

# Virtual Reading Room Research Support at a Caribbean University

## Piloting Innovation in Supervising TVET Graduate Students

---

DEBRA FERDINAND-JAMES, KARLENE NELSON,  
BEVERLY BURTE, AND YOLANDA TUGWELL

### *Abstract*

*This research describes the piloting of a Virtual Reading Room (VRR) at a Caribbean university library to support students' graduate research. In keeping with its Liaison Library Programme, the students' research supervisor collaborated with librarians for the creation of the VRR with library instruction, which served the supervisor's ten research supervisees enrolled in Leadership in Technical and Vocational Education and Training (TVET) and Workforce Development (WFD) graduate programmes. These supervisees are referred to as TVET graduate students in the current study. A mixed methods convergent parallel study design was used in collecting and analysing quantitative data on usage statistics for graduate students' TVET/WFD Library Guides (LibGuides) and qualitative data via a feedback questionnaire on their reactions to VRR use for supporting their graduate supervision. The study results indicated that the LibGuide Homepage followed by the Thesis Preparation, Databases/E-Journals, and Research Methodology webpages were the most used by graduate students. Graduate students' overall VRR feedback was that these virtual resources were very necessary and useful for sustaining their graduate research. These results can contribute to the scholarly Caribbean literature on virtual reading room use and inform local policy and practice for TVET graduate supervision.*

**Keywords:** Virtual Reading Room; graduate research support; convergent parallel mixed methods

## Background

The Caribbean university library remains “home” to all staff, faculty members, and students for meeting their information and research needs in an era of digital transformation characterising higher education’s trajectory (Alam and Kohda 2022; Pelletier et al. 2021; World Economic Forum 2020). This digital transformation is fuelled by Industry 4.0, prompting a resulting shift to Education 4.0 that focuses on equipping students to live and work in a digitally-enabled economy (Pelletier et al. 2021; RMIT University, Europe 2020, November; World Economic Forum 2022). While regrettable, the COVID-19 global pandemic served to catalyse education into digital transformation to include traditional physical spaces such as library learning commons. These library spaces are frequently used by graduate students and faculty members for their research (Abrashi and Sallauka 2022; Salmon 2019; UNESCO Educational Sector 2020, April).

These digital learning commons or virtual reading rooms are served by reference librarians, who provide a range of services such as developing research and subject guides; research consultation; and library instruction for supporting graduate students and faculty members in their research (Colvin 2010; Jones and Grote 2018; Singh 2019). Much research on graduate students, generally considered them to be novice researchers, who frequently lacked information literacy skills for doing research and who experienced challenges in completing their final research projects/theses. Consequently, the library instruction and subject guides provided by librarians are critical to graduate students in developing the requisite information literacy skills for conducting and successfully completing their scholarly research (Ferdinand-James and Medina-Charles 2022; Kennedy and Gruber 2020; Marshall, Klocko, and Davidson 2017; Stoeger and Ziegler 2021).

Thus, research supervisors are assigned to graduate students to provide needed guidance and support to enable the successful completion of their research projects and theses (Blair, Watson, and Raturi 2020; Rackham Graduate School 2020; Roach, Christensen, and Rieger 2019; Remenyi and Money 2012). To this end, faculty members who supervise graduate students often collaborate with librarians to meet their supervisees’ (i.e., graduate students being supervised) specific information needs. This collaboration has led to mutual benefits in improving the quality

of graduate research (Reed et al. 2022; Free 2021; Tang 2020; Stöpel et al. 2020).

Interest in quality graduate research is growing as the digital transformation characterising higher education institutions (HEIs) is sweeping across the globe, widening access to graduate programmes, and prompting attention to the provision of adequate library support services towards the successful completion by students (Pelletier et al. 2021; Akareem, Husain, and Hossain 2016). A premier five-campus Caribbean university, ranked in the top 1.5 per cent in the world is fostering digital transformation in its operations and included “. . . improving the quality, quantity, and impact of research, innovation, and publication” as a deliverable in its strategic plan (THE World University Rankings 2021 – The UWI section; The University of the West Indies, St. Augustine 2020, 22).

As part of the Liaison Library Programme at this premier Caribbean university, the first author and research supervisor strategised with their librarians and fellow authors to innovatively pilot a virtual reading room (VRR) that included library instruction. The VRR accommodated the TVET graduate supervisees’ directed reading and writing hours, which was a component of their supervisor’s graduate supervision for completing their research projects (The University of the West Indies, Mona 2023a).

The VRR comprised library instruction twice weekly from 4:00 p.m. to 7:00 p.m. (Master’s on Mondays and Master’s of Philosophy on Thursdays). Subsequent requests from students resulted in a more flexible schedule, allowing all 10 TVET graduate students to attend both sessions. Challenges with this combined schedule in having to account for students attending both sessions in the same week, led to librarians observing the average attendance weekly of a student. The VRR sessions were mainly intended for use as supervisees’ reading and writing time for their final research projects, so these were not recorded. The TVET graduate students consisted of five Master of Arts (MA) and five Master of Philosophy (MPhil) students pursuing graduate programmes in the Leadership in Technical and Vocational Education and Workforce Development (L/TVET/WFD) at this university’s School of Education (The University of the West Indies, Mona 2023b). These students are referred to as TVET graduate students, MAs, and MPhils in different parts of this study.

The VRR was considered an innovation in graduate supervision as it was introduced for the first time at this university’s library during a pandemic that catalysed education into innovation and digital transformation (UNESCO Educational Sector 2020, April). In keeping with its strategic plan, previous innovation in graduate supervision piloted at the southern-most campus of

this premier university included Research e-Clinics for supporting graduate students' research (The University of the West Indies, St. Augustine 2020, 22). These "Research e-Clinics" were entered into a UK competition, which won a merit award and was published as the second chapter in the anthology of the competition finalists' case histories for *Innovation in Teaching of Research Methodology Excellence* (Remenyi 2016).

Two TVET LibGuides (Research Proposal and L/TVET/WFD) were specially developed and included in the VRR resources for supporting students' final graduate research projects. Jackson and Stacey-Bates (2021) described LibGuides as highlighting information resources available for different fields or subjects, which in the study context was the field of TVET and Workforce Development. Previous research has shown LibGuides to be beneficial to graduate students' research (Kennedy and Gruber 2020; Stoeger and Ziegler 2021).

