

An Embedded Librarian at the National University of Singapore: Case Study of the Ridge View Residential College

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Abstract

The term “embedded librarian” is a redefinition of the professional identity of the librarian. Working beyond the confines of a library, the embedded librarian seeks to understand and respond authentically to students’ information needs within their natural environment. NUS Libraries has been facing increasing requests for information literacy programmes that are one-shot instructional sessions. Grappling with these, librarians sought to embed information literacy into the curriculum. This article tells the story of how conversations on student learning between an academic and a librarian led to embedding a librarian in Ridge View Residential College, National University of Singapore (NUS).

Keywords

Embedded Librarians, Information Literacy, Academic Libraries, Residential Education, Faculty-Librarian Collaboration

Introduction

Coined in 2004 by Barbara Dewey, the term “embedded librarian” has come to mean a librarian who is focused “on the needs of one or more specific groups, building relationships with these groups, developing a deep understanding of their work, and providing information services that are highly customized and targeted to their greatest needs” (Shumaker & Talley, 2009). Working beyond the traditional confines of a library, embedding is an approach to engage with students and users in their natural environment from which the librarian would be able to understand day-to-day information needs in order to respond authentically. In tertiary education environments, librarians embed in different ways depending on the needs of their user groups and the collaborations they build with the faculty.

In January 2016, NUS Libraries fully embedded a librarian into the curriculum of a residential college. This breakthrough came after years of coping with increasing requests for information literacy programmes that were almost all one-shot instructional programmes. Continuing with this approach in the midst of strained resources was not ideal. Pursuing embedment into the curriculum seemed impossible considering the challenge of getting buy-in from academics and

faculty heads. This article tells the story of how conversations on student learning between an academic and a librarian led to the serendipitous outcome of embedding a librarian in Ridge View Residential College, National University of Singapore (NUS).

About NUS Libraries

The National University of Singapore (NUS) is Singapore's flagship university consistently ranked first in Asia and among the leading universities in the world.¹ It is a comprehensive university offering a broad-based curriculum underscored by multi-disciplinary courses and cross-faculty enrichment. The University has 17 faculties and schools, with an enrolment of more than 28,000 undergraduates, 10,000 graduate students, and 11,300 academic, research and general staff. Currently, NUS also has nine overseas colleges at major entrepreneurial hubs including Beijing, Israel, Lausanne, Munich, New York, Shanghai, Silicon Valley and Stockholm.

The NUS Libraries, a group of multi-disciplinary libraries, comprises eight libraries. Six of these, Central Library, Chinese Library, Hon Sui Sen Memorial Library, Medical Library, Music Library and Science Library, are located at Kent Ridge. The C J Koh Law Library and East Asian Institute Library are located at Bukit Timah. Its collection encompasses subjects in architecture, building and real estate, business, dentistry, engineering and technology, the humanities and social sciences, law, medicine, music, nursing and science. As of June 2016, there are over 1.5 million print titles, 678,881 electronic titles, 47,832 media programmes and 23,429 microform resources in the collection.

Resource teams and Information Literacy Programmes at NUS Libraries

Pursuing its mission in advancing scholarship and research, NUS Libraries offers information literacy programmes (ILPs) as one of the main courses in a smorgasbord of innovative library services. Over the years, the resource librarians of NUS Libraries have been embedded in traditional classroom environments. These ILPs are highly customized to teach students how to find information to complete an assignment or project for a particular module.

A module at NUS is a course of study taken by students, or a "course". Each module has a code denoting the discipline and level of study. By contextualizing learning of information literacy within a module, NUS Libraries' purpose is to emphasize the necessity of authoritative information in academic research.

Through ILPs, students learn how to search and find information, how to evaluate authoritative and credible sources, and how to use the information they need responsibly. They learn this through face-to-face instructional sessions conducted either during class time or at the library. Librarians also supplement learning through online subject guides, handouts and videos uploaded to NUS' Integrated Virtual Learning Environment (IVLE). Some ILPs are compulsory and some are given a certain percentage of the module's final grade.

