

Research Paper

A Preliminary Investigation Into the Effectiveness of Online Modules for Teaching Research and Writing Skills to Multilingual International Post-Secondary Students

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Abstract

This paper describes a pilot project undertaken in 2019 by library instructors at Simon Fraser University (SFU) to transition from in-person to online research and writing skills instruction within the context of a foundational course for multilingual international students at Fraser International College (FIC), an international pathway school to SFU. Our research and writing skills modules were integrated into a course with academic skill-building opportunities to support students' successful transition to English-medium university studies. This article reports findings from our mixed-methods study about the effectiveness of these modules. The first semester after we transitioned online, we collected response data from course instructors and students. Preliminary findings suggest students benefited from the self-paced and flexible nature of the online learning experience and resources. Course instructor feedback suggests a blended learning approach combining in-person and online components might be more effective for developing students' university-level research and writing skills. Our work on the modules was highly collaborative, involving an extraordinary level of commitment from FIC and SFU Library staff and instructors. Our findings suggest further collaboration with more specialists, especially with expertise in the area of English language learning, would produce more effective online resources for multilingual international students developing their research and writing skills.

Introduction

As this paper makes its way to publication in 2023, we are aware that faculty, staff, and students in post-secondary institutions have become all too familiar with transitioning in-person programs and services online, and then often back again, in response to the global COVID-19 pandemic. However, this paper describes work undertaken in 2019 at the Simon Fraser University (SFU) Library in British Columbia (BC), Canada to transition research and writing skills instruction from an in-person model to a fully online model. Whereas the widespread transition to online instruction beginning in March 2020 was undertaken as an emergency response intended to help slow the spread of COVID-19, our team of library instructors transitioned this aspect of our programming online back in 2019 for far more quotidian reasons. Namely, the number of requests we were receiving for research and writing skills workshops to support a foundational, academic skills program offered at Fraser International College (FIC) was becoming

unmanageable due to our staffing and space constraints. As a result, we needed to work towards developing a more strategic, course-integrated and sustainable approach to library instruction in this area.

Background

SFU is a public research university located in BC with over 30,000 students enrolled in undergraduate and graduate programs. FIC is located on the Burnaby campus of SFU, and offers classes at both the Burnaby and Surrey campuses. FIC is an academic pathway college for international students in BC, many of whom are also multilingual and English as an Additional Language (EAL) learners. Students from all over the world are admitted into FIC with a combined letter of offer from SFU, and students who successfully complete one year at FIC may directly transfer into the second year at SFU. FIC's program is specifically designed to support international students with the transition to studying in a Canadian post-secondary environment, including supporting multilingual students who are actively engaged with EAL learning as a part of their transition to Canadian post-secondary studies. The FIC Cornerstone course provides students with foundational, skill-building opportunities as they begin post-secondary studies in Canada. This course also includes a particular focus on EAL learning.

SFU Library has a Memorandum of Understanding (MOU) with FIC that affords FIC students with access to library resources, including some research and writing support services. As a part of this MOU, FIC instructors are encouraged to coordinate with library instructors (including instructors from the Student Learning Commons, which houses SFU's equivalent to a writing centre) to support their students' research and writing skills development. In 2018, library instructors offered 40 in-class research and writing skills development workshops to approximately 900 FIC students. At that stage, the three-year trend also indicated that the number of FIC Cornerstone course sections would likely continue to increase in future (although, it is worth noting that the COVID-19 pandemic significantly disrupted this trend). Scheduling these workshops was complex as it involved ensuring that all of the following were available during the requested class time:

- the library's one instructional computer lab that was large enough for the classes;
- an instructor from the library's Learning and Instruction (L&I) division;
- an instructor from the library's Student Learning Commons division.

In addition to being concerned about the sustainability of offering these in-class workshops from an administrative perspective, we also had pedagogical concerns. These workshops were scheduled as two back-to-back, one-hour sessions: a research focused session followed by a writing focused session. These back-to-back sessions were content heavy. As a result, library instructors often felt time pressures when covering the workshop content and activities. The intensive pace of these research and writing skills development sessions also seemed pedagogically unsupportive for multilingual students who were actively engaged in English language learning.

The integration of these research and writing skills development workshops into the FIC Cornerstone course fits within an approach to instruction that is known across the library

profession as “one-shot” instruction. In September 2022, the *College and Research Libraries Journal* (C&RL) published a special issue focused on one-shot instruction. According to Cook’s (2022) meta-analytic study on the effectiveness of library one-shot instruction published in that issue, this is “the most pervasive method of providing information literacy instruction” in academic libraries (p.739). Cook further explained that “the category of the ‘one-shot’ includes a diverse range of pedagogical approaches, goals, and outcome measures, all bound together by the common qualities of being a single standalone, time-limited (often 45- or 60-minute, though may be as short as 15 minutes) session” (p.740). In the introduction to the C&RL special issue on one-shot instruction, Pagowsky (2022) wrote,

I am not claiming that one-shots are entirely problematic all of the time. However, this deep-seated, and perhaps innate at this point, instruction model does need to be problematized for us to even have the option to break free. We can do this through the lens of critique as care, meaning we critique because we care and hope for better. (p.714)

