



Chapter 1

The Tele-Reference Model: Adopting Virtual Tools to Enhance Reference Services During COVID-19 and Beyond


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ABSTRACT

At the University of Central Florida Libraries, a new alternative to traditional reference service was adopted during the COVID-19 pandemic as a remote solution for safely staffing the Research and Information Desk (RAID) at the John C. Hitt Library. Due to the challenges of a partial library re-opening at the height of COVID-19 variant infection rates in Florida, a safe alternative to physically staffing RAID was conceived and coined “Tele-Reference.” Utilizing a Zoom institutional license and readily available work equipment with audio and video capabilities, the Tele-Reference service model was developed by our research and information services librarians. The implementation, challenges, assessment, and future directions of using Tele-Reference at the University of Central Florida Libraries, as well as possible applications at other institutions, are explored herein.

INTRODUCTION

The COVID-19 pandemic had a substantial impact on services provided by academic libraries worldwide. Many closed their facilities for extended periods of time. Services, such as reference support, were provided 100% remotely during library building closures. Additionally, academic libraries and librarians had to make this shift to remote work and support quickly. Thus, many services were either paused temporarily,

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no longer offered, or were adjusted by using new and existing technologies. The John C. Hitt Library at the University of Central Florida, like many academic libraries, faced these issues and developed a new service called “Tele-Reference,” to provide traditional reference services in a virtual setting.

The University of Central Florida (UCF) is one of 12 state public universities in Florida. With an enrollment of 71,948 (Fall 2020), it is the second largest university in the United States and is classified as a Carnegie RU/VH (Research Universities/Very High Research Activity) institution (UCF Facts 2020-2021). This metropolitan university is comprised of a main campus, several other campuses, and regional locations, along with renowned fully online programs. Therefore, the UCF Libraries provide research support to a large and diverse campus population.

Beginning in March 2020, UCF library staff would begin working 100% remotely due to the COVID-19 pandemic. The duration of time for remote work was indeterminate during this transition. Reference services were initially provided to patrons using a statewide virtual reference service called Ask-A-Librarian, by email, chat, and phone, or by making an appointment with a librarian to meet virtually for an individual consultation. However, as the library began considering reopening its physical building, the need to provide regular, in-person reference desk services arose. A review of safe physical distancing standards, university guidelines, and staffing needs were under evaluation as the institution and library administration discussed protocols and processes for re-opening the John C. Hitt Library, at least partially, beginning in August 2020.

During this evaluation, the UCF Libraries conducted an environmental scan of other State University System (SUS) schools in Florida in June of 2020. Feedback from other institutions across the state indicated that no other universities were planning to provide physical, in-person reference services during this time. In fact, based on communication with other institutions, none of the universities that were queried offered in-person reference services from March 2020 through August 2021. However, UCF Libraries was committed to providing pre-pandemic levels of service to students, faculty, staff, and community patrons beginning in Fall of 2020, to abide by the university guidelines related to staffing of physical spaces on campus. As a consequence, feedback from the environmental scan, university guidelines, and other factors led the Research & Information Services Department (RIS) to propose a new reference service to be contrived, developed, tested, and adopted.

The Tele-Reference model uses Zoom, a web conferencing program, and existing computer hardware to provide traditional reference services to patrons who are physically in the library. The service operates by using a continuously running, single Zoom session accessible on dual monitors located at the library’s Research and Information Desk (RAID). The sole means of input from the patron is the camera and microphone, mimicking a face-to-face reference interaction. Removing the keyboard and mouse eliminates another potential mode of COVID-19 indirect transmission. This setup allows reference librarians who would normally provide services at the desk to do so virtually. Patrons are able to have an interaction with a librarian that is similar to traditional reference services available before the pandemic while allowing both patrons and librarians to be physically distanced, aid in mitigating COVID-19 exposure, and provide consistent services when librarians were working remotely.

The following chapter explores this case study from the University of Central Florida Libraries. It will outline the impetus for developing and implementing Tele-Reference, explore how the model works, highlight benefits and challenges of utilizing the service, and explore future considerations for academic libraries interested in utilizing Tele-Reference or the technologies at their institution. While this chapter focuses primarily on the pragmatic details of implementing the model, it will include a brief literature review that highlights trends in virtual reference services pre-pandemic and anecdotes from

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other institutions during the pandemic. The aim is to provide readers with a comprehensive look at how academic libraries can use existing technologies and tools for remote services and lessons learned from the global pandemic.

BACKGROUND

In a review of the relevant literature regarding virtual reference services before the pandemic, a number of trends have emerged. This includes several uses of technology for which varying levels of technical skills in development and usability are needed. Enhanced email and chat-based services are the most basic trends and have been utilized across various software platforms and systems in libraries worldwide (Smith, 2001; Pearce & Whatley, 2010; Stahr, 2010). A slightly more sophisticated approach utilizes virtual voice messaging and web conferencing for reference services, and mobile apps and other readily available web conferencing platforms have been used to connect with patrons (Thomsett-Scott, 2013; Pun, 2015; Yang & Dalal, 2015). Taking reference service into the 21st century, artificial intelligence and machine learning applications are being built to provide an automated approach to virtual reference service (Fei, et al., 2011; Vincze, 2017; Rzhеuskyi, et al., 2018).

In looking at specific examples, one of the first successful implementations of video reference was at Ohio University, using a dedicated kiosk to communicate with a librarian via Skype (Booth, 2008). At the time web-based video chat was still a novelty; students had problems recognizing the kiosk as a service point, and it was used infrequently when a traditional reference desk remained an option. Previous attempts at video conferencing software had issues with insufficient bandwidth hampering video/audio quality (Folger, 1997) and expensive equipment setups (Lessick et al, 2003). Video conferencing software such as Elluminate, Wimba, and Join.me have been used in academic libraries for outreach to distance learners (Reeves, 2005; Barnhart and Stanfield, 2011; Chesley et al, 2020), students in resident halls (Folger 1997), satellite campuses (Bartnik, 2010), and underserved areas on campus (Hillyer & Parker 2006).

Throughout the literature, research indicates that as patrons grow more accustomed to using technology to interact with librarians across service points in the library, they are not deterred from embracing new approaches to library services. In addition, libraries are increasingly more comfortable with the implementation of new service models and these approaches are not as daunting with numerous case studies (Maharana & Panda, 2005; Duncan & Gerrard, 2011; Mu, et al., 2011) and best practices (Shaw & Spink, 2009; Murphy, 2010; Weak & Luo, 2013) readily available to assist in deployment.