These LibGuides were critical to the option of doing an Extended Literature Review, which the TVET research supervisees chose for their final research projects. Due to the global pandemic restrictions, students were given this option to conduct an empirical study involving interaction with research participants for data collection. It is against this background that the current study probes, for the first time, the use of statistics of these LibGuide resources and TVET graduate students' feedback on the use of the VRR. The results of the study can also help to inform practice and policy for graduate supervision in the study's local context and contribute to the scholarly Caribbean literature on virtual reading room use for graduate students.

## Literature Review and Theoretical Framework

### Postgraduate reading room support

The postgraduate reading room, also referred to as the Learning Commons, began appearing in academic libraries around the year 2000 and was readily embraced by both faculty members and graduate students (Colvin 2010). The Learning Commons has been described as a social and active learning environment where learners, faculty librarians, and writing tutors share and apply information and knowledge for teaching and learning (Alam and Khoda 2022; Singh 2019; Somerville and Collins 2008). However, technological advancement and the forced shift to a virtual learning environment due to the COVID-19 pandemic, hastened the

introduction of virtual learning commons (Abrashi and Sallauka 2022; Colvin 2010; Jones and Grote 2018). These virtual learning commons or reading rooms are also supported by the services of reference librarians, who can be approached for assistance with such requests as research consultations for final theses, library instruction, and creation of subject guides to support graduate students and faculty members in their teaching and research (Colvin 2010; Jones and Grote 2018; Singh 2019). Librarians at this premier Caribbean university affirmed the digital transformation of similar spaces in their research:

The Postgraduate Learning Commons at the Main Library and the Science Library with their variety of digital services and their own resident librarians and on call technicians [offer] a convenient, comfortable space for postgraduates to do research, have discussion groups or just a quiet area for writing, reading or reflection. (Patrickson Stewart and Newman 2017, 226).

Notably, Robinson et al. (2018) attested that research consultations with skilled librarians helped students identify their mistakes in referencing and formatting their theses. Through this intervention, students gained proficiency in correctly citing sources and creating theses that adhered to academic standards. The latter guided support provided by university librarians reflects the Vygotskian situated learning theory in which the expert, like the more knowledgeable research librarian, provides guided support to the novice or the less knowledgeable graduate research student. This guided support or scaffolding is very applicable to the present study that involves library instruction for study participants in finding relevant literature for completing their chosen extended literature reviews. This scaffolding approach has also been used effectively in the supervisor-supervisee relationship in graduate supervision (Tian, Watson Todd, and Darasawang 2012; Vygotsky 1978).

Researchers have also examined how graduates responded to a space designed just for them (Kinsley et al. 2015; Marcus, Covert-Vail, and Mandel 2017; Rempel, Hussong-Christian, and Mellinger 2011). Rempel et al. (2011) found that participants in their study believed it would be advantageous to have a space where they knew others would be working on related projects, that is, a group of people who come together for shared learning, study, or teaching. Participants also discovered that they preferred graduate-only spaces. The Reading Room, which is open only to graduate students and faculty, was deemed to be ideally suited to intensive focus of graduate students (Kinsley et al. 2015). Participants in this study also reported that being around other graduate students doing similar work made them feel

less lonely and isolated because studying and writing can be isolating. According to Marcus et al. (2017), graduate students had a variety of preferences for library space. They desired private spaces, public spaces, and spaces that promoted group work in a welcoming environment. A critical feature of these spaces was that they should be distinct from undergraduate study areas.

### Information literacy instruction

In academia, information literacy is a fundamental set of skills required for conducting research. Graduate students as novice researchers need assistance not only with understanding the search process and using the library's specific resources and technologies, but also with learning how to find, interpret, and integrate useful materials that will meet their research needs (Allari et al. 2022, 212). Nelson and Tugwell (2022, 271) found that graduate students had challenges in selecting the appropriate keyword to obtain useful information for their research. In addressing these research needs, librarians also helped to develop attributes of its ideal graduate that include *IT skilled, critical thinker, information literate, and effective communicator* (The University of the West Indies, St. Augustine 2020). Higher education institutions have been giving more attention to faculty and librarian collaborations in information literacy to increase student success and overall effectiveness (Igbo and Imo 2017; Reed, Kinder, and Farnum 2022; Free 2021; Tang 2020; Stöpel, Piotto, and Goodman 2020). The instruction and guidance provided by university librarians in helping students to find, interpret, and integrate digital resources into their research resonate with Connectivism, an emerging theory for learning in the digital age. A key tenet of this theory is knowing “where” to find information as opposed to the “what” and “how” of its use. Connecting to and perusing a variety of information sources help students to build networks that provide a wider palette of information sources for stimulating their critical thinking and arriving at solutions to research problems (Downes 2022; Duke, Harper, and Johnston 2013). The application of this theory is well suited to the current study that requires TVET graduate students to find and analyze relevant research for conducting an extended literature review for their chosen final research projects

## Library Guides (LibGuides)

The ways libraries present themselves to users have been significantly impacted by technology and innovative ideas. Academic libraries use content management systems to display research guides and highlight information resources available for different fields, according to Jackson and Stacey-Bates (2016). Graduate students frequently need help from compiled subject-related resources such as Library Guides because they work in an electronic environment and must extract information from and sift through various information sources. Subject guides are a crucial component of library research assistance for graduate students because they have been frequently found to be very helpful in their research (Farkas 2012; Strutin 2008).

According to Sinkinson et al. (2012), research guides benefit both students and faculty in the following ways: providing disciplinary context for in-depth research requirements, assistance with pointing users in the direction of subject-specific research sources and online tutorial links, access to research tools, promotion of library collections and services, education about the research process, and assistance with promoting research tools. Okite-Amughero, Makgahlela, and Bopape (2014) posited that some academic libraries create and develop electronic information, electronic resource collections, and electronic resource metadata that connect graduate students with the resources they require all in one location. Further, these ubiquitous resources can be accessed from anywhere via the library website to support their research. Additionally, Palumbo (2016) attested that some academic libraries produce materials and web-based educational content outlining the best tools and resources for specific research.

