that a digital divide existed between students (and families) who have access to a home computer with reliable, high-speed Internet and those who do not. Multiple news agencies reported that students and workers used parking lots as workplaces to capitalize on free Wi-Fi signals from the businesses nearby.[5] In many homes, college students shared

a computer and Internet access with parents, siblings, and other family members, making it difficult to complete their coursework in a timely fashion. Students also took on more responsibilities as family members were laid off or declared essential workers.[6]

In the Higher Ed Learning Collective Facebook group (started in March 2020 as a response to the move from face-to-face to remote learning), many professors, instructors, and administrators from across the country discussed how to bridge the digital divide with which their students struggled.[7] Some went as far as mailing assignments to students without computers and Internet access along with prepaid envelopes to return the work. In two EDUCAUSE QuickPolls in spring 2020, respondents identified technology support and "equitable access for all students to the technology and internet service needed to succeed while learning remotely" as two of the main issues most relevant to student success for the coming 2020–2021 academic year.[8]

> **In many homes, college students shared a computer and Internet access with parents, siblings, and other family members, making it difficult to complete their coursework in a timely fashion.**

The authors of this article observed similar student access issues in spring 2020 at Montana State University (MSU) in Bozeman. In one course taught by a coauthor of this paper, an MSU faculty librarian, a student completed the spring semester courses using only a cell phone because they lacked access to a personal computer or tablet at home and all public libraries were closed. Another student lived in rural Montana and had no access to broadband Internet or a personal computer. This student had to share the family computer with younger siblings as they completed their K–12 schoolwork. Both students had difficulty accessing some items of course content, so the instructor had to make adjustments for them to complete the course. Another example of MSU students' needs came from the TRIO Program, a service aimed at increasing the rates of academic achievement, retention, and graduation among first-generation and underrepresented students. TRIO provides holistic, individualized support to maximize students' own abilities. The program's director and assistant director reported that some of their scholars are Native Americans who lack Internet access at home on their respective reservations, which are geographically isolated.

Focusing on the state of Montana, the *IMLS* [Institute of Museum and Library Services] *Indicators Workbook: Economic Status and Broadband Availability and Adoption* shows only 63.6 percent of Montanans have broadband, the 12th lowest percentage in the nation. The average cost of Internet per month is $91.54 (third highest in the nation). Some 12.7 percent of Montanans have no home computer, and 21 percent have no home Internet access, higher than the national averages for both categories. In more than 20 Montana counties, less than 50 percent of the population has broadband Internet.[9] Data obtained from the Montana State Library's research into broadband access found that "24% (or 28) of the public libraries in the state reported being the only source of free WiFi in their communities." The research also found that "98% of the public libraries serving less than 50,000 people . . . reported speeds below the FCC's [Federal Communications Commission's] national bandwidth target of 100 Mbps [megabits per second]."[10] Sixty-one

percent of MSU's student population are Montana residents, and as such, are affected by the limited Internet options throughout the state.[11]

Because of continuing reliance on hybrid and online learning due to COVID-19, MSU librarians wanted to help students overcome barriers to computer and Internet use and create more equitable access quickly and efficiently. The authors consulted numerous sources to understand what types of equipment would be most beneficial to MSU students. One FCC commissioner, Geoffrey Starks, declared, "During this crisis, we [the FCC] should rapidly use these funds to increase the stock of lendable free hot spots available through schools and public libraries."[12] An EDUCAUSE QuickPoll with 579 respondents from May 5, 2020, declared, "Institutions are continuing technology support and increasing holistic support for students for the fall. About three-quarters (74 percent) of respondents reported that their institution is planning to provide loaner laptops." Thirty-seven percent of respondents offered loans of Wi-Fi hot spots.[13] While some academic libraries—for example, that of the University of Utah in Salt Lake City—offered Wi-Fi hot spots for extended checkouts prior to the COVID-19 pandemic,[14] the authors found most hot spots had been provided by public libraries through public access funding from local and state governments.

The digital divide is not a new problem in higher education or the world at large. Many experts feel, however, that we have moved beyond the "first digital divide" as "the diffusion of the Internet has reached as high as 95% in several countries." The means to connect to the Internet is only one access issue individuals face. Some also lack devices, software, and other necessary equipment. These gaps have resulted in part from rapidly changing technology, the sheer number of devices available, and the fact that not all materials allow the same access.[15]

With this knowledge, the authors—two librarians at the MSU Library—wrote a successful grant proposal to the Network of the National Library of Medicine (NNLM) to purchase Wi-Fi hot spots for the 2020–2021 academic year and collect data on the access needs of MSU students (see the Appendix). This article will document the challenges and successes of the pilot lending program, student stories and survey data gained, and future plans to continue projects focused on digital equity.