Moving beyond pre-pandemic trends in virtual reference services, the COVID-19 pandemic has had a significant impact. Building closures and 100% remote work have prompted both librarians' willingness to shift to alternative means of communication and patrons' inclination to follow them. A study of 300 libraries (Radford et al, 2021), using surveys and librarian interviews, found 71% of libraries' virtual reference services saw notable increases during the pandemic; some libraries experienced all-time high virtual reference usage, necessitating staffing changes (Garvey, 2021). With the increase in virtual reference traffic came the need for greater collaboration, and comprehensive interactions that include links, videos and screenshots (Dar, 2020). Other studies conducted during the pandemic note how it has changed different aspects of virtual reference, such as unique features offered by video conferencing software (Cole, 2021), longer question duration (Hervieux, 2021), more university-themed inquiries, and change in complexity (Costello et al., 2021). During the pandemic, video conferencing

software usage escalated, but primarily for use in workshops and research consultations, as reference on demand (Michalak and Rysavy, 2021), or in conjunction with IT software to view or control the patron's computer (Howes 2021).

Libraries now are therefore provided with considerably more choices to consider when determining how reference services are managed and conducted, especially as they face challenging staffing issues. Numerous studies in recent years have examined the successful supplementation or substitution of librarians with paraprofessionals (Dinkins, 2010) and student assistants (Stevens, 2013; Coleman, 2016) at library service points, some determining that undergraduates are often best suited to provide quality reference service to their peers (Faix et al, 2010). With new staffing possibilities and technology solutions for non-physical reference desk staffing models, reference librarians may be provided with additional time to focus on outreach, instruction, research consultations, and collection development duties among other important research-related needs of students, faculty, and staff. As will be explored in this chapter, the implementation of a virtual reference service can provide important benefits to all involved.

THE DEVELOPMENT OF THE TELE-REFERENCE SERVICE MODEL

When the library closed its doors indefinitely in March 2020, several plans had been put in place to support working from home. *COVID-19 Emergency Remote Work Agreement* forms have been signed and given to supervisors, accompanied by detailed remote work plans to ensure that each person's essential duties would still be performed. Library IT had been working with staff to make sure they were equipped with computers and Internet connectivity to do their work at home. Though the physical library buildings were initially closed to the public, a small number of librarians and library staff continued to work on site, frequently alternating days to maintain physical distancing, in order to provide continuity of service. Responsibilities were varied and included former tasks such as processing acquisitions and checking the mail, and new duties, like sending books by mail to patrons, front-door book delivery, and sanitizing returned items before reshelving. The employees in the RIS department, which exists to provide teaching and research support to the students and faculty who had all been sent home, performed 100% of their jobs from home as well.

Research & Information Services (RIS) is the department in the John C. Hitt Library primarily concerned with providing reference assistance. The offices of Reference, Ask-A-Librarian (phone, email, text and chat reference service), Government Documents, and Patent and Trademark Resource Center are all housed within this unit. It consists of 10 full-time subject librarians, 3 adjunct librarians, 3 full-time Library Technical Assistants (LTAs), and 1 part-time LTA. Three non-RIS librarians also help staff the Research & Information Desk, colloquially known as RAID. RAID is centrally located on the entrance level of the main library, situated between two other service desks on the same floor, the Circulation Desk and the Library Technology Desk (LibTech). All three service points are critical locations where patrons interact with librarians and staff to get one-on-one assistance with their library needs. At RAID, patrons generally get more in-depth research support and can meet with reference librarians staffing the desk for assistance. During the shutdown, subject librarians were able to continue phone, email, and other forms of outreach with their departments, but many soon felt stymied by the lack of interaction with their colleagues.

Soon after the abrupt shift to remote work occurred in mid-March, the RIS Department began holding weekly online meetings to keep librarians and staff involved and engaged with each other, and also

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the library at large, during the campus-wide COVID-19 pandemic closures. The UCF Libraries created several reopening task force teams to determine how to safely reopen the facilities partially in August 2020. For RIS, a small team of reference librarians was pulled together by the department head to assist in the process of determining how to reopen the Research & Information Desk. The RAID Reopening Task Force consisted of four senior level reference librarians, including the RIS Department Head, the Ask-A-Librarian coordinator, the Research Consultation coordinator, and one other RIS librarian.

As library task forces were being formed, the university was preparing to reopen the campus. A student survey determined that the majority of students wished to have an on-campus experience which included in-person classes (UCF Faculty Senate, 2020). With this feedback, the administration developed the *COVID-19 Return to Campus Policy* to lay the groundwork for a fall 2020 reopening (UCF, 2020). In addition to mandatory face masks and physical distancing, the policy outlined several other precautions and procedures to be followed in order to ensure the safety of employees and students. For instance, employees were asked to avoid sharing desks, offices, copiers, or other work equipment as much as possible; any equipment or touchpoints that had to be shared should be sanitized frequently. All furnishings had to allow at least six feet between employees and other employees or members of the community.

These regulations preclude the normal functioning of a reference desk, which regularly hosts several librarians and many more visitors on shared desktops in a confined area. Furthermore, the recommendation for “Employees who are identified by the CDC as being at increased risk due to COVID-19...are encouraged to remain in remote work status,” (UCF, 2020) was applicable to many librarians and library staff.

As the task force discussed how to proceed with reopening the library with limited operations for an August 2020 partial reopening, there were concerns regarding safety for librarians and staff who would be interacting with patrons physically at RAID. Per CDC guidelines, the majority of the RIS reference librarians were either considered at increased risk for COVID-19 infection themselves, or someone in their household fell into one or more high-risk categories; therefore, the overall health and safety of departmental staff was at the forefront of the task force’s considerations (U.S. Centers for Disease Control and Prevention, 2020). Understanding these concerns, the task force solicited feedback from reference librarians and other librarians at the John C. Hitt Library who also staff RAID and to suggest potential solutions for reopening safely while also providing a physical presence at RAID comparable to the other two service desks. While feedback and suggestions could be provided to the task force at any time, the librarians and task force discussed and brainstormed as a group during the department’s weekly online meetings.

