

Delivering research skills to all first-year students: The Temasek Polytechnic example

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Abstract

Starting from April 2018, all first-year Temasek Polytechnic students have to take a common subject, namely, *Communication and Information Literacy*. As librarians were involved in the curriculum development meetings with lecturers right from the beginning, they proposed to create a self-directed online tutorial which was integrated into the curriculum. The tutorial brought students through a four-step research process in an engaging and interactive manner, and was closely tied to their assignment requirements. This enabled the students to immediately practise their new-found skills while researching for their assignment topics. Students were also expected to complete a quiz that would contribute to their final grade for the subject. At the end of the first semester, the librarians collated and analysed the data captured within each Blackboard course site. This paper includes the development process of the online tutorial; challenges faced; feedback that we received from students and staff; and areas for future improvement. As other libraries may be exploring using online platforms for instruction instead of conducting face-to-face research skills workshops, the findings presented in this paper will contribute towards more informed decisions about the feasibility of online tutorials and possible best practices.

Keywords:

information literacy, library instruction, academic libraries, curriculum development, instructional design, online learning

Introduction

Communication and Information Literacy is a new compulsory subject that has to be taken by all first-year students in Temasek Polytechnic, starting from the new academic calendar in April 2018. In the past, each school had its own communication skills subjects and most of the schools would get the library to conduct research skills workshops for their students. The new enhanced core curriculum for Temasek Polytechnic students included three communication skills subjects, with Communication and Information Literacy being one of them. This core curriculum was developed to ensure that all students would graduate with the same set of skills and attributes that would help them with their future employment.

Development of the online tutorial

Right from the planning stage, reference librarians were involved in the curriculum development of the three communication skills subjects, through their active participation in the meetings with lecturers and recommendation of curated resources for those subjects. It was decided that Communication and Information Literacy would be the most suitable subject for the library to contribute its expertise. The librarians proposed to develop a two-hour, self-directed online tutorial that had to be completed by each student.

The learning outcomes for the online tutorial were identical to those for the face-to-face workshops which were conducted for first-year students:

1. Use effective search strategies across various databases
2. Access full-text information in both print and digital formats
3. Evaluate the quality of information using the CRAAP criteria
4. Practice ethical academic behaviour by citing sources using the appropriate citation style

The Communication & Information Literacy subject required an online or self-direct learning component of two hours, which is the same duration as a typical face-o-face workshop for first-year students. Thus, the lecturers and librarians came to the consensus that the online tutorial would require approximately two hours to complete.

The online tutorial would be uploaded to course sites in Blackboard Learning Management System, which is used in Temasek Polytechnic. Each student had to complete a quiz with twenty questions to be awarded class participation marks.