Implementing the Wi-Fi Hot spot Lending Program

The NNLM grant proposal initially called for a modest pilot program that would purchase four Wi-Fi hot spots and gather monthly data about the cost. Though a small project, it promised to be worthwhile to determine student need in the areas of digital equity and inclusion. After receiving the grant funds in August 2020, however, the authors learned of additional opportunities within the state and ultimately procured 17 hot spots for mid- to long-term student checkouts. Direct marketing to student service offices and faculty across campus urged instructors and staff to refer high-need students to the program, such as first-generation, veteran, and Native American students. The program encountered challenges in procurement, marketing,

> **The means to connect to the Internet is only one access issue individuals face. Some also lack devices, software, and other necessary equipment.**

and procedures during the first several months. Once these were corrected, however, all 17 hot spots were checked out throughout the spring 2021 semester with little or no difficulty.

Initiating the Lending Program

After receiving the NNLM grant funds and completing required training for principal investigators, the authors began purchasing Wi-Fi hot spots. Only two mobile providers offered significant coverage of Montana, and the authors determined Verizon would be the preferred provider for the majority of students. During this process, the Montana State Library contacted the authors offering inclusion in the statewide Hot Spot Lending Program. The state's program is funded through an Institute of Museum and Library Services grant under the Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020. The act allows every public and tribal college library to receive hot spots to loan in their communities. The program was expanded to all Montana libraries after it obtained additional funding from the Governor's Emergency Education Relief Fund.[16] The authors also learned that a state contract with Verizon allowed the library to receive government pricing for the hot spots and data plans. With the additional funding and reduced government pricing, MSU Library procured a total of 17 hot spots for the pilot lending program.

After the hot spots were purchased, the devices needed initial setup, procedures, and packaging. Each Wi-Fi hot spot was given a user-friendly network name and password, labeled with an item number, packaged, and cataloged. A LibGuide (see Figure 1) was created to provide information on the program and to house the referral form with which faculty and staff could notify the library of students in need of hot spots. Checkout protocols were established along with user technology agreements, an initial need interview form, and a post-checkout survey. The interview form and survey were used to gather data on students' needs and usage of the hot spots to help determine if the program should be formally put into operation by the library.

Figure 1. The "Bridging the Gap" LibGuide at Montana State University Library introduced the library's WiFi Hotspot Lending Program and provided referral forms.

In general, the setup process for the Wi-Fi hot spots and the lending program went smoothly. Two challenges did arise, however, during this time: creating a checkout process outside the normal library procedures for traditional materials and the time needed to set up, label, and package each hot spot.

Since the Wi-Fi hot spots required a referral and interview before they could be checked out, the Service Desk staff could not complete the checkout process. One of the two librarians overseeing the lending program, both of whom were working remotely, had to come to the library to check out the hot spots to students. Scheduling an appointment for pickup could take one or two days, and sometimes students did not show up to check out the device. Missed appointments remained a problem even after nine months. Nevertheless, all students interested in using a hot spot eventually received one.

Setting up the hot spots also took more time than anticipated. The library received the devices on October 2, 2020. Setting up the network name and password, labeling the hot spots and cords, adding labels and contact information to the boxes, and cataloging the hot spots took several weeks. Each hot spot required approximately 45 minutes to an hour to set up, and cataloging the devices could take anywhere from one to five business days. Because of the extensive setup process, the librarians' other responsibilities, and the remote working environment, all hot spots did not come online until December 2020. Despite the

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delay, eight hot spots were checked out in the fall semester for terms between two and six weeks. In spring 2021, all 17 hot spots were checked out at least once, with a total of 23 unique checkouts and 4 special use cases by library employees.

Marketing Hot Spots to Students, Faculty, and Staff

In fall 2020, the MSU Library initially marketed the Hotspot Lending Program to campus agencies that served high-need students. These included the Academic Advising Council, American Indian Council, Office of Health Advancement, Office for Student Success, TRIO, and Veteran Services. Librarians requested instructors and advisers to refer students in need of a hot spot to the Lending Program using the referral form embedded in the "Bridging the Gap" LibGuide (see Figure 2). The librarians thought this marketing would reach a broad audience across campus, but it brought few referrals. Posters, campus announcements, social media posts, and other marketing strategies also proved unsuccessful in the fall semester, when only six hot spots were checked out.

During winter intersession, the librarians sent a targeted e-mail to the college deans and added marketing to promote a new self-referral process for students (see Figure 3). In January 2021, self-referrals came in from several graduate students as well as a handful of recommendations from faculty and staff. By the end of January, 11 students had checked out hot spots, many for the full semester. During the first week of March 2021, all 17 hot spots were checked out simultaneously for the first time, including full-semester checkouts as well as shorter term loans ranging from two to four weeks.