Previous studies on LibGuides also show that their use and value by library stakeholders, though varied, have been quite beneficial. In a survey of more than 1000 students, a university library found that 24% of respondents occasionally used the library's web guides, while another 53% never did (Reeb and Gibbons 2004). Researchers from George Washington University polled 210 students about the value of LibGuides. The study findings showed that 52% of respondents thought research guides were helpful, while 40% felt they were not helpful or of little help. Those who used these research guides found that they improved their research process, and they gained access to reliable sources and materials relevant to their subject area. The participants added that the LibGuides were a great place to start their research and a fantastic introduction for first-timers to the library's discovery system (Courtois, Higgins, and Kapur 2005).



A similar survey at a different university of more than 1000 undergraduate students revealed that they frequently used online databases research guides (Staley 2007). Likewise, in a 2013 Center for Research on Educational Outcomes (Credo) survey of more than 1000 university students on their research habits, 77% of them found research guides were the most useful teaching tool (McKiel and Dooley 2013). However, LibGuides with fewer secondary pages show a higher usage, as students are inclined to link to the homepages first for finding needed resource content (Castro, Chandler, and Wilcox 2015; Conrad and Stephens 2019). The studies in this literature review, which included Conrad and Stevens (2019), Nelson and Tugwell (2022), and Pittsley and Memmott (2012), seldom distinguished between male and female students, their age ranges, or research developmental stage for study participants. Instead, they focused on how students used upgraded library resources such as digital learning commons for supporting their research. Noticeably, the studies reviewed, though limited on perspectives in a Caribbean higher education context, highlighted the importance, use, and benefits of the library's VRR research support, library instruction, and LibGuides to graduate students' culminating research projects and theses. The current pilot study attempts to narrow the dearth of scholarship that examines VRR research support for TVET graduate students in a Caribbean higher education context by answering the following overarching and two sub-questions:

What are TVET graduate students' usage of and reactions to virtual reading room (VRR) resources for supporting their research at a Caribbean university library?

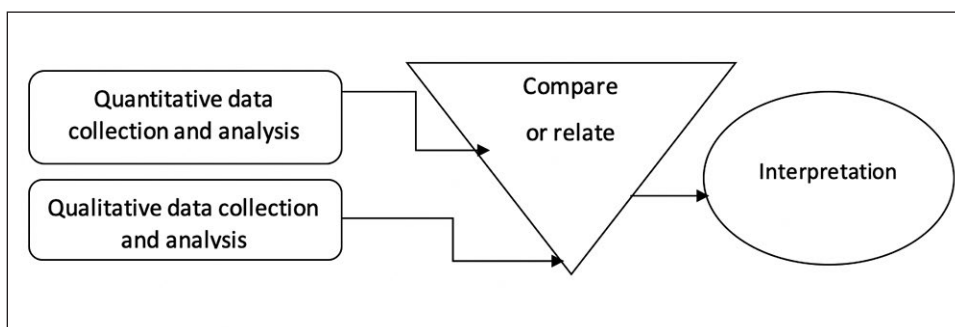
*Sub-Question (1):* What do usage statistics reveal about TVET graduate students' use of LibGuide resources for supporting their research at a Caribbean university library?

*Sub-Question (2):* What are TVET graduate students' reactions to the use of a VRR for supporting their research at a Caribbean university library?

## Methodology

The purpose of this pilot study was to describe TVET graduate students' usage of and reactions to virtual reading room (VRR) resources for supporting their research at a Caribbean university library. A Convergent Parallel Mixed Methods (CPMM) design (*see* figure 1) was used as the researchers wished to triangulate the findings of the different data analyzed by comparing or relating the quantitative statistical results with qualitative findings for corroboration. This process was





**Figure 1.** Convergent Parallel Mixed Methods (CPMM) Design (Source: Creswell, 2003)

used for integration of the latter into the study discussion, leading to a deeper interpretation of the results as shown in figure 1 (Creswell et al. 2003). The CPMM requires simultaneously collecting both quantitative and qualitative data but analyzing these separately and integrating them for gaining a deeper understanding of the central phenomenon – Virtual Reading Room (VRR) graduate support.

This integration mitigated any weaknesses in using only qualitative or quantitative data (Creswell 2013; DeCuir-Gunby and Schutz 2017). A pragmatic paradigm guided the CPMM design, as its foci, among others, are both problem- and practice-centred (Creswell and Creswell 2017) that resonate with VRR research support for novice researchers. A total of ten TVET graduate students (five MAs and five MPhils) in the early stages of their research and supervised by the first author were purposefully selected. All agreed to participate in the current pilot study. Insider researcher bias was mediated by taking the stance of Pring (2001) who advocated that when compared to their external counterparts, insider researchers assembled a more genuine image of reality because of their sociocultural immersion in the field. The study participants would have been the first graduate students to experience the VRR at the study site.

The VRR research support sessions were scheduled twice weekly (4:00 pm–7:00 pm), MAs on Mondays and MPhils on Thursdays over the period January 2022 – May 2022. TVET graduate students were allowed flexibility in these sessions to accommodate spotty internet connectivity, clashing schedules, emergencies, and personal challenges. The latter did make for challenges in having to count one student twice, so daily attendance was not done but instead an overall average student attendance over the semester was observed by the VRR librarians. Usage statistics were collected on the two LibGuides: (1) Research Proposal with a thesis template and (2) Leadership in TVET and Workforce Development (L/TVET/

WFD). These statistics were collected using the statistical tool attached to the LibGuides that only gave accumulated viewing statistics by TVET LibGuide webpage over time, which for the current study was January 2022–May 2022. The latter statistics are only used as a gauge of students’ use of the LibGuides and these were not restricted to viewing by the TVET graduate students alone, which was posted on the library’s Homepage (The University of the West Indies 2023)

A self-reported online questionnaire with open-ended questions on VRR reactions was created and reviewed by the other three authors/librarians for correct grammar, clarity, and accuracy (Patton 2014). This questionnaire was slightly tweaked by the latter review panel in keeping with the minor revisions suggested, to include typos. The online questionnaire, distributed as a Google Form and available to students for three weeks, comprised the following items: (1) three closed-ended questions that asked about students’ graduate level programme, number of VRR sessions they attended, and title of these sessions; and (2) six open-ended questions that asked for feedback on drivers for attending the VRR sessions; library instruction; library VRR resources; working with peers, and overall impression of the VRR. Demographics on student gender, age ranges, or stage of research development were not included in keeping with previous studies on the topic that focused more on the use of research resources by undergraduate and graduate students. There were no Likert-type items included in the study questionnaire.