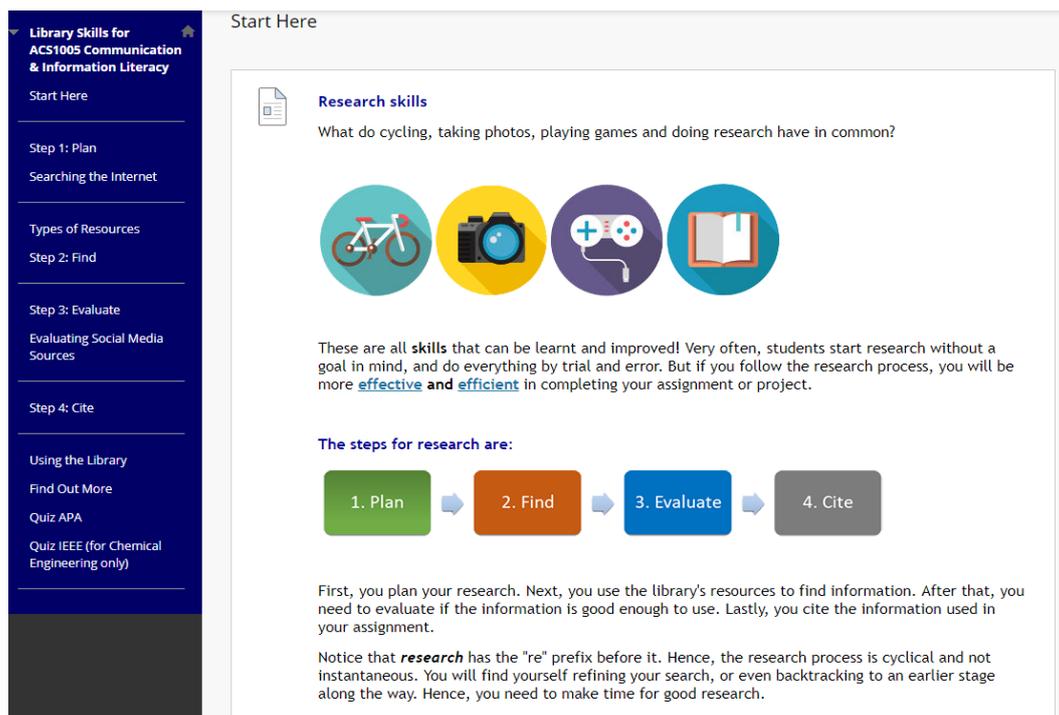


Figure 1: Online tutorial hosted on Blackboard Learning Management System

The tutorial was developed over a five-month period by two reference librarians and an information officer trained in multimedia design. The content was adapted and condensed from an online tutorial that was previously developed by the Temasek Polytechnic librarians for part-time students in PolyMall, which is a portal for online learning shared by the five local polytechnics.

The framework, content and quiz

In face-to-face research skills workshops, the reference librarians have been teaching the students the four-step research process, namely, Plan, Find, Evaluate, and Cite. This research process was also used as our framework for the online tutorial so that students could learn each step of the research process in a systematic and thorough manner, at their own pace. Each research step had an interactive module that was created using Articulate Storyline. It was highly visual and comprised of instructional content as well as activities to engage the students and mini interactive quizzes that served as formative assessment for the students.

USE SYNONYMS OR RELATED WORDS

When searching a database, you should use **synonyms or related words** if you want more results. Why? Different authors may use different words to mean more or less the same thing.

Author A



Studies have shown that the use of **robots** as **medical** assistants leads to better care and...

Author B



The market for **healthcare** robots, including surgical robots and **hospital robots**, will grow in revenue from \$1.6 billion...

◀ ▶

Figure 2: Instructional content on using synonyms or related words. Some of the words were hyperlinked to dictionary entries.

Type the author's name in the correct format for APA reference list.

Hint: Capital letters and full stops do matter!

HELLO
My name is

Joseph Schooling

My name in APA format is

Type your answer here

◀ ▶

Figure 3: Activity on citing names in APA format.



Figure 4: Activity on evaluating the purpose of a website.