As part of the critique as care offered in that special issue, Cook’s (2022) meta-analysis on the effectiveness of one-shot instruction suggested “that one-shots that are targeted at specific skills to be measured on a test are more likely to have an effect than those that ask students to perform authentic tasks” (p.746). Relevant to the content of our instructional support, LeMire et al. (2023) argued that “separating library instruction from the teaching of writing skills creates the perception of a false division between library research and writing, as though they are discrete processes. Research and writing, however, are intertwined and recursive; they are inherently linked” (p. 293). Our instruction in the FIC Cornerstone course was intended to support students to complete their final course assessment, which was to write a compare-and-contrast essay drawing on sources they found through library research—an authentic task goal. Furthermore, we were attempting to support the students with both their research and writing tasks for the assignment, and to avoid reinforcing a false divide between these skills. We were therefore motivated to take a different approach to our library instruction for this course because of the intersection between increasing demand and concern about the effectiveness of our instruction to genuinely support students with their research and writing tasks. As we wrote in our initial funding proposal to support the project:

It is difficult to staff, schedule, and book rooms for all requested classes. Instructors are challenged to fit all requested content into the available course sessions and times. Students experience information overload and struggle to find time to reflect on or practice strategies covered in the classroom. (Goldrick-Jones et al., 2018, p.1)

As a result of these intersecting concerns, in 2018 we secured financial support from SFU’s administration to develop a series of online, interconnected research and writing skills modules (hereinafter, “the modules”) for FIC Cornerstone within Canvas, SFU’s Learning Management System (LMS).

Project Overview

We hired a Graduate Writing Facilitator and a Reference Librarian to support us with the work of developing these modules, which were focused on introducing and elaborating on the content

from our past in-class research and writing workshop presentations. In developing these modules, we worked closely together to ensure we were taking a coordinated and integrated approach to teaching these skills and concepts so that we could effectively present research and writing skills as “iterative and recursive processes that inform each other” (LeMire et al., 2023, p. 307). Another intended benefit for students in transitioning to these online learning modules was that they could be used throughout the entire semester of study in their course, and provide more accessible, point-of-need learning support in comparison to the one-shot sessions we had previously delivered. Through this online and asynchronous approach, students could revisit the resources at their own pace as their learning progressed through the course and as they took up the work required by their course assignments (Munn & Small, 2017). We intentionally created the modules to leverage the strengths of online, asynchronous learning supports. Namely, they were designed to encourage students to interact with, reflect on, practice, and repeat research and writing exercises at various points in their assignment preparation when developing and applying those skills would be most relevant and helpful. Screenshots of the modules are provided below to help the readers visualize what we are discussing (see Figures 1–4 below).

The modules represented a significant departure from the way we had previously provided instructional support for FIC Cornerstone. Although SFU and FIC use different Learning Management Systems—Canvas at SFU and Moodle at FIC, the modules were built in Canvas because this was the platform that we, as library instructors, had direct access to work within. In addition to building the modules, we wanted to ensure that the course instructors were supported to engage effectively with the modules. We recognized that both the (potentially) unfamiliar platform and this change in approach to library instruction would heighten the need for course instructor support. Once the content of the modules was complete, we set up an instructor-only sandbox course. We also attended an FIC instructor professional development day to present the modules and discuss opportunities for integrating them into the existing FIC Cornerstone curriculum.

Figure 1

Module Thumbnail in Canvas Dashboard



Figure 2*Overview of all of the Research and Writing Modules*

Work to develop the modules and introduce them to the course instructors took place over the spring and summer terms in 2019, and we did an initial pilot of the modules in two sections of the FIC Cornerstone course in Fall 2019. We did a full-scale pilot of the modules in spring 2020, integrating the modules into all sections of FIC Cornerstone that term. It was during this full-scale pilot that we conducted the research that informs this article. Of course, it was also during the spring 2020 semester that emergency work from home orders were received by many around the world in response to COVID-19. These orders impacted both SFU and FIC, with many international students returning to their home countries before the end of the spring 2020 term. While the modules provided some instructional continuity and stability in the context of these emergency orders (since they were already available for remote, asynchronous access), these orders undoubtedly impacted our research for this project, including the student response rate for our survey.

Figure 3*Content in the Introductory Module*

INTRODUCTION: Welcome to the SFU Library		
Introduction: Pre Quiz	Sep 25, 2019 2 pts	✓
Introduction to SFU Library		✓
Why use a Library? Why not just use Google?		✓
FIC CNST Scavenger Hunt: Assignment		✓

Figure 4*Content in the Final Combined Research and Writing Module*

5. COMBINED RESEARCH & WRITING MODULE: Incorporating & Citing Sources; Developing Para... Complete All Items		
Welcome: Let's Put it all Together	View	✓
Pre-Quiz: What's not working in this paragraph?	Nov 20, 2019 7 pts	✓
A Better Version		✓
My Essay is Woven, not Patched		✓
Why We Cite		✓
Citation Toolbox		✓
Tips & Tricks to Track your Sources		✓
Post-Quiz: Spot the Correct APA Citation Format	Nov 20, 2019 4 pts	✓
How to ICE your Paragraph	Nov 20, 2019	✓
Peer Reviewed Paragraph Practice (Part 2)	0 pts	⊘

Literature Review

The development of information literacy and writing skills is a continuing and iterative process that involves a range of abilities and knowledge practices on a spectrum, from basic and practical skills to advanced intellectual cognitive functioning (Secker & Coonan, 2011). Library instructors can play a vital role in supporting students with building their research and academic

writing skills, and we are grateful when course instructors recognize our expertise in these areas and seek to collaborate with us in this area (Chao et al., 2010; Xu & Morris, 2007). Collaborations may involve library instructors being “embedded into disciplinary courses where they teach multiple one-shots, co-design assignments and assessments, and provide instructors with activities and train-the-trainer workshops. These strategies can be effective ways to increase information literacy learning beyond the scope of a one-shot” (LeMire et al., 2023, p. 296). In this study, our emphasis on the use of learning modules is not intended to replace other kinds of innovative and productive collaborations between course and library instructors, but rather to see what is possible when we bring these into an online, asynchronous mode.