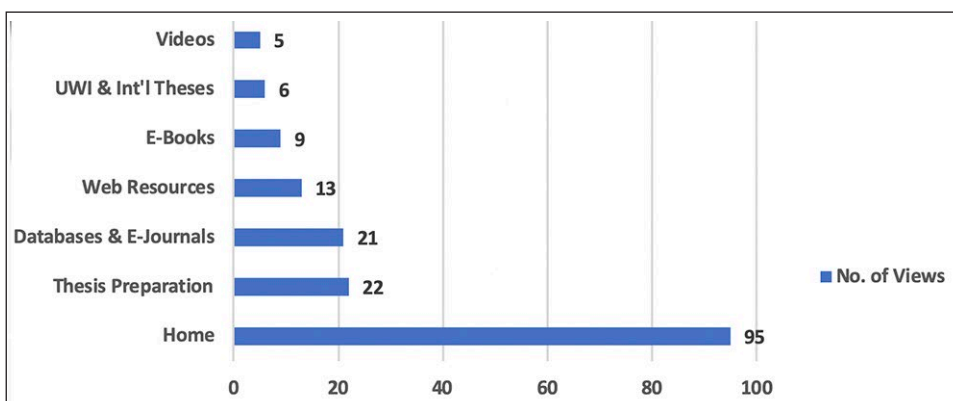
Thematic analysis was used to capture the emerging themes and patterns from the “reactions” qualitative data collected along with supporting quotes that were verified by the other three authors/librarians for trustworthiness and anonymity (Patton 2014). Triangulation of the quantitative usage statistics on the VRR research resources and the analyzed qualitative “reactions” data was done in comparing or relating the latter for confirming and/or disconfirming the study findings in relation to its research questions. Combining the quantitative and qualitative findings in this way enhances the validity and credibility of the study results and helps to give a deeper interpretation and understanding of the study’s phenomenon, in keeping with the Convergent Parallel Mixed Methods study design (Creswell et al. 2003) as shown in figure 1.

## Results

Accumulated usage statistics (i.e., views per LibGuide webpage) were automatically generated by the statistical tool attached to the online LibGuides (Research Proposal and TVET & Workforce Development). Simultaneously, the “reactions” questionnaire was issued to participants at the end of Semester II, 2021–2022 or May 2022. The TVET supervisees interacted with these webpages during and outside the weekly VRR sessions, but viewing was not restricted to them alone as the LibGuides were posted on the library’s Homepage (The University of the West Indies 2023). As such, for the purpose of the current study in which the TVET LibGuides were specially developed for the TVET graduate students, the LibGuide viewing statistics collected are used as a gauge of their use of these resources. Notably, during their VRR facilitation, librarians observed that some students attended the same two combined VRR sessions weekly out of need and others alternated for missed or partly missed sessions. Overall feedback on attendance from the VRR librarians indicated that students who needed the support attended regularly, which was around 60% on average.

A total of six (three MAs and three MPhils) – or 60% – of the ten TVET graduate students participating in this pilot study responded to the feedback voluntary online questionnaire (Google form). This result corroborates with the librarians observed 60% overall average attendance for the VRR sessions. The four TVET graduate students not responding to the anonymous voluntary questionnaire were in the early stages of their final research project, two MAs and two MPhils, so there was no non-response bias in the study results. Cleaning of data or data entry was not required as the Google form used for the questionnaire generated the descriptive statistics needed for analysing responses of the six students (three MAs and three MPhils) responding.

The results for the two sub-questions are grouped in the following sections, accordingly, for answering the main overarching study question: What are TVET graduate students’ usage of and reactions to virtual reading room (VRR) resources for supporting their research at a Caribbean university library?

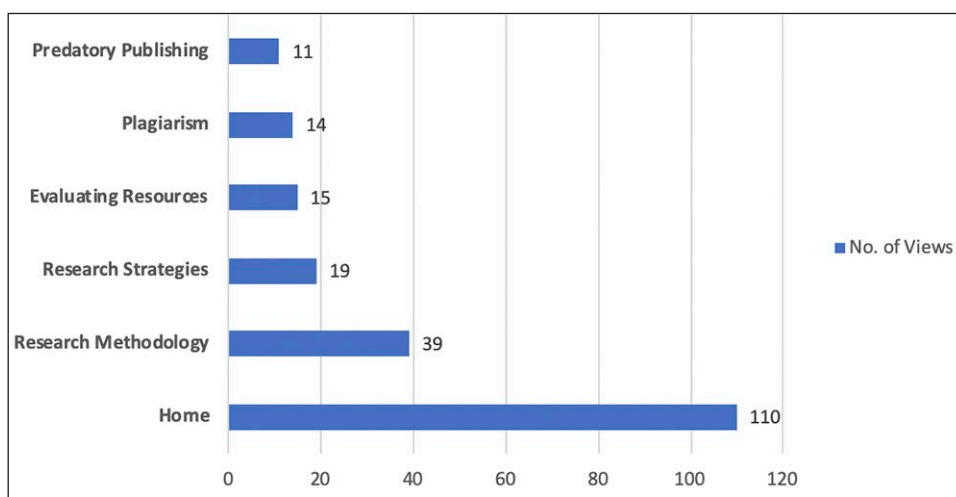


**Figure 2.** TVET and Workforce Development LibGuide Resource usage.

**Research Sub-Question (1):** *What do usage statistics reveal about TVET graduate students' use of VRR resources for supporting their research at a Caribbean university library?*

The accumulated usage statistics in figure 2 of the TVET and Workforce Development LibGuide in this pilot study are a gauge of how the TVET graduate students used this resource as viewing was not restricted to them alone. Given the moderate number of views shown, it was assumed that these would be mostly the study participants for whom the LibGuides were specially developed. There is a wide disparity among the Homepage (95 views) and the other secondary pages with the top two being Thesis Preparation (22 views) and Databases & E-Journals (21 views) as shown in figure 2.