One solution that emerged was the possibility to implement a new reference service model. The reference librarians shared ideas on how existing technology and available equipment could be considered in creating an alternative remote reference desk. Zoom video conferencing software was the top suggestion. This emerged as a viable option since UCF had purchased an institutional license during the initial weeks of the pandemic and remote work, and several librarians had successfully used Zoom to hold virtual office hours, research consultations, and instruction sessions during the shutdown. Furthermore, all reference librarians had ready access to a laptop or a desktop at home (some supplied by the library) in their remote work offices. The model to be implemented was coined Tele-Reference, for its similarity to the tele-health model seen in the healthcare industries in the United States. The Tele-Reference model was a simple solution to a complex problem and allowed RIS librarians to provide a fully staffed service, safely and remotely, using existing and available technology and equipment.

As the RAID Reopening Task Force developed the Tele-Reference model, it was critical to examine staffing considerations, the types of technology needed, and training to be provided to make the service

both effective and successful. Beta testing offered an opportunity to test and refine. The following section will outline how each of these were utilized during Tele-Reference implementation and highlights specific details about how the model works in practice.

HOW THE TELE-REFERENCE MODEL WORKS

The Tele-Reference service (see figure 1) is available at UCF Libraries' reference desk called RAID. Patrons approach the desk and are able to ask a reference librarian questions. The librarian (who may be working from home or in their office in the library) is visible on one of two computer screens setup at RAID. Using a continuously running single Zoom session, the librarian can not only speak directly to a patron to answer questions, but they can also share their computer screen when conducting a reference interaction. This means that patrons can be shown various library research services, such as the library catalog and databases, in an easy and streamlined way. Some technology, such as a keyboard and mouse, have been removed from the service. If a patron needs to access their account, login to a database, or request ILL, for example, they can still easily do so on a personal device or on one of the many public computers available in the library nearby.

In addition to librarians staffing Tele-Reference virtually, patrons may also encounter a student Reference Ambassador physically located at the reference desk. While having a physical presence at a reference desk that is using a virtual service may seem counter-intuitive, there were pragmatic reasons for still offering a physical presence. The primary reason, which will be explored in more detail in this section, was institutional guidance that required a physical presence be available at the desk during normal operating hours. Should a patron have a simple or easy to answer question, such as directions to the restroom, the reference ambassador was able to assist. Generally, the Reference Ambassador directed patrons to Tele-Reference services when questions arose.

Adjusting the staffing structure played an important role in the evolution of the Tele-Reference service model. When launched in August 2020, the staffing structure utilized was similar to the one used for the library's traditional face-to-face reference desk with librarians and adjunct librarians staffing the virtual service. This included librarians externally from the RIS Department, such as the Scholarly Communication Librarian and cataloging and acquisitions librarians. While the former service at RAID relied on two librarians staffing the desk during a regular shift, the RAID Reopening Task Force recognized early in the planning process that the service should be staffed by one individual librarian or adjunct librarian during any given shift. There were several reasons for this. The first is that the demand for in-person reference services would not be as high as it typically would be due to a low number of patrons in the library building during this period; this was the result of fewer and smaller face-to-face classes, stringent indoor mask and distancing policies, and decreased building occupancy limits. Second, the physical layout of RAID -- a circular desk with an eight-foot internal diameter and a single 42" point of entry -- made maintaining the recommended six foot minimum distance very difficult for two people. Lastly, institutional guidance required that onsite offices should have a physical presence during business hours to support faculty, staff, and students. With this in mind, an in-person, student Reference Ambassador was hired to physically work at the desk concurrently with librarians staffing Tele-Reference. Additionally, two on-site librarians were in the library daily to not only ensure that technology was operating properly but to also respond to staffing needs, such as scheduling issues, as they arose.

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Figure 1. Photograph of the tele-reference service model and reference and information desk set-up during 2020-2021



Librarians staffing Tele-Reference typically worked one-hour shifts, although there were cases in which two-to-three-hour shifts occurred due to scheduling conflicts and other factors. During these shifts, librarians provided more in-depth reference support to patrons physically in the library -- as they would if they were staffing the desk in-person. Signage around the library and near the RAID desk directed patrons to the Tele-Reference monitors for assistance; however, it was often the case that patrons would approach the Reference Ambassador who was physically at the desk with questions. The staff member would triage the question and either provide information or direct the patron to Tele-Reference for more in-depth assistance. It is important to note that the Reference Ambassador position was a new role in the library -- created specifically to support the Tele-Reference model and the institutional policy requirement for all units on campus to have a physical presence available. Students hired were trained by RIS librarians to provide direct assistance to patrons in-person and address basic directional and informational questions. Safety was paramount for these in-person Reference Ambassadors. All measures such as adding plexiglass stands around the desk and providing physical distancing helped aid in providing a safer environment for Reference Ambassadors to work.

Technology was also critical for successfully implementing the Tele-Reference model. In order to effectively provide virtual reference services, Tele-Reference would require a technology that provided a consistent, stable, and easy-to-use tool for both librarians and patrons. During the university's rapid shift to 100% remote teaching and learning, Zoom was the preferred technology for all operational aspects of the institution. As previously noted, a university-wide license of the platform had been acquired, and virtually everyone affiliated with UCF was using it in some way. Therefore, the use of Zoom as a mechanism for implementing Tele-Reference was a logical choice.

Determining the best way to utilize Zoom, however, would require further thought, with beta testing providing UCF Libraries with opportunities to try out different options, troubleshoot, adjust as needed, and obtain feedback from colleagues throughout the library. From this, it was determined that a single, persistent Zoom meeting would be used on a daily basis. The meeting would be started during operating hours by one of the on-call, in-person librarians and would run continuously throughout the day. Each individual librarian staffing Tele-Reference would login to their individual Zoom account and enter the meeting during their scheduled shift. Due to potential technology challenges, it was recommended that librarians login to the meeting a few minutes prior to their shift to troubleshoot as needed. From a user perspective, patrons only see an active Zoom meeting with a librarian visible to provide them with assistance. Patrons do not need to login or use Zoom in any way, except for interacting with the librarian.

In addition to utilizing Zoom, there were other technology needs to consider. Both on-site and off-site locations required specific equipment. On-site, the Tele-Reference service utilized two, dual use computer monitors. This allowed patrons to view the Zoom meeting which included live video of the librarian staffing the service, as well as any screen sharing conducted during a reference interaction. The computer and monitor at the desk included video and audio enabled features, so that both the librarian and the patron could see and talk to each other. Off-site, librarians required a stable Internet connection and a computer with audio and video capabilities to provide basic and standard service. Although not a requirement, many librarians used dual monitors off-site, as well, to aid in screen sharing and to multitask during a reference shift, so that they could both watch the live video from the library while working remotely on other areas of responsibility.