Many post-secondary institutions have been exploring the possibilities offered by online learning modalities for years. These modalities include both fully asynchronous and blended approaches that integrate online and in-person learning components. These online options have the potential to increase accessibility, accommodate greater flexibility, and recognize the familiarity that many students already have with online search tools and resources. Online materials can also be especially useful for students who are studying in a language that they are actively engaged in learning. This usefulness is because multilingual students, including those who have EAL, may strategically seek out online tools that can help them with translating asynchronous course content into another language as they study, and they can also work through this content in a self-paced way without the time pressures of in-person learning. In these ways, online learning modes can offer a strengths-based approach to developing information and academic literacy.

For the purposes of this paper, we define academic literacy as a set of interconnected skills and abilities that students require to be successful in their post-secondary coursework (Gunn et al., 2011; Sutton, 2011). These are skills that are not discipline or course-specific, though there are also discipline and course-specific academic literacies. Our project focused on supporting students to develop their writing and information literacy skills as core competencies of academic literacy. Information literacy is an important component of academic literacy, and is defined as “the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning” (Framework for Information Literacy, 2015). In practice, information literacy instruction is often focused on developing strategies and skills for strategically finding, critically evaluating, and effectively using research resources for a range of course assignments.

To our best knowledge, to date, little study has been conducted on the online delivery of information and academic literacy instruction for multilingual international students. We are aware that some Canadian scholars have developed a nation-wide survey aiming to measure the effectiveness of library information literacy instruction in Canadian higher education (Julien, 2005). But, as Trescases (2008) wrote, “these studies focused on information literacy instruction in general and not on instruction aimed primarily at first-year students” (p. 303), or, in our case, multilingual students seeking to transition from an international college into university. Research focused on the effectiveness of online academic literacy instruction is an increasingly essential area of study since the COVID-19 pandemic has emphasized the need for adaptable and easily accessible ways of learning and seeking academic assistance. Understanding the potentials of

online academic literacy support and instruction delivered to multilingual international students can help to shape effective practices for the development of successful online library instruction. It is also rare in the existing literature to hear directly from students and classroom instructors about the ways they actually use online support modules or about their own assessments of the value of such online learning tools. We believe that discussing evidence from students and course instructors creates a more complete picture of the effectiveness of online academic literacy supports.

The Study

Research Questions and Methods

Our assessment of the modules has focused on the following areas:

1. Students' perspectives on the value, efficacy, and usefulness of the research and writing modules, especially for completing core course requirements.
2. Instructors' perspectives on the value, efficacy, and usefulness of the research and writing modules, especially for supporting their core curriculum expectations.
3. Challenges that students and instructors encountered when using the research and writing modules, especially compared to the in-person research and writing instruction previously offered by the library.

We received an assessment grant from the SFU Library to support our research into the impact of the modules. This assessment grant funded us to hire a research assistant who helped us to design and conduct a research process. The core of this process was distributing two surveys, one to FIC Cornerstone instructors and the other to students in the course. Both surveys were administered using the SFU-supported version of SurveyMonkey. We distributed these surveys at the end of the spring 2020 term, after the students had completed their final compare-and-contrast essay, which the modules were designed to support them to research and write. The instructor survey contained several logically connected open-ended questions. The student survey contained fifty-one questions including a combination of yes/no, Likert-scale, and open-ended questions.

To guide the development of our survey instrument for students, we examined relevant research articles about the effectiveness of online library and writing centre instruction. We developed the student survey based on Kirkpatrick (1996) and Tham and Werner's (2005) recommendations for survey constructs, such as perception, content learning, and behaviour, with some open-ended questions that elicited written feedback at the end of the survey. The course instructors were our close partners in the development and delivery of the research and writing modules, and so our questions for them targeted:

- how they used the online modules in their classes,
- the challenges they faced supporting their students to engage with the modules,
- the merits they thought the online modules had, and
- their suggestions for future improvement of the modules.

Invitations for filling out the survey were sent out to the students enrolled in seven Cornerstone classes. We had thirty-five ($n=35$) student respondents. These students indicated the following languages spoken at home: Chinese, Korean, and Portuguese. Six course instructors ($n=6$) responded to the instructor survey. They were all experienced teachers specializing in developing multilingual international students' academic literacy.