The accumulated usage statistics in figure 3 of the other Research Proposal LibGuide with the thesis template are a gauge of how the TVET graduate students in the current pilot study used this resource, as viewing was not restricted to them alone. Given the moderate number of views shown, it was assumed that these would be mostly the study participants for whom the LibGuides were specially developed. There is a wide disparity between the Homepage (110 views) and the other secondary pages with the top two being Research Methodology (39 views) and Research Strategies (19 views) as shown in figure 3. Still, the total views (208) for the Research Proposal LibGuide was moderately higher than the total views (171) for TVET and Workforce Development LibGuide.



**Figure 3.** Research Proposal LibGuide Resources usage.

**Research Sub-Question (2):** *What are TVET graduate students’ reactions to the use of the VRR resources for supporting their research at a Caribbean university library?*

TVET graduate students were asked to give their reactions to VRR resources for supporting their research in open-ended responses on library instruction, resources, collaborating with their peers, attending the VRR sessions, overall impression of the VRR facility, and suggestions for improving the VRR facility. The following pseudonyms were used accordingly, to refer to the respondents for confidentiality: MA1, MA2, and MA3 for the Master’s students and MPhil1, MPhil2, and MPhil3 for the MPhil students. All six respondents (three MAs and three MPhils) reported that they attended most of the VRR sessions, which included full attendance for the following ones: Searching UWIlinc and Databases; Choosing Key Words, Search Strategies, and Tips; and Citing Sources Correctly in APA. Their main influences for VRR attendance can be summarised for each group as follows: a need for “improving my research skills” as MPhil1 student stated and needing to make “Citations and References using APA 7<sup>th</sup>. Edition” as MA2 student indicated.

In reacting to the VRR library instruction sessions, the six students (three MAs and three MPhils) responding used descriptors that were comparable such as informative, resourceful, useful, effective, and enlightening. The following

detailed comment from the MPhil2 student echoes the overall reaction of TVET graduate students in both groups to their VRR library instruction:

It was very effective, as my personal objective was met, that of being able to effectively search through various databases, knowing where to find the appropriate citation as well as being able to have a personal relationship with a librarian who is willing to assist and guide you through the research process of finding appropriate and relevant resources relating to your research area.

Respondents' reactions to the VRR research resources were mostly positive as they found these to be very useful in enabling the conduct of their research. This quote from the MA3 student reflects the overall reaction of the six TVET graduate students (three MAs and three MPhils) to using their VRR research resources: "I consider the sessions to be very resourceful in retrieving the relevant literatures needed for my research." In commenting on the experience of collaborating with peers in the VRR, most TVET graduate students' reactions showed it to be beneficial, reciprocal, and helpful. The following detailed comment from the MA1 student sums up their reactions to working collaboratively with their peers in the VRR: "I was able to learn from them and was motivated to pressed [*sic*] on with the project." Their overall impression of the VRR facility for sustaining their graduate research showed that it was necessary, relevant, satisfactory, and beneficial. The following detailed comment from the MPhil2 student echoes the overall reaction of TVET graduate students to the VRR facility:

It is a needed environment – especially during the COVID-19 period – as we are not able to meet face to face. The journey as a graduate student can be lonely and research can become very daunting, so this kind of support and guidance is needed.

Suggestions for improving the VRR facility by the six TVET graduate students mostly include that these should be recorded and made available to students who are absent as detailed in this comment from the MPhil3 student: "If the facilitators could share each presentation after each session, that would be helpful."

## Discussion, Conclusion, and Recommendations

The purpose of this pilot study was to describe TVET graduate students' usage of and reactions to virtual reading room (VRR) resources for supporting their research at a Caribbean university library. Consistent with the LibGuide litera-

ture (Castro, Chandler, and Wilcox 2015; Conrad and Stephens 2019), the overall gauging usage of the two online LibGuide resources created for supporting TVET graduate students' research during a pandemic indicated that the Homepages in both LibGuides had the most views unlike their secondary pages. Further, the Research Proposal LibGuide with the thesis template and fewer tabs had a moderately higher usage (208 views) than the TVET and Workforce Development LibGuide with more tabs (171 views). This finding is not unexpected as students were inclined to link first and stay on the Homepages for finding their needed research content (Castro, Chandler, and Wilcox 2015; Conrad and Stephens 2019). In addition, all ten graduate students using the VRR resources would have needed the thesis template in the Research Proposal LibGuide Homepage for formatting their final research projects. Hence, the latter may have contributed to the viewing statistics being higher for this Research Proposal Homepage than the other TVET and Workforce Development Homepage. Similarly, the study results from the six TVET graduate students' reactions to the VRR resources for supporting their graduate research were comparable and consistent with previous related literature. The current study revealed that their main influences for attending the VRR sessions was the need for improving their research skills to include APA 7<sup>th</sup> edition referencing, research searching tips, and needing added guidance and support for conducting their research. This feedback supports the LibGuides usage findings that gauged respondents use in viewing the following secondary LibGuide pages in this order: (1) Research Methodology; (2) Thesis Preparation; (3) Databases & E-Journals; and (4) Research Strategies. In addition, recent research conducted in the local study setting and in the previous literature also confirms the need for developing such research skills for graduate students (Farkas 2012; McKiel and Dooley 2013; Nelson and Tugwell 2022; Strutin 2008).

Moreover, TVET graduate students' reactions to their library instructional sessions and working with peers as part of the VRR experience resonated strongly with previous literature both in theory and empirical studies. The qualitative feedback on library instruction from respondents included that it was informative, enlightening, and effective in "knowing where to find the appropriate citation as well as having a personal relationship with a librarian who is willing to assist and guide you through the research process of finding appropriate and relevant resources relating to your research area." The latter instructive feedback mirrors the guidance and support of Vygotsky's situated learning theory in which the



expert, such as a skilled librarian, provides guided support to the novice researcher (Vygotsky 1978). Also, the ability of TVET graduate students in knowing where to find information digitally for their extended literature reviews is consistent with Connectivism, an emerging theory for learning in the digital age in which knowing “where” as opposed to the “what” and “how” of the information sought is more important (Downes 2022; Duke, Harper, and Johnston 2013). The reported willing and supportive approach of the university librarians coupled with peer collaboration in the VRR sessions are consonant with the empirical literature that attested to students’ favour and likely resulting success in such a learning environment (Croxtton and Moore 2020; Edwards 2018; Harris 2017; Kinsley et al. 2015; McGowan 2019; Murray and Preston 2016; Rempel et al. 2011). Respondents’ had an overall positive impression of the VRR as being necessary and useful. Their suggestions for improving the VRR facility for TVET graduate students (both MAs and MPhils) was mainly recording the VRR sessions for future use, especially for missed sessions. This feedback resonates with the empirical literature on the need for and value of digital library resources to graduate students’ successful completion of their research. Success is also measured by the quality of graduate research that higher education institutions relish for having a competitive edge in its global market (Allari et al. 2022, 212; Igbo and Imo 2017; Reed et al. 2022; Free 2021; Tang 2020; Stöpel et al. 2020; The University of the West Indies, St. Augustine 2020).