Faculty/Staff Referral Form

Please use this form to refer a student to the lending program.

M MONTANA STATE UNIVERSITY | LIBRARY

WiFi Hotspot Lending Program

The goal of the WiFi Hotspot Lending Program is to reduce access barriers for high need MSU students.

The hotspots will be offered through a referral process, and we need your help!

If you know of a student who is struggling to access their courses due to poor Internet options, please use this form to refer them to the library.

Start

Figure 2. The referral form used by Montana State University faculty and staff to submit names of students who might benefit from the Hotspot Lending Program.

Overall, the spring semester saw 23 unique checkouts by undergraduate, graduate, on-campus, and off-campus students. Several library employees also used the hot spots for special purposes, such as during Internet outages, travel, and conference presentations.
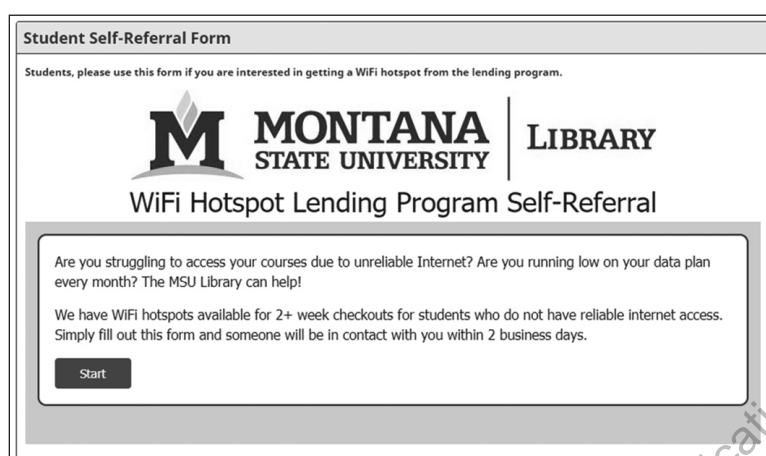
Student Need and the Digital Divide

Why Students Needed Hot Spots

The two librarians overseeing the Hotspot Lending Program recognized a need to gather student stories because such information was scarce on campus overall. They created a survey with several questions to determine individual student needs. Most students met with one of the two authors to share information about their need for Internet access prior to receiving a hot spot for a time ranging from two weeks to an entire semester. At checkout, one of the librarians used the survey to interview the student and asked additional follow-up questions to get more detailed information. A few students submitted their interview forms via e-mail because they were in quarantine. The interviews revealed a variety of unique situations. Most students either had spotty, unreliable Internet access in their homes or no Internet at all. All took some or all of their courses online, and thus needed a hot spot to keep up with their coursework. One student reported that prior to receiving a hot spot, she did her college work on her cell phone and used all her data to attend courses via Web conferencing and to complete assignments, an expensive and unsustainable practice. Students in quarantine designated a proxy to pick up a hot spot on their behalf at the library and deliver it to them. In one instance, a representative from Student Health Services brought a hot spot to two students who were quarantined in a fraternity house near campus.

> **One student reported that prior to receiving a hot spot, she did her college work on her cell phone.**

Figure 3. The self-referral form that allows students at Montana State University to request the loan of a Wi-Fi hot spot.

Other student stories were just as compelling. A few hot spots went to students who had moved to a new house or apartment and would not have Internet service installed for two to three weeks. Most students needing short-term checkouts had one or more roommates who were also enrolled at MSU, and so several hot spots served the Wi-Fi needs of multiple students at once. The authors learned from students that Internet service to campus housing was often unreliable. The need for Internet service in campus housing far exceeded capacity during the pandemic because so many students needed large amounts of data from the network to complete their coursework. One computer science student who checked out a hot spot in fall 2020 reported that she had to drop at least one class because of unreliable Internet service in her campus apartment. Additionally, several students lived in rural areas where no Internet was available to their homes. These students took online courses and seldom came to campus, where more reliable Internet access is available. Some students who had all their courses online went home to live with their family in remote corners of the state hours from campus. The university quickly responded to COVID-19 guidelines by reducing seating availability in classrooms, the student union, the library, and other gathering places. Thus, if students who lacked reliable Internet access tried to study on campus, they might not find a study space when they needed it.