Data Analysis

The student survey consisted of 52 items, 36 of which were binary (yes/no) questions pertaining to components of the modules. The next nine questions were Likert scale questions in which students were asked to select their level of agreement with statements reflecting their perceptions of the modules. To prevent acquiescence bias (Krosnick, 1999), there was no neutral choice presented. The next seven questions inquired about students' suggestions for the modules, their demographic information, their stage of completeness at FIC, and their linguistic backgrounds. For the purposes of this article, we focused our analysis on one yes/no question asking about the students' general experience with the online modules: whether the modules helped them with their final essay. We also analyzed the Likert scale items (nine questions in total) and determined the response rate for each scale (agree, kind of agree, kind of disagree, and disagree) among the 35 respondents. We extracted the three open-ended questions and analyzed them thematically. The bullet points below show the details of the three open-ended questions:

- What's one thing you learned in the online modules that you think will stay with you?
- What's one question that you still have about the research and/or writing process?
- What suggestion would you give us to improve the online modules (e.g., what functions do you want?)

For the instructor survey, six instructors answered 18 open-ended questions on their pedagogical use of the modules, their experiences with the modules, and suggestions for improvement. Our approach to data collection and analysis drew on grounded theory approaches (Cohen & Manion, 1994; Martin & Turner, 1986). We analyzed and categorized the instructors' responses based on the codes developed, hoping to seek some guiding principles for online instruction from the data we collected. Initially, we analyzed all instructor responses and identified common themes. The instructors' responses were then extracted and categorized according to the established themes. The project team had two meetings to discuss the categories, obtain consensus, and, where required, modify the categorization.

Findings

Student Survey

Students generally agreed that the online modules helped them to develop their research and writing skills for their final essay (Yes = 86%; No = 14%). Specifically, as can be seen in Table 1 below, students agreed that after working through the online modules, their summarizing skills had been improved (71%), they learned helpful strategies for writing their essays (61%), and they applied what they had learned while writing their final essays (71%).

Table 1

Student Survey Descriptive Results

Questions/Scale	Agree	Kind of Agree	Kind of Disagree	Disagree
Q37* After working through The Writing Module on Summary Writing, I feel that my summarization skill has been improved	71%	12%	9%	9%
Q38 After working through the Research Module, I am more confident in conducting research	50%	27%	12%	12%
Q39 After working through the Research Module on Evaluating Sources, I learned some good strategies for identifying trustworthy sources for my research	50%	29%	15%	6%
Q40 After working through the Writing Module on Essay Paragraphs, I learned some good strategies for writing my essays	61%	12%	18%	9%
Q41 After working through the Writing Module on Thesis & Outline Building, I am more confident in brainstorming ideas for my essays	56%	27%	3%	15%
Q42 After working through the Research Module, I can describe ways to identify scholarly and popular sources	47%	32%	9%	12%
Q43 I know how to get help from the Library when I need it.	56%	27%	12%	6%
Q44 At the end of the semester, I feel that the online modules supported my independent learning	59%	24%	12%	6%
Q45 I used what I learned from the online Canvas modules when researching and writing my final essay for FIC EFC	71%	18%	6%	6%

*Questions in the table start at 37 because question 1 to question 36 are yes/no questions; only results of one of the yes/no questions is reported here as it is the most relevant to this article.

Based on their written responses, we can also report that students felt that after using the modules, their APA citation skills had improved and that these skills would likely be retained after the course (Student 4, Student 15, Student 26). Some of the students indicated that they would like to see more interactive features included in the online modules (Student 21, Student 23, Student 34). Some of the students appreciated that the online modules were easily accessible at any time (Student 5). However, other students reported that they experienced technical difficulties when using the modules (Student 5) as they were hosted on a different LMS than the one primarily used and supported by the college.

Instructor Survey

Three common themes that emerged from the instructor survey included “How modules were used,” “Benefits of using the modules,” and “Challenges.” Subthemes were further developed as shown in the Table 2 below. Complete data are included in Appendix 2.