¹ NUS placed 12th in the world and 1st in Asia in the 2016-17 QS World University Rankings. It ranked 24th in the world and 1st in Asia in the 2016-17 Times Higher Education World University Rankings.

Supporting these ILPs are resource librarians. Reflecting NUS Libraries' commitment to engage its community, its organisational structure is aligned to ensure greater support for innovative library services. It organises librarians into resource teams: Area Studies, Humanities, Social Sciences, Design & Environment, Engineering & Computer Science, Business, Law, Medicine, Science, Music, Reference and Management, Patents and UTown. Each team is assigned a group of subjects. Adopting a holistic approach, librarians in each team, oversee the collection development, provide information services and offer ILPs in the subject areas they are assigned.

NUS Libraries experienced substantial growth in ILPs in recent years. Figure 1 shows the number of information literacy programmes and sessions in the past three academic years.

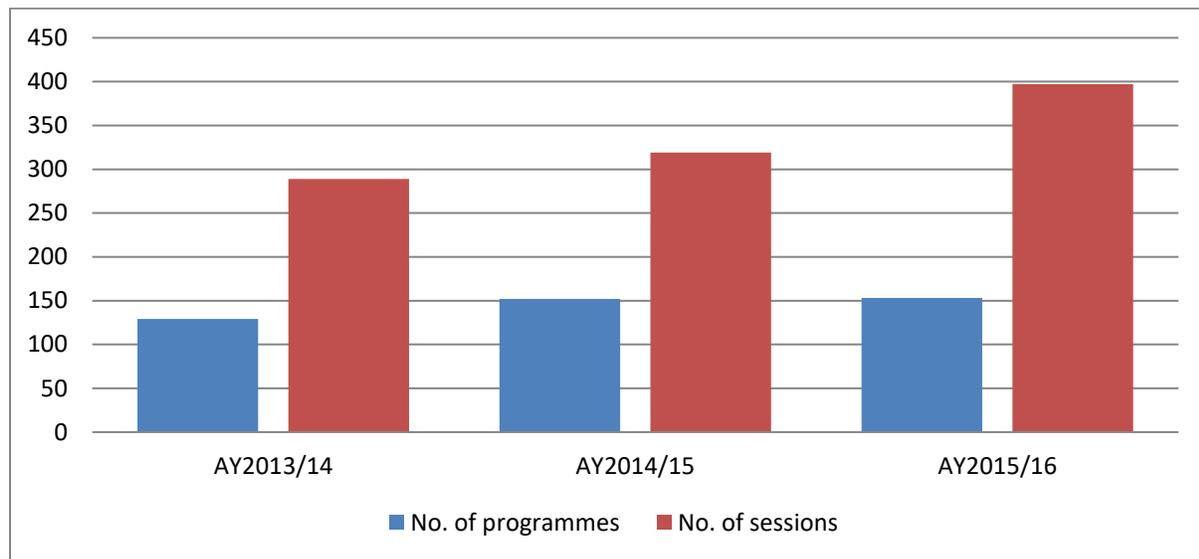


Figure 1: Number of information literacy programmes and sessions conducted at NUS Libraries

The likeliest reason for increase is the collaboration librarians have established with faculty. The rapport and warm relationships through the years were built on the research help given to lecturers and co-teaching with them in their lessons. Through these collaborations, the quality of ILPs and the professional reputation of librarians continued to spread.

Despite such positive outcomes, NUS Libraries examines the premise of learning. The perennial question of the effectiveness of learning is posed continuously. Recurrent challenges include changes in lecturers teaching the module, changes in syllabus and the lack of time given to teach. In addition to all these, ILPs are essentially one-shot instructional sessions. Librarians are guest speakers. Even with the ILP given classroom time, it was still the only contact time the librarian had with the students. Once the librarian leaves the class, it is extremely rare for students to consult librarians despite encouragement from the lecturer and librarians. Furthermore, with their heavy schedules, consulting a librarian for research help seems to be ranked low on students' list of priorities.