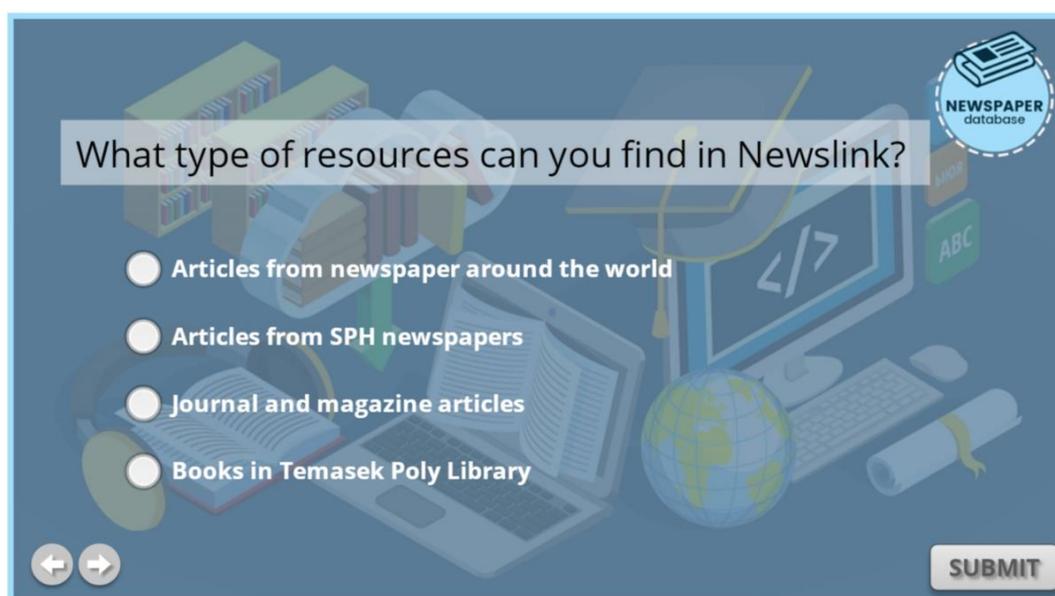


Figure 5: Mini quiz that served as formative assessment

Apart from the interactive modules for each stage of the research process, there were other useful content in the tutorial, namely searching the internet; types of resources; and evaluating social media. These content were deemed to be more effective as stand-alone content for each stage. In addition, there was a section on how to use the library for the benefit of the first-year students who may not have attended library orientation sessions.

The compulsory quiz which consisted of twenty multiple-choice questions was created using the assessment tool in Blackboard and tested all the four steps of the research process covered in the tutorial. Answering the questions required both lower and higher order thinking skills that ranged from recollection to application, and the order of the questions was randomised. Students were allowed up to three attempts to complete the quiz before the set deadline, with the highest score recorded in Blackboard. After each attempt, they could see the number of

questions which they had answered correctly, but not the mark that they received for each question. Before the online tutorial was made available to all first-year students, we enlisted three second-year student assistants to go through all the content and quizzes. Based on their feedback, some of the quiz questions were rephrased to be more precise and less ambiguous.

In order to introduce students to this online tutorial, the librarians created a set of slides that the lecturers could use in class. The slides featured a mixture of true and fake news including the so-called bagel head trend in Tokyo; the man who sued his wife for ugly kids; and the rejection of a huge import of durians by China due to the large amount of pesticides detected. These news served as attention grabbers and the students were tasked with discussing and voting which of the news items were real and which were fake. The slides enabled the lecturers to emphasize about the prevalence of fake news and the importance of learning good research skills by completing the online tutorial.

A library skills course site was created for each school in Blackboard so that it would be easier for the lecturers to monitor their own students' performance in the quiz. All the first-year students were enrolled by their tutorial groups into each site at the start of the school year in April 2018. Total enrolment across the six schools was 4,767 students. Students could access the site during the entire first semester from April to August, so that they could re-visit the content at any time. However, the compulsory quiz was set to be completed by July.

Results

At the end of the first semester, the librarians collated and analysed the data captured within each Blackboard course site. It was hoped that this analysis could help make more informed decisions for future online tutorials.

Knowing how hard it would be to get students to voluntarily leave feedback about the online tutorial, the quiz was set up so that the students had to complete a simple survey form before they could attempt the quiz. This was made possible using the adaptive release feature in Blackboard. In response to "This library online tutorial was well-prepared and useful for my studies", the majority of the students (89%) either agreed or strongly agreed with the statement.