Table 2*Instructor Survey*

Themes	Subthemes	Example Excerpts
How were modules used in class?	<ul style="list-style-type: none"> • Homework • Extra practice 	<ul style="list-style-type: none"> • I had students do many of the modules as homework in preparation for research. Students were more able to identify academic sources. They understood how to evaluate credibility better. (Instructor 1) • The students used the module as both review and practice and as assignments to do before the lectures. (Instructor 4)
Benefits of using the modules	<ul style="list-style-type: none"> • Research skill improvement • Writing skill improvement • Self-pacing advantage • Others (specific modules that are helpful) 	<ul style="list-style-type: none"> • Many of the students were able to distinguish the difference between quoting, paraphrasing, and summarizing their sources within their research papers and properly use I.C.E. in their paragraphs. (Instructor 2) • A good chunk of the class was able to use ICE in their writing in a way that made sense connected to their topic in a meaningful way. (Instructor 5) • They were able to check the information and examples as many times as they wanted on a screen—they seem to be more motivated by onscreen info. The information is quite dense and some students had issues finding their way around. (Instructor 6) • Paragraph and essay writing had to be the best ones. Lots of great examples even though they were difficult topics. I loved the brainstorming/thesis building module. There were videos I believe on the steps needed to take to come up with a thesis. (Instructor 5)
Challenges	<ul style="list-style-type: none"> • Research skills • Writing skills • Content level • Student language level • Pedagogical • Technical 	<ul style="list-style-type: none"> • Many still had problems with using APA to properly cite their sources (in-text citation and references) and struggled with patchwork writing despite class practice and usage of canvas on avoiding plagiarism and patchwork writing. There was also a confusion with weaving contents from their research versus using their own input. Some ended up not using any research sources within parts of their paper to properly support a point while others made a mistake of using too many facts from their sources (one after another) without explaining the significance of their ideas properly to the reader. (Instructor 2) • Some examples and exercises were still at a too high level of challenge for some students. (Instructor 4) • The information is quite dense and some students had issues finding their way around. Students benefited from the types of sources and evaluating sources bit. It is clearly highlighted and it saved them tons of time and saved me tons of explaining! I cannot say they are less effective. I find the course is already overloaded with info and to be honest, we could not cover a lot of things. One of the main issues is the amount of information in some of the modules. (Instructor 6) • I did not use the part on the “Independent Paragraphs” within the writing module section because the information was not really relevant to what was covered in class with my own materials on writing paragraphs, especially with the samples of “Video Game Addictions” and the Post Quiz related to forest fires did not use the same structure, transitions, cause and effect phrases, and topic/concluding sentences format taught in class. (Instructor 2)
Recommendations	<ul style="list-style-type: none"> • Improving language • Adding content • Blended modules 	<ul style="list-style-type: none"> • I would love to have both the online components and the in-person training to help students prepare for research to help them navigate the SFU Library portal and how to access information. (Instructor 1) • We are teaching the basic essay structure, so would you mind changing the 1–2 sentence thesis explanation to a complex one-sentence thesis in your description? (Instructor 3) • They [the students] would benefit from more paraphrasing exercises and from evaluating source exercises—easier examples helpful ... some examples and exercises were still at a too high level of challenge for some students ... Both formats of workshops [in person and online] were helpful and appreciated. If we could have more videos and audios it might help with engagement and confidence levels of students. (Instructor 4) • I'd like to keep the online library modules, but I'd really like the opportunity for students to still go to the computer labs at SFU and have the library staff there help them with their initial researching. (Instructor 5)

Discussion

Based on the students' and instructors' survey responses, we have found that there are merits to using online modules for research and writing instruction, especially for multilingual international students enrolled in an academic preparation program.

The majority of student respondents indicated that they returned to the modules when they were completing their assignments for their course (Q45: 71% agree; 18% kind of agree; 12% kind of disagree/disagree). This finding confirmed the original intention of the project—that is developing students' research and writing skills through the opportunities to view the modules when they were most relevant to their coursework and return to them multiple times if content needed to be reviewed. Consistent with previous research findings (e.g., Zhang et al., 2015), the present project reveals that students seem to benefit from the repeatability of online modules.

The content of the modules seems to have supported students with developing both declarative and procedural knowledge of academic writing and information literacy (Myhill & Jones, 2015; Penner et al., 2022). In particular, the online modules can help students develop criteria and guidelines for conducting research for their final essay assignment, including how to select keywords to search with, critically evaluate resources, select appropriate citation styles for specific genres or disciplines, and understand the importance of citing other scholars' work when paraphrasing (Yahia & Egbert, 2023). In addition, the online modules can also help these students develop the procedural skills needed to cite the sources, such as using a reference management software or formatting the citation manually. Repeatedly accessing the online modules might reinforce the acquisition of these students' research and writing skills and make them more likely to transfer what they have learned in the online modules to the completion of their class assignments (Amiryousefi, 2016). It might also further develop their confidence for engaging in scholarly research and writing activities (Kim, et al., 2015). When student writers navigate content in the online space, their self-organizing and self-regulatory systems allow them to take in given information, process the information, and create new information internalized as part of their declarative and procedural knowledge (Myhill & Jones, 2015). Online modules provide an accessible environment that repeatedly reinforces students' academic literacy skills as they complete their assigned coursework.

The self-paced nature of the online modules and the flexibility of pedagogical ways to incorporate them into the existing course curriculum also stood out as benefits. From the perspective of self-regulated learning theory (Panadero, 2017), the modules engage student agency and empower their conscious decisions vis-à-vis their own learning. Online modules allow multilingual students to assess their own learning and decide on pathways to further their learning (Penner et al., 2022). The students' overall positive perceptions of the online modules suggest that library instructors should consider developing additional online support materials to increase the accessibility, repeatability, and flexibility of instruction.

Some of the course instructors' written responses pointed to potential benefits of integrating both in-person and online instruction. As suggested by Walton and Hepworth (2013), students may benefit from a blended approach to academic literacy instruction, with more foundational materials presented online (for ease of access and repeatability) and more complex materials presented in-person. Having said that, the terms blended and hybrid have been somewhat contested and evolving in recent years. At SFU, the Centre for Educational Excellence (CEE) has defined blended learning as a type of course where some of the face-to-face classroom sessions are substituted with self-paced online activities (Garrison & Vaughan, 2008; Martínez-Caro & Campuzano-Bolarín, 2011). The modules in this project were originally designed to replace the in-person instruction provided by the library. However, the findings from our

research suggest that we may need to consider a more hybrid approach to this instruction and its incorporation into classes—with some content offered through online modules and other content addressed through in-person activities. The course coordinator for FIC CNST captured this desire for a hybrid approach well by explaining that one of the benefits of the in-person workshops that was not replicated with the online modules was the sense that students had of being “part” of the university because the workshops took place in the SFU library computer lab and involved interaction with librarians and SLC staff members.