From a usability standpoint, all Tele-Reference librarians were advised to have a photograph of themselves, as an avatar, that could be displayed when the individual was online. Additionally, all librarians were encouraged to have their web cameras on during shifts. This helped patrons quickly identify that a librarian was available live to speak with. Early on during Tele-Reference implementation, many patrons did not realize that the librarians on the computer monitor screen were indeed live. However, as librarians interacted by waving or saying, "hello," patrons were quickly acclimated to seeing and communicating using Tele-Reference.

As with any technology or service, training and resources were critical for the successful implementation of Tele-Reference. The task force worked on a variety of training opportunities to help librarians staffing Tele-Reference feel comfortable and confident with the new service and technologies. Basic training on how to use Zoom was offered, which was beneficial not only to Tele-Reference but also to other library-related tasks and activities because it was being so heavily used at the institution. Training included emphasizing critical tasks, such as logging in and out of Zoom to help make shift transitions easy and seamless. Other features highlighted include:

- Turning audio and web cameras on and off
- Using optimal settings for audio and video

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- Using mute and unmute
- Adding virtual backgrounds
- Using different screen sharing options (e.g., sharing entire desktop, sharing specific browser, sharing certain application)

Training opportunities were conducted in a variety of venues, such as the weekly RIS meeting, to ensure that all librarians participating in Tele-Reference would receive training. Additionally, the RAID Reopening Task Force created resources to help aid in streamlining the service and technology details. Using the Springshare LibGuide platform, a password protected guide was created to provide a centralized resource for login information (including Zoom meeting link), ready reference, and other details.

In order to assist the Tele-Reference librarians with answering frequently asked questions, especially those questions with directional nature, a one-page document was created with links to visual aids like campus maps, building floor maps, as well as instructions on how to access and use the LibGuide, on-call contact information, and other basic details. If, at any time, librarians were unsure about technology or had questions, both the RIS Department and other units within the library, such as the LibTech desk, were also available to assist with technology needs and challenges. The following will identify some of the challenges experienced, highlight solutions provided to technology issues, and explore how Tele-Reference was adjusted or adapted to address the challenges experienced throughout beta testing and implementation.

CHALLENGES WITH THE TELE-REFERENCE SERVICE MODEL

Several challenges to implementing Tele-Reference have already been alluded to. There was some reluctance, but not resistance, to adopting this as a mode for providing reference service, as well as some skepticism as to how it would work. Some librarians had only used Zoom a few times before the pandemic began. For instance, it was not uncommon for a librarian to have only used a Zoom meeting on a few occasions, and even then, another colleague well-versed assisted to help guide through some of the intricacies, such as monitoring chat and screen sharing. At one point, before UCF obtained an institutional license, the library had its own site license but librarians and staff had to reserve a time to use the software due to specific licensing terms and use limits. Therefore, using Zoom on a regular basis was a wholly new experience for many.

From a technical perspective, there was concern that each librarian would be required to establish their own Zoom Tele-Reference session. The department quickly disabused this notion. As outlined in the previous section, the RIS Department would develop a common login procedure and passwords for librarians, so that there would be no need to set-up individual appointments for Tele-Reference. Additionally, far fewer students would be on campus for the Fall 2020 semester, since nearly all university classes had become virtual and might be for the foreseeable future, perhaps for the remainder of the 2020-2021 academic year. Due to an anticipated lack of patrons potentially in the library during this time, there was some skepticism that Tele-Reference was necessary. However, the department determined that instituting the service and assessing how frequently it was used would be an appropriate course of action. With the challenges addressed, Tele-Reference was implemented -- though with some trepidation on the part of the librarians.

Upon implementation during beta testing, there were a multitude of technology issues with reference librarians working remotely and conducting Tele-Reference. Questions arose around what equipment would be needed for the service to be deployed effectively from home. Some librarians had all the requisite hardware and software necessary to work with Zoom remotely, including either a dual screen monitor set-up or a personal laptop. Others with relatively old hardware and software at home would also be able to use one of the UCF Libraries laptops. However, it should be noted that the laptops, under normal circumstances, are reserved only for currently enrolled students, as a part of the requirements for equipment acquired using technology fee funding provided through the Student Government Association. Since this was an unusual and unprecedented situation, an exception was made. For those librarians who did not have a university issued laptop or were unable to obtain one of the laptops available through the library's lending system, another alternative option for equipment was undertaken. In this case, some librarians took their university issued desktops from their office to their homes. At the time of this publication, all librarians at the UCF Libraries were provided with either a laptop or desktop computer in their offices equipped with most of the requisite hardware, such as a web camera and two-way communication.

For those librarians not comfortable taking home an office computer and setting it up off-campus, there was a time-sensitive need to obtain the necessary hardware and software. Equally, if a librarian brought any equipment, such as headphones, from the office to their home, there may be challenges experienced related to installing software in order for the equipment to effectively operate. Some librarians did not have equipment, such as web cameras. This required additional purchases along with the necessary software to be installed. In many cases, the library's information technology department had to be called upon to offer some remote technical assistance and included the staff to remotely access librarian computers through VPN (Virtual Private Network) in order to make further adjustments or download software on the librarian's behalf. If a librarian was using a university issued computer, some software could not be installed by the librarian due to administrative settings for which they did not have permissions to install and which required IT intervention, typically via TeamViewer software.

Beyond the technical challenges noted, there were several unexpected challenges. Inclement weather was perhaps the most notable. Florida, especially during summer months, typically experiences daily intense afternoon thunderstorms. On at least one occasion a librarian lost power at home during a storm that occurred during a Tele-Reference shift. This instance necessitated the department to establish the procedure to have two on-call librarians available each day so that librarians could contact them and the service could be resumed, should an emergency situation occur. Internet connectivity problems at home were another challenge faced by many librarians staffing Tele-Reference. Due to the high number of individuals nationwide working remotely from their homes, bandwidth issues caused unstable Internet connections, lag times, and other issues. Some librarians had to purchase a hotspot from their Internet service provider in order to ensure connectivity when their places of residence did not have adequate or stable Internet capabilities. Finally, many librarians not only faced the challenges of working remotely themselves, but they also had to navigate assisting their children with attending public schools remotely or homeschooling and providing access and time for both school and work needs.