In conclusion, the study results were comparable for both MA and MPhil students and affirmed the need for VRR resources. Moreover, the LibGuides and library instruction are critical to orienting TVET graduate students’ final research projects to a successful completion, especially for extended literature reviews. The virtual reading room and accompanying LibGuides are timely for libraries, given the digital transformation characterising higher education’s trajectory that is widening access to tertiary education globally. As such, policy decisions regarding graduate research supervision in a digital age can consider VRRs (to include innovative variations) as paramount to library resources. Research supervisors can also pilot these in their practice in their various disciplines to determine “fitness for purpose” towards enhancing the quality of graduate research output. The study findings from this research is limited to a pilot study of ten TVET graduate students in the local context and cannot be generalised to other jurisdictions. Therefore, further research on collaborations between faculty of various disciplines and university librarians is highly recommended as it relates to using VRR’s for meeting the information needs of different groups of graduate students.

## References

- Abrashi, Gazmend, and Urim Sallauka. 2022. "Use of Information Technology in Academic Library Practice." *The International Information & Library Review* 54 (4):38–86. doi: 10.1080/10572317.2022.2124834
- Akareem, Husain S., and Syed S. Hossain. 2016. "Determinants of Education Quality: What Makes Students' Perception Different?" *Open Review of Educational Research* 3 (1): 52–67
- Alam, Mohammed K., and Youji Kohda. 2022. User-centered Problem-based Learning at Learning Commons: In Search of a Unique Learning Pedagogy in Academia. *Library Philosophy and Practice*, 1–25. <https://www.proquest.com/openview/eb55e32f0b5f75921ff408dcafdc772e/1?pq-origsite=gscholar&cbl=54903>
- Allari, Rabia S., Khaldoun Hamdan, Maha Alkaid Albqoor, and Abeer Shaheen. 2022. "Information Literacy: Assessment of Undergraduate and Graduate Nursing Students." *Reference Services Review* 50 (2):211–21. doi: 10.1108/RSR-09-2021-0052.
- Blair, Erik, Danielle Watson, and Shikha Raturi, eds., 2020. *Graduate Research Supervision in the Developing World: Policies, Pedagogies, and Practices*. Routledge.
- Castro Gessner, Gabriela, Adam Chandler, and Wendy Sue Wilcox. 2015. "Are You Reaching Your Audience?" *Reference Services Review* 43 (3): 491–508. doi: <https://doi.org/10.1108/RSR-02-2015-0010>
- Colvin, Gloria. 2010. "The Scholars Commons: Spaces and Services for Faculty and Graduate Students." *Florida Libraries* 53 (1): 6–8. [https://www.academia.edu/20591113/The\\_Scholars\\_Commons\\_Spaces\\_and\\_Services\\_for\\_Faculty\\_and\\_Graduate\\_Students](https://www.academia.edu/20591113/The_Scholars_Commons_Spaces_and_Services_for_Faculty_and_Graduate_Students)
- Conrad, Suzanna, and Christy Stevens. 2019. "Am I on the Library Website?: A LibGuide Usability Study." *Information Technology & Libraries* 38 (3): 49–81. <https://ejournals.bc.edu/index.php/ital/article/view/10977>
- Courtois, Martin P., Martha E. Higgins, and Aditya Kapur. 2005. "Was this Guide Helpful? Users' Perceptions of Subject Guides." *Reference Services Review* 33 (2):188–96. doi: 10.1108/00907320510597381.
- Creswell, John W. 2013. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage.
- Creswell John W., and J. David Creswell. 2017. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 4th Edition*. Newbury Park: Sage.
- Creswell, John W., Vickie Plano Clark, Michelle Gutmann, and William Hanson. 2003. "Advanced Mixed Methods Research Designs." In *Handbook of Mixed Methods in Social and Behavioral Research*, edited by A. Tashakkori and C Teddle, 209–40. Thousand Oaks, CA: Sage.
- Croxton, Rebecca, and Anne Moore. 2020. "Quantifying Library Engagement: Aligning Library, Institutional, and Student Success Data." *College & Research Libraries* 81 (3):399–434. doi:10.5860/crl.81.3.399.