To summarize, a wide spectrum of student needs became apparent. One surprise to the coauthors was the disparity in Internet access among students in campus housing. The Residence Life program supported an auxiliary information technology service separate from the main campus IT service and less robust. Thus, students in the residence halls had recurring problems with dropped Internet access, during which they would lose segments of their online courses. Students in older, small, stand-alone campus houses dating from the 1950s had no access to either the main campus IT or the auxiliary IT; they had to pay separately for Internet access to their campus homes. These individual student stories tell the story of the digital divide among MSU students, even though no

specific data on overall digital access for MSU students are available. These examples also match the national trends noted in the introduction to this article.

Self-Reported Student Success

Wi-Fi hot spot borrowers were queried via a Qualtrics survey at the end of spring semester 2021 with the goal of using their responses to pursue additional funding to continue the Hotspot Lending Program beyond the pilot period. The survey results were overwhelmingly positive. All respondents reported that the Hotspot Lending Program allowed them to succeed in their courses. Feedback included the following statements:

- This was an absolute necessity for my household and should continue to be offered to students who need it.
- Very helpful for me when quarantined and in general when my Wi-Fi would go out.
- This is absolutely a necessary service that MSU should provide! So many Montana students either cannot afford or access reliable internet.
- This program really saved me these past two semesters. If I had been able to use it spring 2020, it would've saved me a couple suffering grades as well. I was able to actually upload and watch lectures at home and when I was quarantined, there were times that I would not have been able to participate in any classes if not for the hot spot.
- This was amazing. Please keep this going! I hope it continues because I will check one out every semester if possible! I've told a few others about it who needed one, and I hope there were enough for them, too.
- This is a wonderful program that you have introduced, and you are changing lives.

Final Data, Lessons Learned, and Future Plans

Checkouts and Data Usage

At the end of the spring 2021 semester, the Wi-Fi hot spots had been checked out 31 times and had four instances of special usage by library employees. From October 2020 through April 2021, approximately 2,500 gigabytes (GBs) of data were used by the Wi-Fi hot spots. Based on AT&T's general guidelines, this amount of data equates to 1,000 hours of high definition video streaming or 135,000 hours of surfing the Internet (see Figure 4).[17] For students to attend synchronous online sessions, they needed between 0.5 and 1.62 GBs per hour for a Zoom or WebEx video call.[18]

> **Direct e-mails to specific stakeholders, such as the TRIO Program, college deans, and student organizations, proved the most productive form of marketing.**

Lessons Learned

The most significant lesson learned from implementing this lending program was that marketing across a large institution is difficult. Librarians had to saturate the organization

How we estimate

The examples below provide a general guideline for the amount of data used for each activity:

Activity	Data Size
1 email (no attachments)	20KB
1 email (with standard attachments)	300KB
1 min. of surfing the **web**	250KB(15MB/hr.)
1 song downloaded	4MB
1 photo upload to social media	5MB
1 min. of streaming **standard-definition video**	11.7MB (700MB/hr.)
1 min. of streaming **high-definition video**	41.7MB (2500MB/hr.)
1 min. of streaming **4K video**	97.5MB (5850MB/hr.)
1 min. of **online games**	200KB (12MB/hr.)

Keep in mind that these examples are just estimates based on typical file sizes. Your usage may vary. **

1MB = 1,000KB approximately
1GB = 1,000MB approximately
1TB = 1,000GB approximately

Figure 4. Estimated data used by various online activities, according to AT&T.

with marketing materials, e-mails, announcements, and social media posts before any referrals came in, and even then, only a handful of hot spots were checked out. Direct e-mails to specific stakeholders, such as the TRIO Program, college deans, and student organizations, proved the most productive form of marketing, so those channels will be used again in future semesters.

Another lesson learned is to have students refer themselves into this type of need-based program rather than depending on faculty and staff recommendations. Self-referrals proved more successful and helped the program succeed in the spring 2021 semester.

If another institution would try to implement this type of lending program, the authors would make two suggestions:

1. Include institutional IT in the marketing of the program. At MSU, the university IT Department did not know about the program until January 2021 despite marketing across campus and e-mails.
2. Plan metrics for need ahead of time, and make the application process electronic if possible. The metrics can include income, living situation, geographic location, and other factors that impact Internet access. The pilot project determined need on a case-by-case basis, which took more time than if metrics had been established to simply determine if a student qualified.

Plans for the Future

The data gathered from students have shown many negatively impacted by the digital divide at MSU. Some cannot afford Internet access, while others simply lack Internet due to housing restrictions or geographic location. Based on the survey responses, the Hotspot Lending Program helped alleviate barriers to Internet access and allowed students to succeed academically in an online or hybrid learning environment during the 2020–2021 academic year.