ACCESSIBILITY AND THE TELE-REFERENCE SERVICE MODEL

The RIS Department also gave much thought to accessibility, and many questions arose around this. For instance, would patrons in wheelchairs be able to see the monitor and the librarian? What about

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individuals who are less than five feet in height? Should live transcription or closed captioning capability within Zoom (which was launched in February of 2021) be utilized? After UCF Libraries developed the Tele-Reference model, the university's Office of Student Accessibility Services was asked to provide recommendations for improving accessibility. The Assistant Director for Accessible Technology at UCF observed both the Tele-Reference setup and the service in action and made an assessment which included the following suggestions:

- Deploy Zoom's closed captioning to assist hearing-impaired patrons
- Adjust monitor further to be visible to patrons in low wheelchairs
- Instruct the Reference Ambassador to advise blind patrons on where to stand in relation to the monitor so they can best be heard and seen

On the whole, the Tele-Reference model comported with most American Disability Act (ADA) strictures. The Web Content Accessibility Guidelines (WCAG) Success Criterion do not require captions for video with live audio broadcast, when it is not being recorded for future access, and indeed specifies that captions are not intended for two-way multimedia calls (WCAG, n.d.). It was decided not to turn on closed captioning, as the ADA industry standard for closed caption accuracy is 99%, and Zoom's closed captioning, using automatic speech recognition, would fall below that mark. Despite advances in live transcription technology, Zoom's own support page recommends manual or third-party transcription if used to meet compliance or accessibility requirements (Zoom Video Communications, 2021).

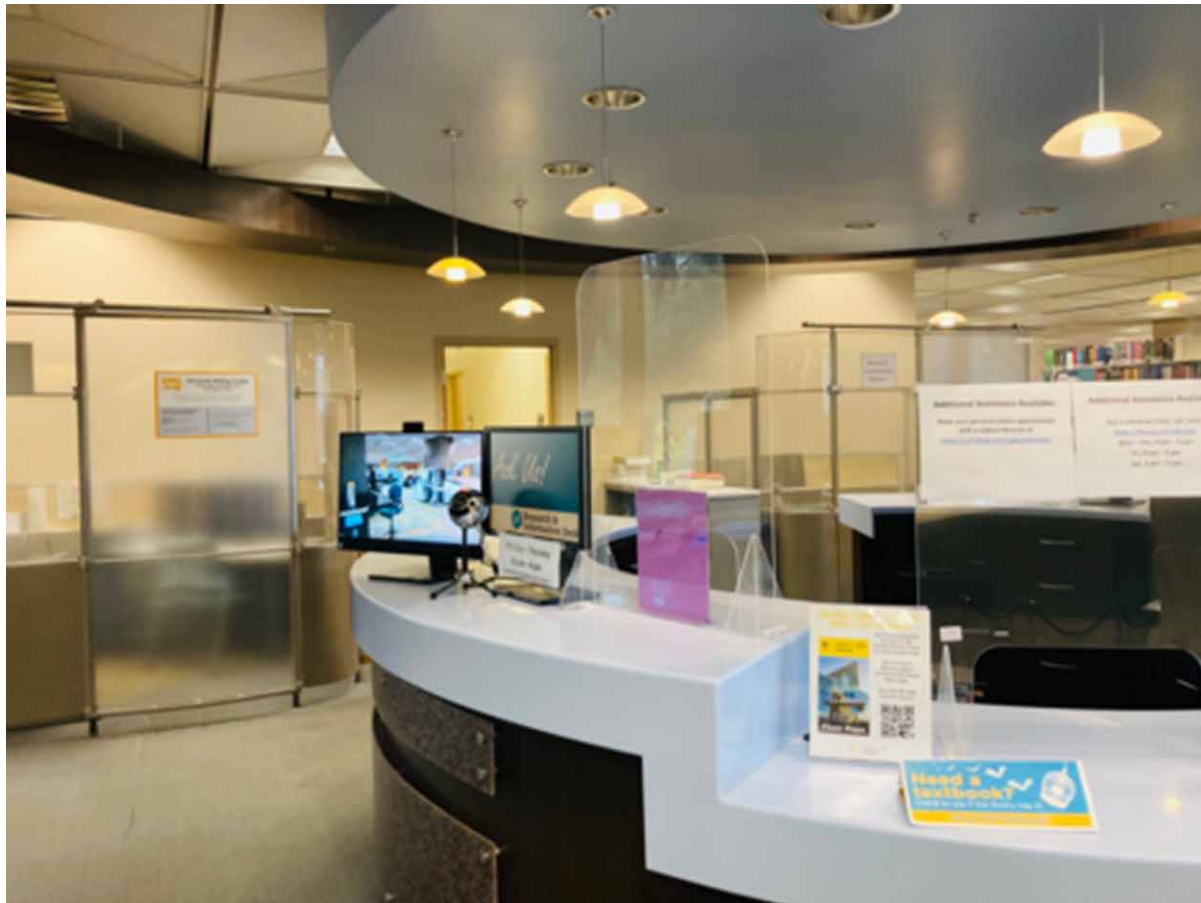
The RIS Department took care to ensure that Tele-Reference would be accessible to patrons of varying statures and abilities. The Research and Information Desk is circular with two upper levels and one lower level. The initial placement of the monitor was at the lower station of the desk (see Figure 1), making it visible and physically accessible to people of any height. In adherence to the above suggestion, a "stand here" decal was placed on the floor a measured distance in front of the Tele-Reference service desk monitor and camera. In doing so, not only would the monitor be visible to all patrons who approach it, but the librarians could see the individual on their viewscreen, regardless of whether they were short or tall in stature. Currently, the in-person librarian sits at the wheelchair-height station and Tele-Reference is to their right (see Figure 2). The remote and hands-free setup ensures that immune-compromised patrons or librarians are not unnecessarily exposed, and eliminating the mouse and keyboard removed the need to constantly re-sanitize these items.

One benefit of the Tele-Reference model is the librarian's capacity to speak to patrons without wearing a mask. For people who are deaf or hard of hearing, being able to watch someone's lips as they speak results in far better communication than speaking with a masked attendant at the desk. Although the station is hands-free, and thus has no input device for the patron, the chat function can easily be launched on the librarian's end. Any other deficits in communication can be mediated by the Reference Ambassador at the desk who has been trained to answer general directional and informational questions and who can assist if there are technology challenges faced during an interaction, such as audio issues, as they have been trained to handle basic technology needs for the Tele-Reference station or can contact an on-call, in-person librarian to assist with troubleshooting technology issues.