Walton and Hepworth’s (2013) study investigated the use of such an approach, and their findings have indicated that the students who participated in blended information literacy learning outperformed those who received either in-person or online-only instruction. In this study, the blended approach involved face-to-face instruction followed three weeks later by an online component. This finding points to an important pedagogical implication. First, timing of spaced interventions blending two delivery modes might enhance the effectiveness of information literacy and academic writing instruction. From the information processing perspective, skills and knowledge gained by students might be lost if intervention only occurs once. Multiple or mixed offerings of academic literacy sessions might reinforce or strengthen their acquisition of key research and writing skills. This finding is unsurprising, as it stands to reason that students benefit from multiple opportunities to engage with content, including in different formats and modes. That being said, this finding presents a challenge for one of our initial reasons for undertaking this research: the challenge of meeting increasing demand for workshops. Offering both online and in-person supports for each course increases the workload on library instructors. As such, libraries need to consider these findings and determine if they can provide sufficient resources for a blended learning approach to instruction if this is, indeed, the most pedagogically sound approach. Future research will also need to focus on determining which learning goals and skillsets are best addressed online and which are best addressed in-person, as also discussed in Walton and Hepworth (2013).

The course instructors’ feedback also recommended several ways to improve the online research and writing modules, such as adapting the language level in the modules, particularly the writing modules (Instructor 3); including more interactive video and audio content (Instructor 4); incorporating easier examples for exercises (Instructor 4); and offering a blended model of instruction including both in-person sessions and online modules for students in future semesters (Instructor 4; Instructor 5). In follow up correspondence, the FIC CNST Coordinator emphasized that one of the strengths of the modules is that students and instructors alike appreciated that the modules were created specifically *for them*. He elaborated that we could further build on this strength by ensuring that content is tailored toward students’ interests (e.g., nutrition and relationship wellness) could help to support engagement. Evidence from cognitive psychology and multimedia learning suggests that increasing the content relevance and interactivity of the modules, including by incorporating more audio and video content, might indeed impact students’ retention of the materials, their attention, and their focus (Geri et al., 2017). Further, it suggests that details, such as the length of the videos, be taken into consideration to maximize their impact (Geri et al., 2017). It is also possible that easier examples for exercises might impact these multilingual students’ self-efficacy (Williams & Takaku, 2011). While improving self-efficacy could potentially give them the false impression that they had learned the skills in

question, it could also provide increased motivation to continue learning and practicing those skills.

The instructors reiterated several times the concern that the language used in the modules was too advanced for their students' English proficiency levels (Teacher 4), and that there were inconsistencies between the online modules and their course textbooks (Teacher 6). Teacher 4 and Teacher 6's concerns shed light on the consistencies of composition language (or terminologies) used for instructions and the need for even closer collaboration in the development of course-integrated academic literacy materials. It is worth noting, however, that instructors shared similar concerns about the use of language with in-person library instruction as well, indicating that the research and writing workshops were often not at the right level and, further, that workshop instructors spoke too quickly for students to follow. Determining the appropriate level of language and content, therefore, appears to be an important issue to address for library instruction, regardless of the mode of delivery.

According to a systematic review carried out by Munn and Small (2017), embedded models of instruction are the most effective approach for teaching information literacy and academic writing skills. In their words, the embedded model "moves the development of information literacy and academic skills into the mainstream unit curriculum" (p. 59) in contrast to the one-shot approach in which information literacy "resources, modules, or workshops are offered outside of timetabled unit sessions, either lectures or tutorials" (p. 59). Their findings point to the need to bring course instructors, research and writing support specialists, and instructional designers together when developing curricular content such as these modules. In this way, support modules can become fully embedded into the academic literacy curriculum for multilingual students (Munn & Small, 2017). Additionally, in classroom practice, teachers adjust their level of vocabulary in teaching to accommodate multilingual students' level of understanding. For example, in a lower-level English for Academic Purposes (EAP) class, a thesis statement might be called the main idea, an argument might be called a claim, and supporting evidence might be called supporting ideas. Theoretically speaking, presenting materials slightly above students' level ($i+1$) might facilitate acquisition of language learning (Krashen, 1992), yet the application of this theoretical $i+1$ idea has not been clearly documented in the research literature or classroom practice, especially in writing pedagogy or information literacy (Payne, 2011). Therefore, effectively embedding instructional supports into a classroom requires consistent use of language and terminology which is best accomplished through even more direct collaboration between course and library instructors.

Where our modules were largely created by library instructors for use by FIC course instructors, more sustained and intentional collaboration between both sets of instructors would undoubtedly result in more effective modules. However, as the course instructors' comments also note, this collaboration can be challenging because they are already hard-pressed to cover everything in their content-heavy classes. In our project, we were also concerned that contract instructors might end up having to do substantial unpaid labour if we asked them to collaborate even more intensively on the modules. As it was, many FIC and SFU library staff members and instructors took on additional responsibilities to create and implement these modules. Without this level of commitment, it is doubtful that we could have completed this project. However, after we received this feedback from the course instructors, we sought out further support by

consulting with educational designers from SFU's Centre for Educational Excellence (CEE) who specialize in EAL supports. They provided valuable feedback on the language used in the modules and suggested that future iterations more intentionally reflect the admission requirements expected of students at FIC. One practical way they suggested to gauge these expectations was to examine the can do statements included on admission gatekeeping tests like TOFEL or IELTS and ensure that the language used in the modules was in step with the relevant admission levels.