It is within this environment of continuous flux and one-shot instructional sessions which NUS librarians endeavoured to break free from, in order to engage students in learning. Building on

the foundation of existing collaborations, NUS Libraries has begun pursuing opportunities to embed librarians deeper into the curriculum.

Levels of embedment in Information Literacy Programmes

There are varying levels of embedded librarianship for information literacy programmes. At the entry level, a librarian collaborates on assignment development but does not grade. The librarian facilitates one information literacy session. In the next level, which is twin-pack, the librarian does the same activities except the librarian facilitates two information literacy sessions directly linked to the information literacy-related assignments in the course. At the immersion level, the librarian works within students teams to assist with problem-based learning assignments and meets with teams to help students develop research strategies and critically analyse sources. In the co-teaching level, the librarian fully co-teaches the course and is jointly responsible for the course design, assignments, grading, preparation and delivery. At the co-teaching level, a faculty level member may choose whether to inform students of the librarian's expertise as a specialist (Bowler & Street, 2008).

NUS Libraries adapted the levels of embedded librarianship according to the context of NUS' curriculum and how information literacy supports teaching and learning. Table 1 illustrates the four levels of embedment of ILPs at NUS Libraries in Academic Year 2015/16. The number of programmes for each level is also given in Table 1.

Table 1: NUS Libraries' Four Levels of Embedment

Level 1 Entry	Level 2 Twin-Pack	Level 3 Immersion	Level 4 Co-Teaching as Information Literacy Specialist
One ILP session which supports module's assignment or project	More than one ILP session which support module's assignment or project	Develops, conducts and assesses information literacy in more than 1 session	Designs information literacy component and assessment methods that all faculty of module adopts and conducts.
Collaborates with lecturer		Librarian co-teaches as faculty	Librarian is faculty
Not compulsory for students to attend	Fulfils one or a combination of these criteria:	Compulsory for students to attend	Compulsory for students to attend
Information literacy is not assessable	<ul style="list-style-type: none"> • Compulsory for students to attend • Information 	Information literacy is assessable and is allocated more than 10% of the module's marks	Jointly responsible for the module design, assignments, grading, preparation and delivery.

	literacy is assessable and is allocated 5-10% of the module's marks • Information literacy is included in the syllabus		Information literacy is assessed in almost all the module's assignments
73% (111 of 153 programmes)	16% (25 of 153 programmes)	1% (1 of 153 programmes)	1% (1 of 153 programmes)

*153 programmes were conducted in Academic Year 2015/16.

** 9% (15 of 153 programmes) were "open" ILPs that do not support any modules. E.g. Mendeley ILPs, which are open to all in NUS.

Seventy-three percent (73%) of NUS ILPs conducted in Academic Year 2015/16 were Entry level. They were module-specific ILPs, which were customized to specifically guide students in the assignments or projects to fulfil the module's objectives. Librarians developed and conducted one ILP either as a lecture or several repeated hands-on sessions.

Sixteen percent (16%) of ILPs conducted were Twin-Pack level. They fulfilled either one or more of the criteria listed in the Twin-Pack column of Table 1. They were conducted in a series of more than one session. For example, in the ILP for Physics Graduate Research Seminar, students learned about literature searching as well as how to use reference management tools in two separate sessions respectively. Some ILPs were listed in the syllabus as a class in which students were required to attend. In these classes, students' attendance was recorded. In some of these ILPs, lecturers were present to contextualise information literacy to the lesson.

Another Twin-Pack ILP was an ILP in which the information literacy component of the module was given a certain percentage of the final grade. Therefore, students have to complete an assessment that could be a quiz, or a group or individual assignment. These assessments were developed and graded by the librarians to gauge the outcomes of the information literacy sessions. The percentage of marks varied from 5% to 10%.

An ILP that had the highest percentage of marks allocated for information literacy is the Faculty of Engineering's module "Research Methods and Ethics" (EG5911). The information literacy component was 40% of the final grade. EG5911 is compulsory for all Year 1 Engineering doctoral students. These students must pass the module in order for them to take their Qualifying Exams. Students are allowed only two semesters to pass this module. The EG5911 ILP represents the Immersion Level of embedment.