- Dann, Beverly J., Anne Drabble, and Janet Martin. 2022. "Reading Between the Lines: An Examination of First-Year University Students' Perceptions of and Confidence with Information Literacy." *Journal of Information Literacy* 16 (1): 50. <https://doi.org/10.11645/16.13106>.
- Downes, Stephen. 2022. "Connectivism." *Asian Journal of Distance Education* 17 (1): 58–87.
- Duke, Betsy, Ginger Harper, and Mark Johnston. 2013. "Connectivism as a Digital Age Learning Theory." *The International HETL Review*, 2013 (Special Issue) 4–13.
- Edwards, Julie Biando. 2018. "Added Value or Essential Instruction? Librarians in the Twenty-First-Century Classroom." *Reference & User Services Quarterly* 57 (4):285–93. doi:10.5860/rusq.57.4.6706.
- Farkas, Meredith G. 2012. "Research Guide Technologies." *Tips and Trends (Spring)*. [https://pdxscholar.library.pdx.edu/ulib\\_fac/90/](https://pdxscholar.library.pdx.edu/ulib_fac/90/)
- Ferdinand-James, Debra, and Claudette Medina-Charles. 2022. "Scaffolding Graduate Research Supervision in a Higher Education Caribbean Context." *The UWI Quality Education Forum* 26: 29–47. <https://journals.sta.uwi.edu/ojs/index.php/qef/article/view/8461/7030>
- Free, David. 2021. "Faculty-Librarian Collaborations: Integrating the Information Literacy Framework into Disciplinary Courses." *College & Research Libraries News* 82 (1):7.
- Golafshani, Nahid. 2003. "Understanding Reliability and Validity in Qualitative Research." *The Qualitative Report* 8 (4): 597–607.
- Jones, Derek, and Andrew Grote. 2018. "The Library as Learning Commons." *Planning for Higher Education* 46 (3): 56–64. [https://www.acentech.com/wp-content/uploads/2021/08/PHEV46N3\\_PlanningStory\\_Library\\_As\\_Learning\\_Commons\\_Jones-Grote.pdf](https://www.acentech.com/wp-content/uploads/2021/08/PHEV46N3_PlanningStory_Library_As_Learning_Commons_Jones-Grote.pdf)
- Harris, Sasekea Yoneka. 2017. "Undergraduates' Assessment of Science, Technology, Engineering and Mathematics (STEM) Information Literacy Instruction." *IFLA Journal* 43 (2):171–86. doi: 10.1177/0340035216684522.
- Jackson, Rebecca, and Kristine K. Stacy-Bates. 2016. "The Enduring Landscape of Online Subject Research Guides." *Reference & User Services Quarterly* 55 (3):219–29. doi: 10.5860/rusq.55n3.219.
- Igbo, Harriet Uche, and Nwabuisi Thomas Imo. 2017. "Collaborative Teaching as a Strategy for Imparting Information Literacy in Students: Faculty-Librarian Perceptions." *Library Philosophy and Practice*. [https://digitalcommons.unl.edu/libphilprac/index.53.html#year\\_2017](https://digitalcommons.unl.edu/libphilprac/index.53.html#year_2017)
- Kennedy, Heather R., and Anne Marie H. Gruber. 2020. Critical Thinking in a Service-Learning Course: Impacts of Information Literacy Instruction. *Communications in Information Literacy* 14 (2): 205–26. <https://www.proquest.com/scholarly-journals/critical-thinking-service-learning-course-impacts/docview/2479483106/se-2>
- Kinsley, Kirsten, Rachel Besara, Abby Scheel, Gloria Colvin, Jessica Evans Brady, and Melissa Burel. 2015. "Graduate Conversations: Assessing the Space Needs of Graduate Students." *College & Research Libraries* 76 (6):756–70. doi: 10.5860/crl.76.6.756.
- Makgahlela, Lefose, and Solomon Bopape. 2014. "The Use of Electronic Information

- Resources for Academic Research by Postgraduate Students at Delta State University, Abraka, Nigeria.” *South African Journal of Library and Information Science* 80 (2):1–7. doi: 10.7553/80-2-177.
- Marcus, Cecily, Lucinda Covert-Vail, and Carol Mandel. 2007. “NYU 21st Century Library Project: Designing a Research Library of the Future for New York University: Report of a Study of Faculty and Graduate Student Needs for Research and Teaching.”
- Marshall, Sarah M., Barbara Klocko, and Jillian Davidson. 2017. “Dissertation Completion: Higher Education’s Invisible Problem.” *Journal of Educational Research and Practice* 7 (1): 74–90.
- McGowan, Bethany Sheriese. 2019. “Reimagining Information Literacy Instruction in an Evidence-Based Practice Nursing Course for Undergraduate Students.” *Journal of Medical Library Association* 107 (4):572–78. doi: 10.5195/jmla.2019.663.
- McKiel, Allen, and Jim Dooley. 2013. “Changing Library Operations: Information Literacy and E-resources: The Credo Student Survey.” *Against the Grain* 25 (2). doi: 10.7771/2380-176X.6505.
- Murray, Aoife, and Hugh Preston. 2016. “Empowering International Nursing Students to Become Effective Library Users.” *Health Information and Libraries Journal* 33 (3): 239–43. doi: 10.1111/hir.12149.
- Nelson, Karlene Saundria, and Yolanda V. Tugwell. 2022. “Information-seeking Behaviour of Students at a Caribbean University during the COVID-19 Pandemic.” *Library Management* 43 (3/4): 257–79. doi: 10.1108/LM-10-2021-0089.
- Ocholla, Lyudmila, Zanele Hadebe, and Grace Mutsvunguma. 2016. “The Impact of New Information Services on Teaching, Learning and Research at the University of Zululand Library.” *South African Journal of Library and Information Science* 82 (2). <https://doi.org/10.7553/82-2-1620>
- Palumbo, Laura. 2016. “Championing Institutional Goals: Academic Libraries Supporting Graduate Women in STEM.” *The Journal of Academic Librarianship* 42 (3):192–99. doi: 10.1016/j.acalib.2016.03.003.
- Patton, Michael Q. 2014. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*. Sage.
- Patrickson Stewart, Sonia G., and Nadine Newman. 2017. “User Services in the Digital Environment: Implications for Academic Libraries in the English-speaking Caribbean”. *Library Review* 66 (4/5), 213–34. <https://doi.org/10.1108/LR-07-2016-0058>
- Pelletier, Kathe, Malcolm Brown, D. Christopher Brooks, Mark McCormack, Jamie Reeves, Nichole Arbino, Aras Bozkurt, Steven Crawford, Laura Czerniewicz, Rob Gibson, Katie Linder, Jon Mason, and Victoria Mondelli. 2021. “2021 EDUCAUSE Horizon Report Teaching and Learning Edition.” Boulder, CO: EDU. <https://www.learntechlib.org/p/219489/>.
- Pittsley, Kate A., and Sara Memmott. 2012. “Improving Independent Student Navigation of Complex Educational Web Sites: An Analysis of Two Navigation Design Changes in LibGuides.” [https://commons.emich.edu/lib\\_sch/1/](https://commons.emich.edu/lib_sch/1/)