While the program has been a success, the limited number of checkouts and the short duration of the pilot did not allow a clear determination of need for Wi-Fi hot spots. For this reason, MSU Library requested and received internal funding from the university to continue the Hotspot Lending Program for the 2021–2022 academic year. The Montana State Library will pay for the data plans for the six hot spots it provided through June 30, 2022. Between the internal funding and the Montana State Library hot spots, the MSU Library will have 16 active Wi-Fi hot spots and one spare in case of loss or damage. The librarians will continue to collect student needs data and determine if the program should be put into operation within the library or elsewhere on campus.

> **The Hotspot Lending Program helped alleviate barriers to Internet access and allowed students to succeed academically in an online or hybrid learning environment during the 2020–2021 academic year.**

Conclusion

Overall, the Hotspot Lending Program at MSU Library was a success. The limited number of checkouts and the short time of the grant funding did not allow the authors to determine the depth of need for Wi-Fi hot spots, however. Because of this, they secured an additional year of funding through MSU to gain more data and determine if the program should be put into operation by the MSU Library or another entity on campus.

Acknowledgments

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Appendix

NNLM Subaward Application Template – Outreach

System Requirements

Before attempting to submit your application for funding in the NNLM online application system:

1. Confirm that your institution is a NNLM Member with a NNLM Member record.

   If your institution is not a NNLM Member, submit an application for Membership **at least 3 weeks prior to the funding deadline**. Membership is not automatic. A Member record is required to successfully submit an application.

   Not sure if your institution is a Member or has a Member record? Search the NNLM Membership Directory or contact your Regional Medical Library.

2. Confirm that you (the applicant) have an NNLM account.

   You must be logged in to your NNLM account to successfully submit an application.

   If you are submitting an application on behalf of the Project Lead, the Project Lead must also have an NNLM account prior to submission.

3. Confirm that your NNLM account is connected to the NNLM Member record for your institution.

   To connect, fill in the "Organization" field on your NNLM account using the autocomplete function. When correctly filled, you will see the 5-digit NNLM ID in parenthesis beside the institution name. Watch a brief tutorial for assistance with completing this process.

   Organization

ORGANIZATION NAME (Member Organizations) (16932)

   If you are submitting an application on behalf of the Project Lead, the Project Lead must also be connected to the NNLM Member record for your institution prior to submission.

Please note: you cannot successfully submit an application without these components. If you have questions about these or any other system requirements, please contact your Regional Medical Library in advance of the application deadline.

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Application

All fields with an *asterisk must be completed to save or submit an application in the NNLM online application system.

Overview

o **Funding Region*:** *automatically selected*

o **Project Category*:** *automatically selected*

o **Lead Organization*:** | Montana State University |

Select the institution that will lead and receive funding to conduct the proposed project.

If the drop-down list appears blank, confirm that your NNLM account is connected to the NNLM Member record for your institution (*See System Requirements*).

o **Project Lead*:** | Meghan Salsbury |

If you are the Project Lead, select your own name from the drop-down list. If you are submitting this application on behalf of the Project Lead, select their name from the drop-down list.

If the name of the Project Lead does not appear in the drop-down list, confirm that their NNLM account is connected to the NNLM Member record for the institution (*See System Requirements*).

o **Institution Tax ID*:** | 81-6010045 |

Enter the 9-digit tax identification number for your institution.

o **Institution DUNS Number:** | 625447982 |

o **Have you/your institution previously received NNLM funding in the current grant cycle (2016-21)? ***

- ⊙ Yes
- ◯ No
- ◯ I don't know

o **Amount Requested*:** $ | 4997 |

This field will accept numbers only. Enter the amount to the nearest whole dollar.

NNLM Subaward Application Template (outreach) |3

Details

○ **Project Title*:** Bridging the Gap: Ensuring Digital Equity through WiFi Hotspot Lending

Describe the project with an external audience in mind. Funded projects are displayed on the NNLM website and are provided by NLM in response to data calls from NIH, HHS, OMB, Congress, and the White House.

○ **Project Summary***

Provide a one-paragraph description that summarizes the proposed project. Funded projects are displayed on the NNLM website and are provided by NLM in response to requests from NIH, HHS, OMB, Congress, and the White House.

Since colleges and universities across the country moved to emergency remote learning for the spring 2020 semester, it has become abundantly clear there is a very real digital divide among students (and families) who have access to a home computer and/or reliable, high-speed Internet and those that do not. With many classes again being offered through online modalities for the Fall 2020, and social distancing guidelines limiting computer lab space, this divide will continue to inhibit students' abilities to easily complete their course work. To ease the digital divide and improve students' academic success, Montana State University (MSU) Library requests funding for four Wi-Fi hotspots and data plans to increase access to the Internet for those students most in need. The Wi-Fi hotspots will be loaned to students on medium- to long-term check-outs to enable them access their course content either as on-campus or online students. The hotspots will be offered through an application process to identify students with high-need and marketed to programs on campus that already work closely with underrepresented students.