Next Steps

We were encouraged to see the overall positive responses we received from students who experienced the modules. However, we are also aware of the socially desirable responding effect (Paulhus, 1984). Some students may have felt pressure to tell us what we wanted to hear by responding that they found the modules useful and that they had made use of what they learned when researching and writing their final essays. We also note the discrepancies between the students' self-reported learning and their instructors' perceptions. Around 50% of the students surveyed indicated that they were more capable of conducting research, finding trustworthy sources, and identifying scholarly and popular sources. An even higher percentage (60–70%) of students felt that their summary and essay writing skills had improved through what they learned in the modules. While these findings suggest that the modules were effective as part of building these students' self-efficacy, they are not necessarily reflected in the instructors' views of their students' progress. For instance, the instructors consistently indicated that they felt the level of the modules was too high for their students (a concern that no students themselves raised) and told us that even at the end of the term, the students' work demonstrated ongoing challenges, especially with citing and paraphrasing their sources. These discrepancies suggest to us that more research into the impact of these modules—including, ideally, longitudinal studies to examine the students' ongoing skills development—would be beneficial.

The urgency that we originally felt to develop these online modules has largely dissipated since the broader move to emergency remote teaching due to COVID-19 and especially since the FIC Cornerstone course has been slow to recover its enrolments. Since our pilot in 2020, however, we have worked to transition the modules from Canvas into Moodle, to further integrate them into the class curriculum. This transition of LMS platforms was challenging and has unfortunately slowed the uptake of the modules. We therefore have work to do to improve the instructor and student experiences of working with the content in Moodle. We are also continuing to consider options for adjusting the language levels and types of examples and exercises provided in the modules. However, with lower enrolment, there are also fewer FIC Cornerstone instructors and so collaboration with those who are directly in the classroom has continued to be a practical challenge.

We have continued to work on adjusting the content and language level in the modules, both in the FIC Cornerstone versions and in more generic version of the modules (which we call Research Essay Essentials) that we have adapted as an open educational resource (OER) for SFU students. We continue to be interested in how we might effectively blend in-person and online components of research and writing skills instruction. We also continue to be interested in considering which content benefits from self-paced, easily repeated asynchronous online

delivery and which content may benefit from synchronous in-person delivery. If we can demonstrate that the blended approach makes a significant and positive impact on students' and instructors' experiences of our academic literacy support, it will provide additional data to support the use of online, flexible, and course-integrated alternatives to the more traditional, one-shot model of library instruction. In addition, we will continue to seek and build on instructional collaborations, both within and beyond the library, to advance the integration of information literacy and writing skills development across the undergraduate curriculum.

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Appendix 1

Instructor Survey

1. Describe how you integrated the modules into your course. (e.g. at what point(s) in your lessons did you refer students to the Canvas modules?)
2. As an instructor, describe an improvement that you noticed in the students' research and writing skills, as reflected in their final assignments
3. Based on what you saw in your students' final assignments, what aspects of research and writing do you think your students still need more support with?
4. Describe a specific situation where you and/or your students found the modules helpful.
5. If any, describe a specific situation where the modules were not helpful for your students.
6. Tell us what module(s) you found the most effective.
7. Tell us what modules you found the least effective.
8. When you worked with the online modules, what challenges did you encounter? (e.g. technical challenges or pedagogical challenges)
9. Can you please tell us why you did not integrate the modules into your class?
10. What changes to the online modules would you recommend, so that you will consider using the online modules in your future classes?

11. Even if you did not integrate the modules directly into your classes, did you find other ways to make use of the module content? (e.g., using examples from the modules, using the quizzes, providing them to students as optional support materials)?
12. Have you previously requested in person research and/or writing workshops from the PU Library?
13. If relevant, what benefits did you observe the students receive when they participated in in-person workshops?
14. If relevant, what were the challenges when students participated in in-person research and writing workshops?
15. If relevant, what benefits did you observe when the students used the online modules? (if you did not use the modules, please feel free to skip)
16. If relevant, what were the challenges when students used the online modules? (if you did not use the modules, please feel free to skip)
17. Overall, which method of delivery did your students find more engaging?
18. Do you have any additional feedback for us to help us improve our instructional services?

Appendix 2

Instructor Responses

Teacher 1: Use online modules as homework; students struggle with APA

I had students do many of the modules as homework in preparation for research. Students were more able to identify academic sources. They understood how to evaluate credibility better. We found the models on research and accessing SFU useful. Some aspects of paragraph writing I did not agree with. Sometimes students had difficulty logging on. I would love to have both the online components and the in-person training to help students prepare for research to help them navigate the SFU Library portal and how to access information.

Teacher 2: Technical problems; students continue to struggle with analytical skills; struggle with research skills; content level challenges.