Overall, the accessibility of Tele-Reference was positively received by Student Accessibility Services with the following statement provided by the Assistant Director for Accessible Technology illustrating a successful assessment, "The Tele-Reference appears to be a very useful resource for students including students with disabilities. I think many of our students connected with our office could benefit from

stepping up to the station and talking immediately to a library reference expert. That ease of personal access to an expert seems ideal for many of our students who like simplified personal access. Many may be uncomfortable using the tools and having the librarian demonstrate it, right in front of them, will be a great option for students connected with our office.”

Figure 2. Photograph of the current tele-reference service model and the reference and information desk set-up implemented in fall 2021

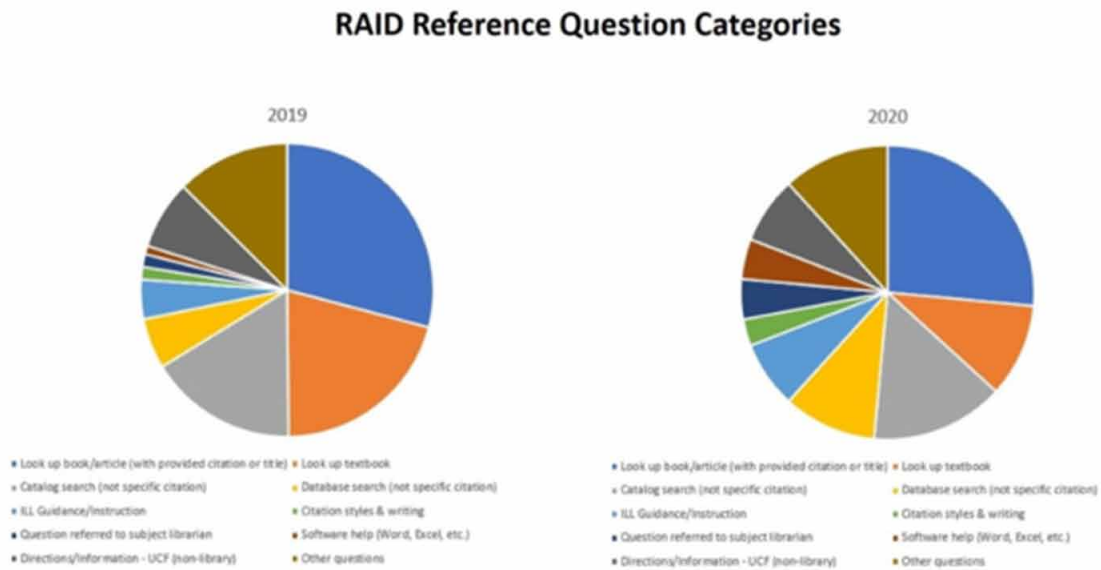


ASSESSING THE TELE-REFERENCE SERVICE MODEL

The Tele-Reference service model has been informally assessed through a variety of means. Because it was implemented as a quick solution to a pandemic related problem, the service has not been formally assessed through traditional means via focus groups, surveys, or other formal assessments. Time limitations also impacted assessment, especially patron surveys to solicit qualitative and quantitative feedback, because there was not sufficient time for the Institutional Review Board’s (IRB) process of approvals ahead of formal assessment. In lieu of this, one of the first ways UCF Libraries has informally evaluated Tele-Reference service model is through internal service statistics. The UCF Libraries uses a software

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Figure 3. RAID reference question categories



system called LibInsight from Springshare to track many aspects of library related service interactions. Reference desk statistics are logged after each transaction. The kind of information being gathered by each individual reference librarian while staffing RAID in-person or on Tele-Reference includes:

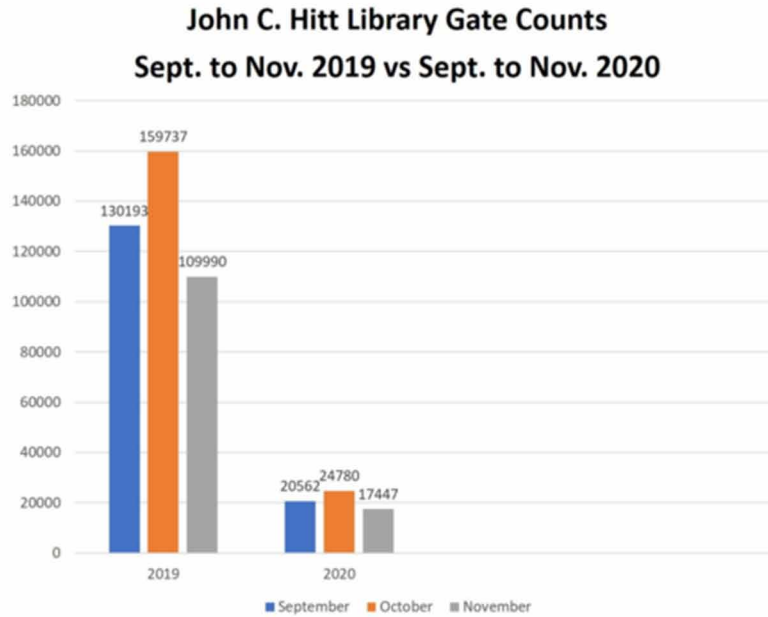
- The type of question asked (e.g. informational, directional, reference)
- The amount of time each interaction took
- The difficulty level of the question

Additionally, the type of question is specifically noted and tracked under a variety of pre-set parameters (see Figure 3). There are a total of ten categories that include: looking up articles/citations, running a catalog search, interlibrary loan guidance, referrals to subject librarians, directional/informational questions, looking up textbooks, database searches, citation styles/writing, software help, and an open other category for questions that fall outside of the nine pre-set options.

By pulling the LibInsight's statistics from September 2019 (before the implementation of Tele-Reference) and comparing statistics from September 2020 (the first full month of the start of the service), it can be easily ascertained from Figure 4 above that there is no notable change in the frequency of the kinds of questions asked from when the library was a normal operations before the pandemic compared to during the closure and start of Tele-Reference. This suggests a high likelihood that the change in the mode of reference service has been well received, been consistently used, and has not deterred patrons from visiting RAID as a walk-up library service, despite a lack of a physical presence at the desk. With Tele-Reference as an option, patrons received comparable services as they normally would and did not see any reduction in service due to the COVID-19 pandemic.