○ **Partner Organizations**

Use the autocomplete function to find and select existing records for up to three (3) organizations that will partner with the Lead Organization to conduct/complete the project.

If a record does not exist for a partner organization, click "Partner Organization not Listed?" and use the additional fields under "Add Partner Organization" to provide the institution name and address.

○ **Will Training be Provided as Part of this Award?***

◉ No
◯ Yes

○ **Proposed Start and End Dates for the Project*:** 08/17/2020   04/30/2021

Contact your RML before applying if your project will extend more than one year.

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o **Evidence of Need***

Provide a statement of how the project proposed will support the mission of NNLM, explain the need for the project, and describe the audience or population that will be reached through this project.

Please clearly document if this project will engage traditionally underrepresented populations and/or involve medically underserved areas.

When possible, support the stated need using data such as known needs assessments or statistics.

Since colleges and universities across the country moved to emergency remote learning for the spring 2020 semester, it has become abundantly clear there is a very real digital divide among students (and families) who have access to a home computer and/or reliable, high-speed internet and those that do not. Multiple news agencies have reported that students and workers are using parking lots as workplaces in order to capitalize on free Wi-Fi signals(1) from the businesses they used to frequent for the same purpose. In many homes, college students are sharing computer and internet access with parents, younger siblings, and other family members making it nearly impossible to complete their coursework in a timely fashion. They are also taking on more and more responsibilities as family members are laid off or declared essential workers(2). In the Higher Education Learning Collective Facebook group started in March 2020 as a response to the move from face-to-face to remote learning, many professors, instructors, and administrators from across the country have discussed how to bridge the digital divide they are seeing with their students(3). Some have gone as far as mailing assignments to students without computer and/or internet access along with pre-paid envelopes to return the work. In two EDUCAUSE COVID-19 QuickPolls this spring, respondents identified technology support(4) and "equitable access for all students to the technology and internet service needed to succeed while learning remotely"(5) as two of

o **Project Goals and Objectives***

State the goal(s) and specific objectives(s) of the proposed project. Consider process objectives about what will be done (outputs) and outcomes-based objectives that specify what will happen or change as a result. Indicate the rationale for the plan.

- Purchase four Wi-Fi hotspots to be used in a long-term lending program
- Lend hotspots to high need students to alleviate barriers to internet access
- Identify students effected by the digital divide within the MSU student body (application and survey data)
- Identify technology needs of MSU student body (survey data)

o **Implementation***

Describe what will be done to meet project objectives.

The lending program will require applications be submitted to the library for review and a determination of need. Applications will be reviewed by select library faculty/staff and equipment will be prepared for each eligible student. Students will need to meet with the Instructional Technology Librarian prior to receiving the equipment to ensure an understanding of the equipment agreement and survey expectations. Equipment will be due either at midterm or one week after the completion of each semester in order to perform maintenance for the next semester. Students will be required to complete a survey upon return of the equipment and information from the survey will be used to modify program parameters, update troubleshooting instructions, and track the helpfulness of the program on a consistent basis. All survey data, usage data, and additional feedback will be reviewed to determine the sustainability and continued need of the hotspot lending program.

o **Schedule/Timeline***

Include a timeline for implementing the plan to meet objectives.

Fall Semester 2020 (Aug. 17- Nov. 26)
- Creation of program policies and procedures, the student application for the program, and the
- Procurement and set-up of the hotspots and accessories
- Marketing plan will be created and initiated
- Applications will be accepted, reviewed, and lending will begin
- Survey will be crafted to assess the helpfulness and sustainability of the program

Spring Semester 2021 (Jan. 11 - May 7)
- Survey results from Fall 2020 will be reviewed
- Marketing will continue
- Applications will be accepted, reviewed, and lending will begin
- Survey will be administered to students utilizing the hotspots

o **Evaluation Plan***

Describe how the project will be measured and the methods used to measure success. The evaluation should be tied to project goals and objectives. Describe the measure of success for each objective.

NNLM Members are strongly encouraged to consult the RML or the NNLM Evaluation Office (NEO) publications and resources in developing an effective evaluation plan.

This is a short- to medium-term solution to the exacerbated effects of the digital divide amongst Montana State University students. The goal of the project is to reduce access barriers for high-need MSU students, and to learn about needs and issues we have not been able to anticipate.