Mostly [integrated] with summary writing, paraphrasing, research (finding sources, getting started, evaluating sources), writing an outline and thesis for final essays, writing cause/effect essays (paragraph structures/using I.C.E., citation, avoiding patchwork, APA usages etc.). Many of the students were able to distinguish the difference between quoting, paraphrasing and summarizing their sources within their research papers and properly use I.C.E. in their paragraphs. Many still had problems with using APA to properly cite their sources (in-text citation and references) and struggled with patchwork writing despite class practice and usage of canvas on avoiding plagiarism and patchwork writing. There was also a confusion with weaving contents from their research versus using their own input. Some ended up not using any research sources within parts of their paper to properly support a point while others made a mistake of using too many facts from their sources (one after another) without explaining the significance of their ideas properly to the reader. "Getting Started" (concept maps, background information) "Finding Sources" (keywords, library search), "Evaluating Sources" (different information sources, reliability and credibility, scholarly vs. popular sources). We focused on these various modules during class time when it came to looking at the library website to properly locate sources; knowing how (using keywords), where to find sources as well as saving

the links (by pinning or emailing them) or downloading the PDF files or knowing the 5W to properly locate the information on the sources were particularly useful. I did not use the part on the "Independent Paragraphs" within the writing module section because the information was not really relevant to what was covered in class with my own materials on writing paragraphs, especially with the samples of "Video Game Addictions" and the Post Quiz related to forest fires did not use the same structure, transitions, cause and effect phrases and topic/concluding sentences format taught in class. Writing Module on Paraphrasing/Summary Writing and Research Modules (all of them)/Combined Research and Writing Module [were most effective]; Writing Module: Independent Paragraphs [were least effective. [There were] some technical challenges - e.g. students were not able to join or access canvas at times.]

Teacher 3: Use as supplementary materials; adapting and changing the language level
Students were asked to read/review sections pertaining to the material covered in class (from paragraph to essay/research) and we worked with their knowledge on class assignments. [Paraphrasing] is something that will change only if students come in with higher level of English vocabulary knowledge. At this time, their English is not at the level to paraphrase with confidence. Examples of academic writing and research modules [are useful and effective for students]. We are teaching the basic essay structure, so would you mind changing the 1-2 sentence thesis explanation to a complex one-sentence thesis in your description?

Teacher 4: Use online modules as supplementary materials and extra practice in class; concern about the language level of the online modules; include more interactive videos; offering blended models; easier examples.

The students used the module as both review and practice and as assignments to do before the lectures. I did notice an improvement among students who were motivated. They clearly gained more understanding of the skills in the module, but weaker students avoided doing the module readings and assignments as they found it difficult. They would benefit from more paraphrasing exercises and from evaluating source exercises--easier examples helpful. It had some good introductions to the writing process and also a good intro to using the library. [However,] some examples and exercises were still at a too high level of challenge for some students. The paragraph writing and the citing sources [are most effective for students]. Students struggled with the paraphrasing and selecting sources at the right level. They choose articles that were far too advanced for their actual reading capability. I had several students who could never access canvas even with SFU IT help. Both formats of workshops [in person and online] were helpful and appreciated. If we could have more videos and audios it might help with engagement and confidence levels of students.

Teacher 5: Improvement in student essays; offering blended model
Particularly for research, paragraph and essay writing. I assigned modules that corresponded to each topic prior to studying them OR after we studied each topic to further solidify their knowledge. Their ability to paraphrase academic material was much better than other semesters. Also, their ability to use APA was significantly better. Such an improvement! Students definitely need more help with ICE. It was a difficult concept for them to grasp and so much more practice is still needed for them to really get it. However, a good chunk of the class was able to use ICE in their writing in a way that made sense connected to their topic in a meaningful way. Since we didn't do the library modules in class, I don't know which ones the students found to be more

helpful than others. Paragraph and essay writing had to be the best ones. Lots of great examples even though they were difficult topics. I loved the brainstorming/thesis building module. There were videos I believe on the steps needed to take to come up with a thesis. However, I found that since students were not doing an argumentative essay, some of this would have been confusing for them. INTG 100 (the class following CNST) does an argumentative essay so this would've been super helpful for that class. Pedagogical challenges as some of the techniques just didn't match with what I was teaching the class. I didn't want to confuse them further by teaching the students the modules in class, so the modules were used more as extra practice outside class time. Overall, I'd like to keep the online library modules, but I'd really like the opportunity for students to still go to the computer labs at SFU and have the library staff there help them with their initial researching.

Teacher 6: Use as supplementary (before class); overloaded information; self-pacing advantage; challenges with APA and understanding information or integrating information in writing. *It was pre-class most of the times - eg. they read about paragraph structure and we had a quick quiz at the beg. of the lesson- other times I used the materials during class- especially to analyze examples on the board (we noted on examples on the board while projecting the material). A small percentage had fewer problems using APA. They have a very hard time making sense of the information they find. Say they have a relevant point for the topic of their paragraph. They use it. They add something else also relevant, but they cannot add their interpretation of what the information means- what are the implications-. Most of them have never experienced this kind of writing assignments. Not sure we need to push them to interpret as of yet. They were able to check the information and examples as many times as they wanted on a screen - they seem to be more motivated by onscreen info. The information is quite dense and some students had issues finding their way around. Students benefited from the types of sources and evaluating sources bit. It is clearly highlighted and it saved them tons of time and saved me tons of explaining! I cannot say they are less effective. I find the course is already overloaded with info and to be honest, we could not cover a lot of things. One of the main issues is the amount of information in some of the modules. Also, the fact that you have to jump from one page to the next one to do the exercises. Wondering if some of these can be done side to side.*



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