The second form of informal assessment by which Tele-Reference has been evaluated involves looking into cross-departmental library statistics, such as gate counts for the main campus library building. Comparing the John C. Hitt Library's overall number of visitors to the RIS Department's RAID statistics

Figure 4. John C. Hitt Library gate counts September to November 2019 versus September to November 2020



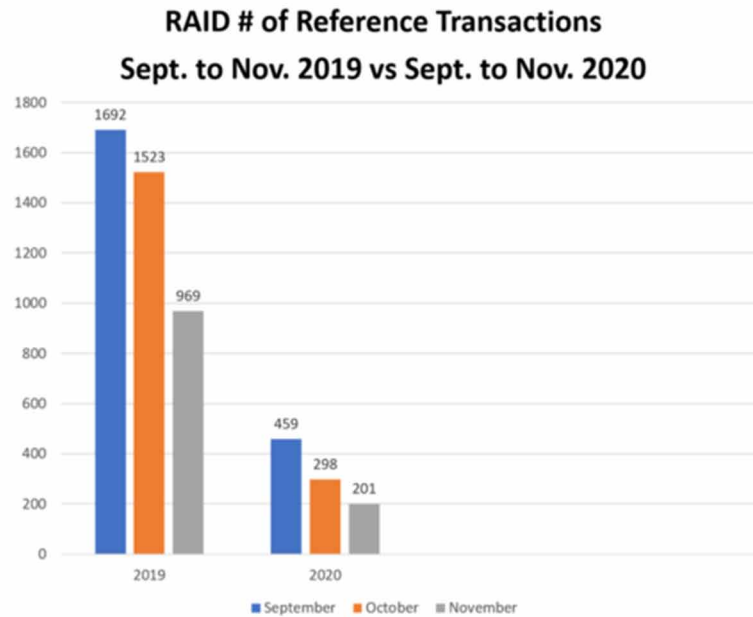
was helpful as it provided a comprehensive view of library usage overall. In a side-by-side review of gate counts from September - November of 2019 (before the pandemic with no Tele-Reference service running) against the September - November of 2020 gate counts (during the pandemic with the service running), it was noted that there was an approximate 84.2% - 84.5% reduction in visitors to the library. This is of note as it includes a period of time in which the UCF Libraries had reopened but the rest of the campus had not yet fully returned (see Figure 4).

Although the library has had a significant reduction in the number of visitors, the RIS RAID statistics show that during the same three months in 2019 versus 2020, the number of reference transactions dropped between 73% - 80% overall, comparably smaller than the drop of the number of visitors which was a higher percentage at 84.2% - 84.5%. These statistics suggest that although the number of visitors to the library dropped substantially, with the help of having a physically staffed Tele-Reference service, the number of reference transactions was not affected overall. (see Figure 5).

The above figure which outlines the number of reference transactions between three months of 2019 (pre-pandemic) exactly one year before the implementation of Tele-Reference, compared to the first three months of the Tele-Reference service being launched in 2020, suggests that even though the gate counts have significantly dropped during the pandemic, the Tele-Reference service is being used consistently by patrons who are physically in the library. Furthermore, this provides additional insight into the success of Tele-Reference as a walk-in library service, since its use trends between 4.2% - 11.2% better than that of the overall drop in total visitors to the library. These statistics suggest that Tele-Reference provides a valuable service that is being used by those who enter the building often, that the service is visible, and that it provided a timely intervention during the COVID-19 pivot.

The Tele-Reference Model

Figure 5. RAID number of reference transactions September to November 2019 versus September to November 2020



The last informal method used to assess Tele-Reference is through qualitative feedback collected from campus partners and administrators. An example of one such piece of feedback received was shared above from the UCF Office of Student Accessibility Services. Another comment received from the UCF Assistant Dean of Academic Engagement of the Division of Student Learning & Academic Success noted, “The reference desk at the UCF Library adapted to meet the needs of students and librarians in light of COVID. Live Zoom reference librarians are available at the desk during traditional hours. At first when colleagues mentioned this to me as a possibility, I was skeptical. However, when I saw it this summer in action, I was impressed. It worked so well. You could see the friendly librarian from across the room on the computer. The library really innovated in our unique climate. This provides one-on-one service at our library but still allows librarians the option to stay remote.” Receiving this kind of positive feedback from high level administrators on campus is testimony to how well Tele-Reference is perceived outside of the library and how impactful the service is to the campus community.

As mentioned earlier, due to the swift timeframe in which the Tele-Reference model was introduced, a more formalized assessment of the service was not a consideration. Now that the model has been running for over a year, additional assessment of Tele-Reference is slated to occur. This would include surveying users after Tele-Reference transactions and utilizing focus groups to gain insight on how the service is functioning. Along with assessing Tele-Reference both quantitatively, as well as qualitatively, there are other benefits to having implemented this kind of alternative reference desk service on a large-scale university campus like UCF.

BENEFITS OF THE TELE-REFERENCE SERVICE MODEL

In addition to being positively assessed, there are also a variety of benefits that the Tele-Reference model provided. From the patrons' perspective, they were able to receive continued reference support from the UCF Libraries throughout the pandemic in a safe and physically distanced environment. Continuity of service throughout the public health crisis has been critical to aid library patrons in their research and scholarly endeavors. By employing the Tele-Reference model, the UCF Libraries was able to provide a safe alternative to in-person reference desk service while adhering to health and safety requirements set forth by the university and the state of Florida, while most other academic university libraries throughout the state of Florida closed their service desks entirely, only offering the equivalent of an Ask-A-Librarian service online during the pandemic. Ever since the UCF Libraries reopened after closing for four months, Tele-Reference enabled the library to provide walk-in service to library patrons who were able to see and interact safely in real-time with a reference librarian. It allowed patrons to receive assistance at the moment of need without having to use a device or fill out a research consultation request days in advance. Overall, this model provided patrons with a traditional reference experience in a slightly modified way by using existing technologies that patrons, librarians, and staff are already familiar with.

From the perspective of the library staff, the Tele-Reference model provided librarians who normally staff the reference desk with a safe and physically distanced working environment. They were able to work remotely, either from their work office or from home without risking their physical presence at the information desk. Additionally, the screen share feature of the Zoom meeting software also enhanced the reference assistance provided by the librarians. It allowed the librarians to teach the search strategies in a much more effective way, for the patrons can watch the steps of information retrieval closely from the screen in front of them.