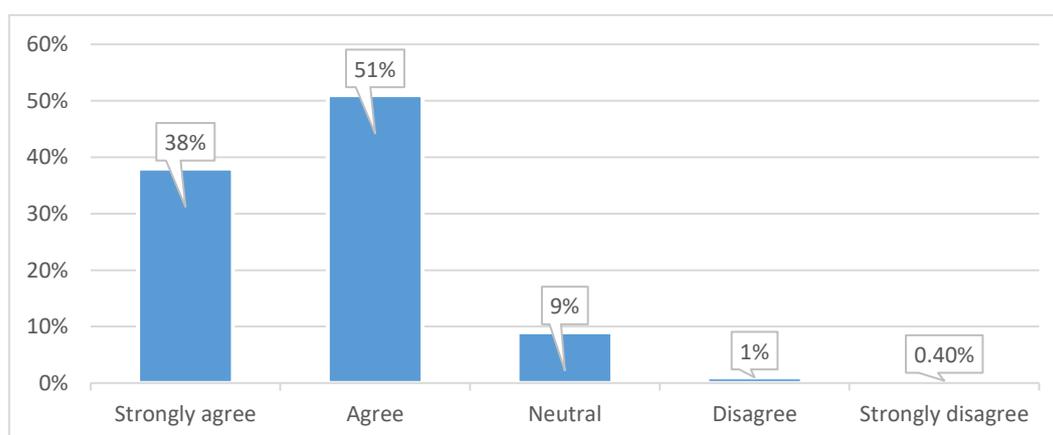


Figure 6: Response to the statement "This library online tutorial was well-prepared and useful for my studies"

The survey also captured qualitative responses. Students were asked to identify the most useful thing that they learnt during the tutorial. Among the feedback received, students shared

that most useful topics were citation, evaluation of resources, and the overall importance of good research. Here is a selection of some responses:

“I learnt that websites ending with 'gov', 'org' and 'edu' are more reliable than websites that end with 'com'. Results are also ranked by popularity and not reliability, hence I learnt that I should research more sources to check the reliability.”

“I learnt how to cite the resources that I have used properly and the how to identify fake news.”

“The different smart techniques I can use to help me in my research. It makes me have a clearer detail on how to look for credible and useful research information rather than just simply typing the topic online and looking for the first article that pops out.”

Students were also asked in the survey to suggest any areas of improvement. The feedback compiled could prove to be useful for developing future iterations of the online tutorial. One of the areas of improvement suggested by the students was to add a printable summary of each interactive module so that students could refer to it easily. This suggestion was raised by several students, and the librarians would be exploring how to do so in the near future. Here are two comments about this issue:

“Perhaps they can make a set of summarised notes in a powerpoint for easier accessibility.”

“To have a concise summary page where all the relevant information has been taught is stored inside as it is hard to refer to when students are doing the quiz halfway and have to redo the tutorials to have to get the answer.”

Across the six schools, 77% of the total enrolment completed the quiz of twenty questions, with 98% of these students passing. This was based on the highest score that students received from the maximum of three attempts that they were given to complete the quiz before the set deadline.

Another area of interest was the percentage of students who completed the interactive modules. This data could help the librarians to gauge how thorough was the students' understanding of the four-step research process, and whether they had attempted the quiz without completing the entire tutorial. Being cognizant of the many competing demands for students' time and attention span, the librarians had set up the tracking feature in Storyline. Those who had viewed at least 70% of the interactive modules were deemed to have completed that module in the LMS full grade centre.

As anticipated, the interactive module with the highest level of completion was the first one, “Plan”, as 59% of the students went through at least 70% of the content. Both “Find” and “Evaluate” modules had 41% of the students completing each of them. Interestingly, the module with the next highest completion was “Cite”, which saw 48% of the students completing it. This went against the expectation that the students would undertake the modules in the same sequence presented on the left navigation panel in the course site. It suggested that students were either aware of the importance of citation or realised that they needed extra help in understanding this topic. It may also suggest that the students were crunched for time and chose to focus on what they thought were the most essential topics to learn.

The online tutorial was designed to take the students about two hours to complete, if they had gone through the content at a leisurely pace in a thorough manner. However, our analysis showed that across the six schools, while the median time spent on the tutorial was 1.24 hours, there were a number of students who spent as much as 4 hours and more.

Unintended consequences

There were unintended positive consequences to the online tutorial.