At the deepest level of embedment (Co-teaching level), NUS Libraries has a programme in which the librarian is faculty. She does not only teach students information literacy but also teaches the subject of the module. This librarian develops the information literacy component of

the module and also integrates information literacy into the module's syllabus. This is the librarian who is embedded in the Ridge View Residential College (RVRC) of NUS.

About RVRC

RVRC is a residential college established in April 2014. RVRC is targeted at freshmen from the Faculty of Engineering, Faculty of Arts and Social Sciences, Faculty of Science, School of Computing, and School of Design & Environment. It adopts a living-learning experience aimed at cultivating students who are intellectually inquisitive, future-ready, and value-centric. Students who live at RVRC have to take a few modules offered by the Residential College in addition to the modules they take in their own faculties.

Like all other residential colleges, RVRC has its own theme, which is "sustainability". Centered on the theme, the RVRC inter-disciplinary curriculum consists of three modules:

- Understanding & Critiquing Sustainability (GEQ1917, formerly GEM1917)
- Professional and Academic Communication (ES1601)
- Workplace Readiness (WR1401)

RVRC's integrated inter-disciplinary approach allows for a comprehensive appreciation of and an enriched discussion on the challenges of sustainability, identified as the unifying theme due to its relevance in today's world. Additionally, through inquiry into issues from different disciplinary perspectives, analysis of cases in real-life settings, and close engagement with industries involved in sustainability efforts, it is envisaged that students develop change agent capacities.

The modules offered are compulsory for all Year 1 students enrolled in RVRC. These modules span over two semesters or one academic year. The two credit-bearing modules (GEQ1917 and ES1601) count towards graduation requirements for students in their respective faculties. The RVRC curriculum ensures that it covers skills relevant to students in subsequent studies at the University, as well as core competencies demanded by the 21st century workplace. All this fits into the NUS' mission to equip graduates with the necessary tools to ensure that they are well prepared for the future that lies ahead. GEQ1917 supports the Asking Questions pillar of NUS' General Education curriculum. As such, GEQ1917 takes an evidence-based learning approach. Students are expected to find and use evidence in their enquiries and discussions. This was, thus, the platform from which NUS Libraries collaborated with RVRC.

Beginnings

In Jan 2014, the Master of RVRC and the Director of Studies of RVRC initiated a meeting with the University Librarian to discuss the development of an information literacy programme for RVRC.

The Master is an Engineering lecturer who spearheaded the EG5911 Research Methods and Ethics module for Engineering doctoral students. The ILP for EG5911 has Level 3 Immersion embedment. Since then, he had moved on to be the Master of RVRC. The Director of Studies

was formerly the Deputy Director of NUS' Centre for English Language and Communication (CELC). She is familiar with the many ILPs conducted by NUS Libraries for CELC's critical thinking and writing modules. As both the Master of RVRC and Director of Studies were cognizant of the learning outcomes of ILPs, they were very specific in their requests. Information literacy was to be integrated in the syllabus of GEQ1917. Students were expected to understand library resources and services, as well as perform basic skills such as searching, evaluating and citing information. As information literacy skills were considered an integral component of GEQ1917, 5% of the module's grade was allocated. Thus, the RVRC ILP started at the Level 2 Twin-Pack of embedment.

A resource team of librarians was formed to support the ILPs of RVRC. In August 2014 (Semester 1 of Academic Year 2014/15), RVRC librarians conducted a library orientation, an information literacy lecture and information literacy hands-on sessions for nearly 100 students. Even though librarians met with students twice and 5% of the final grade was given for an information literacy quiz, by all accounts, information literacy was taught very much as a one-shot instructional programme.

In the subsequent Academic Year of 2015/16, a new module coordinator came on board. He wanted students to discuss and critique with authoritative evidence which they should search using their mobile devices. Furthermore, the coordinator wanted information literacy to be more integrated in the syllabus. ILPs were not stated as a separate lesson or programme but were listed as part of the module.