Montanans already faced a digital divide prior to the COVID-19 pandemic, and so, with college students completing coursework remotely, parents working from home, and younger siblings attending K-12 classes online, the problem has only been magnified. The hotspot lending program will allow high-need students access to Wi-Fi hotspots which can be utilized for course work and remote work requirements. The Wi-Fi hotspots can accommodate up to eight devices at a time, so this could potentially assist with family members who also need internet access for their work and study.

We will collect quantitative and qualitative data in the following ways:
● Usage statistics for Wi-Fi hotspots
● Number of troubleshooting requests

o **Publicity/Promotion***

Briefly describe how you intend to promote your project to the target population.

A marketing plan will be created and initiated by contacting programs and organizations that focus on student success and high-need students. Information will also be available in the library and on the library website.

These programs could include (but are not limited to):
TRiO Program (first-generation college students)
Veterans Services
American Indian Council

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○ **Continuity/Sustainability Plan***

Describe the activities that will sustain project services and/or communication to the targeted community beyond the cooperative agreement period.

> The data gathered from students throughout the project will help MSU Library to understand the number of students impacted by the digital divide at MSU, identify the way(s) they experience that divide, and whether the project helped alleviate barriers to internet access. This data is currently unknown, and the project will clarify the extent of this issue and provide a basis for future solutions to removing technological barriers for students. It will also help us understand the usefulness of the technology provided. The survey and application can also help make MSU Library aware of needs we did not know existed and were not able to anticipate.
>
> If the project data proves to show a positive role in student success, then the recommendation will be made to MSU Library Executive Team to continue to the funding for the hotspot lending program.

○ **Personnel Qualifications***

If applicable, list the project personnel who will be involved in the project and include their role(s) and applicable experience. Submit resumes or CVs for personnel listed as attachments with your completed application.

> Meghan Salsbury, Instructional Technology Librarian, will oversee and manage the project. She works to create accessible, interactive online learning to all MSU constituents and is currently conducting research on the extent of the digital divide in Montana and other rural areas of the United States.
>
> Mary Anne Hansen, Research Services & Nursing Librarian, will assist with marketing, communication, and evaluation of the project. She has worked with many faculty and student service organizations over the years, and has considerable experience working with students in both blended and online capacities.
>
> Other library faculty and staff will help as needed through the duration of the grant.

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Budget

Budget fields will accept numbers only. Enter each amount to the nearest whole dollar.

o **Personnel:** [   ]

Include hourly rate X estimated hours.

o **Consulting Services/Costs:** [   ]

Estimated expenses from consultants, such as marketing firms or other agencies; refer to RFP/budget template for detailed requirements.

o **Equipment:** [3715   ]

Quotes for items required such as computers and other equipment.

o **Supplies:** [   ]

Quotes for printing, publication costs and other materials.

o **Communications:** [   ]

If applicable; refer to RFP/budget template for detailed requirements.

o **Reproduction:** [   ]

If applicable; refer to RFP/budget template for detailed requirements.

o **Travel:** [   ]

o **Other:** [   ]

Instructor honorarium, translation of materials, licenses and other materials.

o **Indirect Costs (IDC) or F&A:** [1282   ]

Refer to RFP/budget template for instructions on calculating IDC or F&A.

o **Other Funding, if applicable:** [   ]

Beneficiaries & Goals

Populations Served*

Demographics

- ☑ Adults
- ☐ Children
- ☑ Men
- ☐ Seniors
- ☑ Teens
- ☑ Women

Geographic Type

- ☐ International
- ☐ Medical Underserved Areas/Populations
- ☑ Rural
- ☑ Suburban
- ☑ Urban

Issues and Interests

- ☑ All of Us
- ☐ Behavioral/Social Determinants of Health
- ☐ HIV/AIDS
- ☐ LGBTQ
- ☐ Maternal Health
- ☐ NIH Helping to End Addiction Long-term (HEAL) Initiative
- ☐ Opioids
- ☐ Vaping

Race and Ethnicity

- ☑ African Americans or Black
- ☑ Alaska Natives
- ☑ American Indian
- ☑ Asian
- ☑ Latino or Hispanic
- ☑ Native Hawaiians
- ☑ Pacific Islanders

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Participants' Roles*

☐ Community based organization staff
☐ Data resource or tool developer
☐ Data scientist
☐ Educator, college & post-grad
☐ Educator, K-12
☐ Emergency preparedness and response
☐ General public
☐ Health care provider
☐ Historian
☐ Journalist
◼ Library or information professional
☐ Public health professional
☐ Publisher
☐ Researcher
☐ Student, college & post-grad
☐ Student, K-12

Attachments

Gather all documents that will be attached to your application, including personnel CVs and resumes, letters of institutional commitment or support, and budget template (if applicable).