Firstly, there was a huge increase in the usage of several of the library's subscribed e-resource databases in May 2018, compared to previous years. There was also an increase in the number of searches made using the library's discovery system, LibSearch. This coincided with the period during which the students taking the Communication and Information Literacy subject had to submit a written assignment.

In the "Find" module, students were shown how to use the library's databases to find relevant articles for their assignments. Like the other modules, it was interactive in nature, featuring actual search interfaces in order to familiarize the students with the databases. Students would have to complete tasks such as filling in the search boxes correctly, and adjusting the publication date slider to refine their search results.

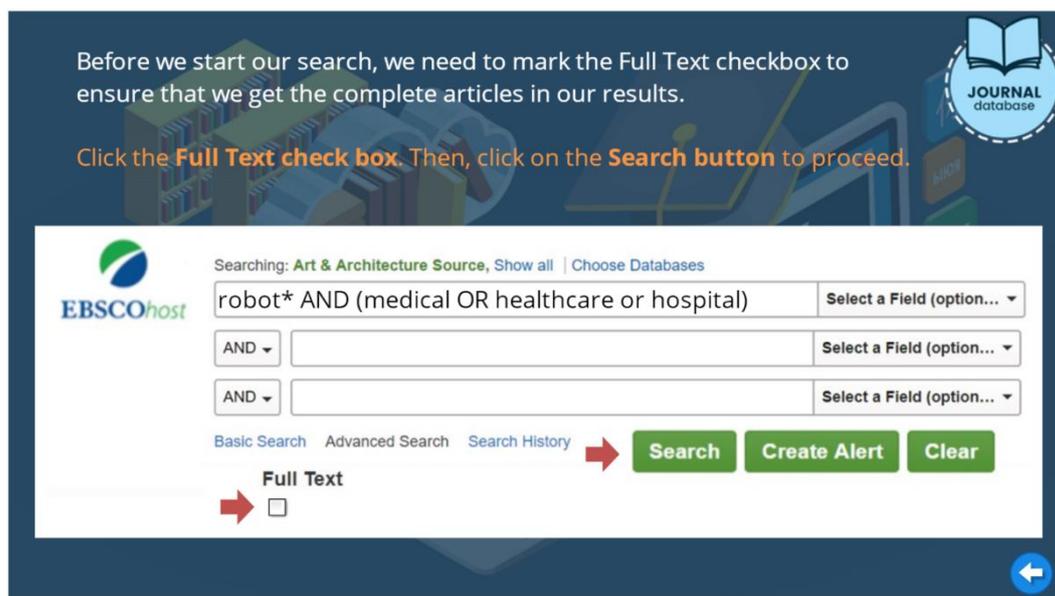


Figure 7: Screenshot of Find module, EBSCOhost

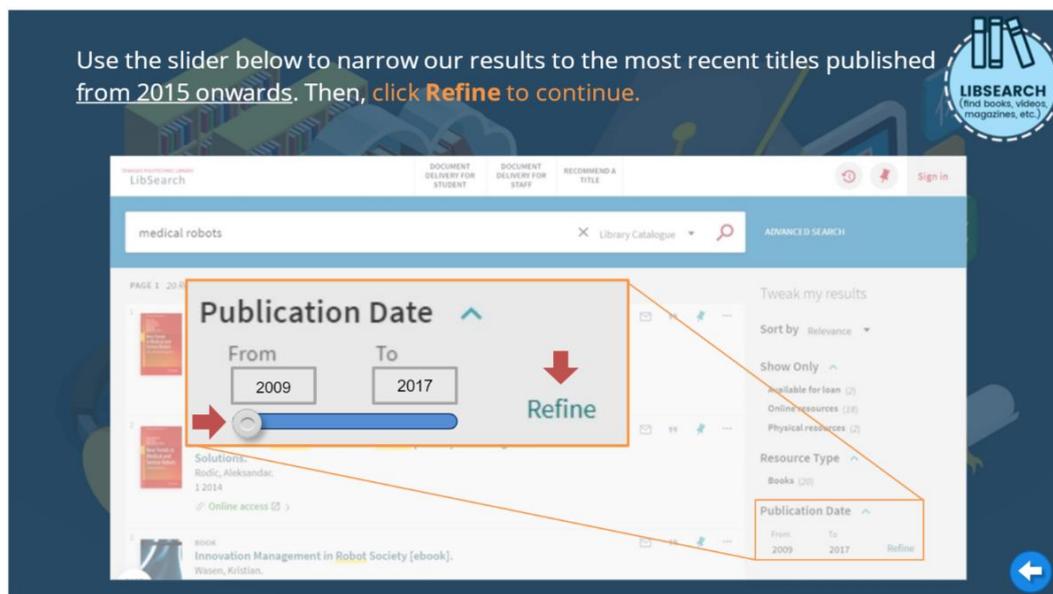


Figure 8: Screenshot of Find module, LibSearch

It was heartening to see that students did pick up on these skills and actively used the library's databases for their assignment research. One database featured in the tutorial was EBSCOhost. In May 2018, the number of searches doubled, as compared to May 2017. Besides the number of searches, there was also an increase in the number of full-text downloads recorded in May 2018 as compared to the previous year.

The library's discovery system, LibSearch, was also featured in the online tutorial. Similarly, it saw an increase in usage. In May 2018, the number of searches tripled as compared to May 2017. This suggested that students were using LibSearch to locate physical items in the library, such as books, as well as online articles for their assignment.

Interestingly, other subscribed databases saw an increase in usage, even though they were not featured in the online tutorial. For example, newspaper database LexisNexis Academic and ProQuest Sci Tech database saw increases in usage in May 2018 as compared to May 2017. Overall, we noted that the databases which saw an increase of usage reflected the assignment topics which the students were given. As the students had to write and present on various topics regarding Singapore's future and challenges, databases that were popular tended to be multi-disciplinary in nature, as well as newspaper databases with local news content.