RVRC was also planning to increase its student population. In order to maintain scalability, RVRC trained senior students to be Student Fellows. As these Student Fellows would assist in various programmes, six Student Fellows were assigned to the librarians to help facilitate the ILPs and to conduct library orientation tours. Librarians conducted a one-day training workshop to train the Student Fellows on information literacy and how to conduct library tours. Each librarian also mentored each Information Literacy Student Fellow.

In the first lecture in which information literacy was introduced, the librarians were determined to apply some novel pedagogies, which they had learnt from the ACRL Information Literacy Immersion Programme. Librarians experimented with a "de-construction" method to emphasise the need to further investigate seemingly authoritative sources. The physical constraints of a lecture theatre did not deter from applying active learning activities. Using a worksheet and a Think-Pair-Share exercise, students were guided to conduct a simple search for authoritative sources on the Internet. They were led to select a specific "authoritative, relevant and timely" information source that was gradually "de-constructed" to reveal its questionable nature. Students concluded that they should not readily accept what they retrieve so quickly from the Internet, without first delving deeper to evaluate the source.

After the lecture and hands-on sessions were conducted in August 2015, the librarians were not called on for any more support for the rest of the semester. However, the leader of the team of RVRC librarians requested permission to observe some tutorials. The purpose was to observe whether students applied information literacy skills and to gain a better understanding of student learning.

The librarian's presence in these tutorials led to interesting outcomes. During the tutorials, the librarian was given the opportunity to comment on students' presentations and ideas. The librarian was also asked to facilitate small group discussions. Through her participation in tutorials, the librarian discussed her observations on student learning with the Master of RVRC and some of the Academic Advisors (tutors of the tutorials). Her observations pointed to students needing more guidance and time in understanding environmental sustainability and consequently, project ideation. This was the primary reason why most students did not fully apply information literacy skills. These discussions on student learning continued until the end of semester.

Breakthrough

In November 2015 (end of Semester 1, 2015/16), in one of the many after-tutorial discussions between the RVRC librarian and the Master, a germ of an idea emerged. Both the Master and the librarian enthusiastically mooted the idea of fully embedding the librarian into GEQ1917 in order to weave information literacy skills throughout, as well as to support critical enquiry. The Master discussed the idea with the module coordinator and Academic Advisors. After their discussion, a meeting was called with the University Librarian. The outcome of the meeting was that the librarian would be RVRC's embedded librarian taking on the role of a part-time Academic Advisor tutoring one tutorial group. She would have 24 hours of contact time with the students in one semester.

In Jan 2016, (beginning of Semester 2, 2015/16), the embedded librarian, as an Academic Advisor, supervised a tutorial group consisting of four teams of students (five students each) to complete a project to be presented at the Final Symposium. She met and coached each group. At the end of the semester, the embedded librarian assessed students' presentations at the Final Symposium. The embedded librarian's performance was reviewed in the middle of 2016. The teaching feedback from students showed that the embedded librarian's overall effectiveness score was above the department average.

In Academic Year 2016/17, a new GEQ1917 teaching team was established and a major revamp of GEQ1917 syllabus was affected. As part of the teaching team, the embedded librarian contributed to the revamp. She was tasked to develop the Tutorial 1 lesson plan on information literacy. In order to apply a framework of enquiry used by students in all tutorials, the embedded librarian suggested applying the PESTLE analysis as a framework of enquiry. PESTLE analysis (Political, Economic, Social, Technological, Legal, Environmental) is the acronym used to analyse external issues in the environment that might affect a company or its products or market (Kurian, 2013). It is used for market and environmental analysis and to support strategic decision-making (Fahey & Narayanan, 1986). PESTLE analysis has also been applied at another Singapore university library during research consultations. In one-to-one sessions, librarians use this framework to guide students in deconstructing research questions (Munoo, 2015).