Starting in the Fall of 2021, UCF returned to a pre-pandemic class schedule. Accordingly, the library returned to an in-person research assistance model at RAID to better support the largely increased student presence on the campus. Even though the Tele-Reference model was not offered as the primary service model, it was utilized as a back-up service point to complement the in-person research assistance during peak service hours at RAID. In addition to having one librarian staffing the physical reference desk, another librarian was scheduled during the peak service hours of 11 a.m. to 4 p.m., to assist patrons by using the Tele-Reference model. A librarian logged into the Zoom meeting room remotely from either a work office or while working remotely. This arrangement helped lower health and safety risks for librarians staffing the desk, especially with the continuance of COVID-19 variants and concerns of increased risk of two librarians working in close proximity of each other in a small space. It also provided an extra service point for patrons should there be a need for additional librarian's research assistance over the peak service hours.

OPPORTUNITIES FOR FUTURE DIRECTIONS AND USE OF THE TELE-REFERENCE SERVICE MODEL

One possible use of the Tele-Reference service model is that it can be utilized in conjunction with a single service desk model, as described in the previous section. Due to a variety of reasons, including budget constraints, the decline in face-to-face traditional reference transactions, and increased demands on reference librarian time for services like library instruction and outreach, many academic libraries

The Tele-Reference Model

have started considering major changes to their public service functions and have begun implementing blended models that combine traditionally separate circulation and reference functions at a single service desk (Oud, 2016). A single service model includes many positive benefits, such as a more efficient delivery of a wide variety of services from a unified, blended service point; however, it is not without its concerns or frustrations. One challenge, for example, highlights the immense learning curve faced by single service desk staff specifically related to a library's massive print and electronic resources (Sider, 2016). For those libraries with a single service desk model, adding the Tele-Reference model could help reduce the extensive scope of responsibilities for the frontline service staff member and mitigate concerns and frustrations. It would also provide librarians scheduled for the Tele-Reference shift the ability to devote their time in a quieter environment to prepare for instruction or outreach work when there are no in-depth research questions taking place.

The Tele-Reference service model could also be utilized to complement the traditional reference service model by connecting the subject librarians on the spot, to enhance the quality of research assistance to patrons at the time of need. If librarians staffing the reference desk receive a research question about a certain subject area that they are not familiar with, they can easily connect the patron to a subject librarian. For instance, the librarian at the reference desk could contact a subject librarian via chat using an instant messaging platform, such as Microsoft Teams or Skype, and the subject librarian could login to the meeting software and provide the student with assistance instantly. The combination of a Tele-Reference model and a traditional reference service is an excellent way to leverage human resources and technology solutions to achieve a high-quality of effectiveness and efficiency in research assistance services.

CONCLUSION

As explored in this chapter, the need for technology solutions to address challenges faced during the COVID-19 pandemic was critical in successfully providing remote reference services at the University of Central Florida Libraries. The Tele-Reference model developed provided an important and timely solution during an unpredictable period. With campus-wide facilities closures and 100% remote work for all faculty and staff, the UCF Libraries faced an ever-changing work environment and one that made providing services to patrons increasingly challenging. By utilizing readily available technology and equipment, such as Zoom and laptop and desktop computers, the library was able to pivot and develop Tele-Reference to address the needs of the campus community while adhering to university guidelines.

Although Tele-Reference provided some challenges, the service, as a technology solution, benefited everyone from a variety of vantage points. The RIS Department could safely staff the desk from a remote location while mitigating risk for COVID-19 exposure yet still provide the important physical desk presence that both university and library administrators required. In addition, during the full library closure between March of 2020 and August of 2020, RAID was able to propose a new student position, the Reference Ambassador, which would provide work opportunities for students in need, as well as assist RIS librarians working remotely. Lastly, as UCF returned to normal operations in August of 2021, Tele-Reference has continued to support RIS staff in a variety of ways. Tele-Reference has been used to reduce the number of physical librarians currently at RAID, allowing for physical distancing and COVID-19 risk mitigation, while still providing dual librarian services at the desk. Additionally, it provides assistance when needed during peak times and will likely be used in the future for these purposes.

The examples in this chapter highlight how Tele-Reference was implemented and successfully used at the UCF Libraries as an alternative to traditional reference desk services. In addition, it has highlighted how the model might be used for various purposes and could be utilized by other institutions interested in similar service support. For those interested in developing similar services at their institution, the Tele-Reference model provides an easy to implement option and can be utilized with any remote web conferencing software available. Technology training, set-up, and beta testing can all be deployed and the service operational in a fairly swift amount of time. By utilizing creative solutions with technology, traditional reference and other library services can be adapted and adjusted to help aid in providing consistent and sustained support to library patrons during difficult times, such as the COVID-19 pandemic, and beyond.

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KEY TERMS AND DEFINITIONS

Ask-a-Librarian: A service providing free, quick reference assistance with basic answers to brief, factual questions via chat, instant messaging, telephone, and/or e-mail.

Reference Ambassador: Student employee who physically staffs the Research and Information Desk in conjunction with Tele-Reference.

Research and Information Desk (RAID): A public service counter where professional librarians provide library patrons with directions to library materials, advice on library collections and services, and expertise on multiple kinds of information from multiple sources.

Research and Information Desk (RAID) Reopening Task Force: A committee charged to survey best practices shared by academic libraries that comport with campus reopening strictures and to develop guidelines for University of Central Florida Libraries concerning site management, staff and user safety, circulation and resource sharing, research and information services, and materials handling as pandemic conditions evolve.

Research and Information Services (RIS) Department: The department of a library which supplies information requested by library users and assists patrons in locating needed information using all available resources.

Springshare LibApps: A suite of services provided by Springshare used by libraries to share information and manage library services and resources.

Springshare LibGuides: A content management system developed by Springshare used to curate knowledge, share information, and develop websites and blogs.

Springshare LibInsight: A tool developed by Springshare to gather, track, and analyze data collected by libraries.

Tele-Reference: A virtual reference service developed by the University of Central Florida Libraries using web conferencing software and computer technologies to provide traditional reference services in an online setting.

Zoom: A web conferencing software program, developed by Zoom Video Communications, used for online meetings, chat, phone calls, webinars, and other events.