Apart from the increase in usage of databases and LibSearch, there was an increase in the number of reference related queries received at the Information counter and via email. Many of the lecturers directed their students to approach librarians for help in finding resources for their assignment topics. In May 2018, the number of reference queries that were received were more than twice of that which were received in May the previous year. The majority of the students who came for help required assistance in using the databases to find relevant articles for their assignments. There were also requests for help in APA citation, as well as assistance in verifying the reliability of information found.

Yet another positive consequence of the online tutorial was the upskilling of staff capabilities. As the online tutorial was produced entirely in-house, the librarians and library officer had to learn how to use Articulate Storyline to create the interactive modules from scratch. They

also had to learn how to create content in Blackboard and how to create course sites, enroll students by groups, and retrieve usage analysis reports.

Areas for future improvement

To improve the students' completion of each interactive module and to ensure a more thorough understanding of each step of the research process, questions that are now in the summative quiz could be embedded into each Storyline module. Completion of these built-in quizzes can then be used as the determining factor for completion of the module. Another possible improvement is to shorten the quiz period from ten weeks to four weeks, so that the students will feel a greater sense of urgency to complete it. As suggested by students in the feedback survey, another possible improvement would be to compile a summary of the interactive modules, which students could print for easy reference.

Conclusion

Bringing the library's research skills workshops to the entire first-year cohort by means of an online tutorial seemed ambitious at first. Adding to the challenge was a steep learning curve of mastering a software and learning management system. However, as this paper has shown, the end result was highly encouraging, with mostly favourable feedback and a good rate of quiz completion. There were also unexpected positive outcomes, such as increases in the usage of various subscribed databases, and in the number of reference queries received by librarians. As areas of future improvement have been identified, it is hoped that the future iterations of this online tutorial would see better completion rate of the interactive modules and quiz. As more libraries may be exploring using various software and online platforms for instruction, we hope that by sharing our experience and data analysis in this paper, these libraries will be able to make more informed decisions for their own online tutorials.