- Pring, Richard 2001. "The Virtues and Vices of an Educational Researcher." *Journal of Philosophy of Education* 35 (3): 407–21.
- Rackham Graduate School. 2020. *How to Mentor Graduate Students: A Guide for Faculty*. The Regents of the University of Michigan. <https://rackham.umich.edu/downloads/how-to-mentor-graduate-students.pdf>
- Reeb, Brenda, and Susan Gibbons. 2004. "Students, Librarians, and Subject Guides: Improving a Poor Rate of Return." *Portal (Baltimore, Md.)* 4 (1):123–30. doi: 10.1353/pla.2004.0020.
- Reed, Maureen, Don Kinder, and Cecile Farnum. 2022. "Collaboration between Librarians and Teaching Faculty to Teach Information Literacy at One Ontario University: Experiences and Outcomes." *Journal of Information Literacy* 1 (3): 29. doi: 10.11645/1.3.28.
- Remenyi, Dan, ed. 2016. *Innovation in Teaching of Research Methodology Excellence Awards: An Anthology of Case Histories 2016*. Reading, U.K.: Academic Conferences and Publishing International.
- Remenyi, Dan, and Arthur Money. 2012. *Research Supervision for Supervisors and Their Students*. Reading, U.K.: Academic Conferences and Publishing International.
- Rempel, Hannah G., Uta Hussong-Christian, and Margaret Mellinger. 2011. "Graduate Student Space and Service Needs: A Recommendation for a Cross-Campus Solution." *The Journal of Academic Librarianship* 37 (6): 480–87. <https://doi.org/10.1016/j.acalib.2011.07.004>.
- RMIT University, Europe. 2020, November. *Future of Work in The Digital Economy: Developing Skills for Industry 4.0*. <https://www.rmit.edu.au/news/all-news/2020/nov/industry-40-skills-report>
- Roach, Alex, Bruce K. Christensen, and Elizabeth Rieger. 2019. "The Essential Ingredients of Research Supervision: A Discrete-Choice Experiment." *Journal of Educational Psychology* 111 (7): 1243–60.
- Robinson, Karlene Patricia, Karlene Saundria Nelson, and Jessica Claire Lewis. 2018. "Thesis Consultation: A Review." *Reference Services Review* 46 (1):16-28. doi: 10.1108/RSR-04-2017-0009.
- Salmon, Gilly. 2019. "May the Fourth Be with You. Creating Education 4.0." *Journal of Learning for Development* 6 (2): 95–115.
- Singh, Punit K. 2019. "Establishing Library Learning Commons in Universities of India: A Case Study of BHU Library System". *Library Philosophy and Practice*, 1–11. <https://www.proquest.com/scholarly-journals/establishing-library-learning-commons/docview/2236131187/se-2>
- Sinkinson, Caroline, Stephanie Alexander, Alison Hicks, and Meredith Kahn. 2012. "Guiding Design: Exposing Librarian and Student Mental Models of Research Guides." *Portal (Baltimore, Md.)* 12 (1): 63–84. <https://doi.org/10.1353/pla.2012.0008>.
- Somerville, Mary M., and Lydia Collins. 2008. Collaborative Design: A Learner-Centered Library Planning Approach. *The Electronic Library* 26 (6): 803–20.
- Staley, Shannon M. 2007. "Academic Subject Guides: A Case Study of Use at San José State University." *College & Research Libraries* 68 (2):119-40. doi: 10.5860/crl.68.2.119.

- Stoeger, Heidrun, and Albert Ziegler, eds. 2021. "Special Issue: Mentoring: Theoretical Background, Empirical Findings, and Practical Applications." *Annals of the New York Academy of Sciences* 1483 (1): 1–243. <https://nyaspubs.onlinelibrary.wiley.com/toc/17496632/2021/1483/1>
- Stöpel, Michael, Livia Piotto, and Xan Goodman. 2020. *Faculty-Librarian Collaborations: Integrating the Information Literacy Framework into Disciplinary Courses*. Chicago, IL: Association of College and Research Libraries
- Tang, William Ko-Wai. 2020. "One Plus One is Greater than Two: Faculty-Librarian Collaboration for Developing Information Literacy in Higher Education." *IAFOR Journal of Literature & Librarianship* 9 (2): 82–86. doi: 10.22492/ijl.9.2.05.
- Tian, Wenwen, Richard Watson Todd, and Pornapit Darasawang. 2012. Scaffolding in PhD Supervisory Talk. *LEARN Journal: Language Education and Acquisition Research Network* 5: 30–44. <https://soo4.tci-thaijo.org/index.php/LEARN/article/view/102815>
- THE World University Rankings. 2021. "The University of the West Indies." <https://www.timeshighereducation.com/world-university-rankings/university-west-indies>
- UNESCO Educational Sector. 2020, April. *Distance Learning Strategies in Response to COVID-19 School Closures*. UNESCO COVID-19 Education Response, Education Sector Issue Note n 2.1. <https://unesdoc.unesco.org/ark:/48223/pf0000373305>
- The University of the West Indies*. 2023. *TVET and Workforce Development Library Resources: Home*. <https://libguides.uwi.edu/c.php?g=1196331&p=8749262>
- The University of the West Indies, Mona. 2023a. *Mona Library: Liaison Librarians*. Liaison Librarians | Mona Library (uwi.edu)
- The University of the West Indies, Mona. 2023b. *The School of Education: Graduate Programmes*. Graduate Programmes | School of Education (uwi.edu)
- The University of the West Indies, St. Augustine. 2020. *Creating Value: Annual Report 2019–2020*. The Marketing & Communications Office, The University of the West Indies, St. Augustine. [https://sta.uwi.edu/resources/documents/UWI\\_AnnualReport\\_19\\_20.pdf](https://sta.uwi.edu/resources/documents/UWI_AnnualReport_19_20.pdf)
- Vygotsky, L. S. 1978. *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.
- World Economic Forum. 2020. "Schools of the Future: Defining New Models of Education for the Fourth Industrial Revolution." [http://www3.weforum.org/docs/WEF\\_Schools\\_of\\_the\\_Future\\_Report\\_2019.pdf](http://www3.weforum.org/docs/WEF_Schools_of_the_Future_Report_2019.pdf)
- World Economic Forum. 2022. "Catalysing Education 4.0 Investing in the Future of Learning for a Human-Centric Recovery." [WEF\\_Catalysing\\_Education\\_4.0\\_2022.pdf](https://www.weforum.org/reports/catalysing-education-4-0) (weforum.org)
- Yvelson-Shorsher, Anna, and Jenny Bronstein. 2018. "Three Perspectives on Information Literacy in Academia: Talking to Librarians, Faculty, and Students." *College & Research Libraries* 79 (4):535–53. doi: 10.5860/crl.79.4.535