Acknowledgements

You are required to acknowledge the following statements before submitting an application:

o You will share the information gained with colleagues in your institution/RML, as required by the Request for Proposal.*

o You will submit regular, interim & final reports, as requested by the funding agency & stipulated in the Request for Proposal.*

o Any web-based resources developed for this project will ensure accessibility to the greatest possible number of people.*

Notes

1. National Digital Inclusion Alliance (NDIA), "Definitions," https://www.digitalinclusion.org/definitions/.

2. Institute of Museum and Library Services (IMLS), "IMLS Indicators Workbook: Economic Status and Broadband Availability and Adoption," https://www.imls.gov/data/data-catalog/imls-indicators-workbook-economic-status-and-broadband-availability-and-adoption.

3. Julia Tanberk and Tyler Cooper, "Searchable Data by State on More Than 500 Tribes," *BroadbandNow* (blog), March 16, 2021, https://broadbandnow.com/research/tribal-broadband.

4. Office of Planning & Analysis, Montana State University, "Quick Facts: 2020–2021," https://www.montana.edu/opa/facts/quick.html#Demo.

5. Stephanie Sun, "Taking an AP Test outside McD's: The Low-Income Student's Predicament," *New York Daily News*, May 18, 2020, https://www.nydailynews.com/opinion/ny-oped-taking-an-ap-test-outside-mcds-20200518-pbzbctec4rgnvkhlwrzfsd3poe-story.html.

6. Nidia Bautista, "Distance Learning during Coronavirus Worsens Race, Class Inequality in Education," *Teen Vogue*, May 1, 2020, https://www.teenvogue.com/story/distance-learning-low-income-students.

7. Meghan Salsbury, "Hi! I'm an academic librarian in the field of online education/instructional technology. I'm doing research on the digital divide," Higher Ed Learning Collective, Facebook, March 24, 2020, https://www.facebook.com/groups/onlinelearningcollective.

8. Susan Grajek, "EDUCAUSE COVID-19 QuickPoll Results: Fall Planning for Education and Student Support," *EDUCAUSE Review*, May 15, 2020, https://er.educause.edu/blogs/2020/5/educause-covid-19-quickpoll-results-fall-planning-for-education-and-student-support; Susan Grajek, "EDUCAUSE QuickPoll Results: IT Budgets, 2020–21," *EDUCAUSE Review*, October 2, 2020, https://er.educause.edu/blogs/2020/10/educause-quickpoll-results-it-budgets-2020-21; Kim Arnold, Linda Feng, Marcia Ham, and Andy Miller, "EDUCAUSE COVID-19 QuickPoll Results: Student Success Analytics," *EDUCAUSE Review*, May 28, 2020, https://er.educause.edu/blogs/2020/5/educause-covid-19-quickpoll-results-student-success-analytics.

9. IMLS, "IMLS Indicators Workbook: Economic Status and Broadband Availability and Adoption."

10. Colin Rhinesmith, Jo Dutilloy, and Susan Kennedy, "The State of Broadband Connectivity and Related IT Infrastructure in Montana's Public Libraries," Montana State Library, 2020, https://docs.msl.mt.gov/central_services/publications/SimmonsReport_BroadbandConnectivity.pdf.

11. Office of Planning & Analysis, Montana State University, "Quick Facts: 2020–2021."

12. Geoffrey Starks, "To Fight Coronavirus, Millions More Americans Need Internet Access," *New York Times*, March 19, 2020, https://www.nytimes.com/2020/03/19/opinion/internet-broadband-coronavirus.html.

13. Grajek, "EDUCAUSE QuickPoll Results: IT Budgets, 2020–21."

14. Adriana Parker, "Academic Libraries and Vulnerable Student Populations: A New Model of Embedded Librarianship for First-Generation University Students," *Political Librarian* 3, 1 (2017): 25–31.

15. Alexander J. A. M. van Deursen and Jan A. G. M. van Dijk, "The First-Level Digital Divide Shifts from Inequalities in Physical Access to Inequalities in Material Access," *New Media & Society* 21, 2 (2019): 354–75, https://doi.org/10.1177/1461444818797082.

16. Montana State Library, "Montana State Library Hot Spot Lending Program," 2021, https://libraries.msl.mt.gov/hotspotlendingprogram.

17. AT&T Intellectual Property, "Internet Data Calculator," 2021, https://www.att.com/support/data-calculator.

18. Tyler Abbott, "How to Reduce Zoom Data Use," *Reviews.org*, December 2, 2020, https://www.reviews.org/internet-service/how-to-reduce-zoom-data-use/.