In enquiring or investigating an issue, students were required to consider all PESTLE factors that impact a particular sustainability issue. With each PESTLE factor articulated, students would then have the keywords for their information search, and have a better idea of which relevant information source they should use. The teaching team saw the usefulness of PESTLE and

adopted it for all GEQ1917 tutorials. All tutorial worksheets had a question in which students had to determine the PESTLE factors of a particular issue.

Tutorial 1 (the information literacy tutorial) was taught by Academic Advisors, including the embedded librarian for her own tutorial group. The embedded librarian created a worksheet, the assessment rubrics and an online guide for students (<http://libguides.nus.edu.sg/geq1917>). To train the Academic Advisors, the embedded librarian created an Academic Advisor's Brief, which explained the lesson plan. Academic Advisors also looked through the comprehensive LibGuide to prepare for Tutorial 1. As with all tutorials, students were given 5% of their final grade for Tutorial 1. The assessment rubrics of all tutorials also included a criterion for the selection of authoritative, relevant and timely information sources. This criterion was given 10% weightage.

In order to observe whether the Academic Advisors could teach Tutorial 1, the embedded librarian attended another Academic Advisor's tutorial. The Academic Advisor demonstrated a good grasp of the lesson plan focusing on the importance of identifying keywords to find the information as well as the relevance of academic databases. The Academic Advisor was also able to guide students to apply PESTLE factors in their search for information.

The embedded librarian tutored a tutorial class of 16 students. She met and tutored them every two weeks. As Academic Advisor, the embedded librarian chose the readings for the tutorials. The readings were chosen for the purpose of transiting students from reading simple news articles to magazine articles from Nature, Harvard Business Review, etc. The embedded librarian attended weekly Academic Advisors meetings to discuss and to give feedback on the previous week's lesson. Meetings were also a time when the embedded librarian was able to immerse herself in the academic culture of RVRC. The end of 2016 saw the embedded librarian guiding her students in their critical response project. The embedded librarian wrapped up the semester's work by moderating and submitting final grades and giving feedback to each individual student in her tutorial group.

Discussion and Analysis

From the start of 2016 until the end, the embedded librarian traversed an intense journey of learning. Whether it was reading up on environmental sustainability, designing instruction, contributing to syllabus revamp, tutoring and assessing 16 students or working with faculty, every single step was absorbing and enriching.

The success of the embedded librarian initiative was due to an academic and a librarian conversing. It was serendipitous that the academic was a champion of information literacy and the librarian was passionate about student learning. It is important to note that the conversations were not on information literacy but on student learning. The librarian did not have to persuade the champion of information literacy to support her cause. Instead, she talked about issues she was personally concerned about. These were challenges students faced in learning and reading and consequently, how students evaluate, select and use the information they find. These were the same issues about which the academic was also concerned.

When Barbara Dewey defined an embedded librarian as one who builds relationships with groups and develops a deep understanding of their work, supporting them by targeting their greatest needs, she provided the blueprint on how to embed.

However, it was not simply getting two enthusiastic people to converse. The academic was fully aware of the librarians' professionalism and work ethic. He had also been working with the librarians to develop ILPs and was, thus, familiar with the consistent good quality of the ILPs.

The reputation of the librarians' professionalism, knowledge and expertise could not have been established without the leaders of NUS Libraries investing heavily on training and giving librarians the freedom to explore. The ACRL Immersion Program inculcated the habit of applying learning activities as well as instilling the spirit of exploration and improvisation.

With this spirit of exploration and her passion for student learning, the embedded librarian created a syllabus which non-librarians (Academic Advisors) had to teach. Her choice of PESTLE analysis (an essentially business framework) to teach enquiry showed how she grasped the need to apply a simple and easy framework which was readily available.

As a champion of information literacy, the Master of RVRC truly believed in the necessity for students to learn information literacy to be future-ready in the 21st century workplace. He was also very keen in exploring new ways of getting things done, believing that embedding the librarian alongside faculty is achievable. He exerted great influence on the Academic Advisors and thus, created an inclusive culture that smoothened the process of embedment.

A question that should be asked is whether the embedded librarian has the subject knowledge to be an Academic Advisor. Both her degrees were purely Library Science. The Academic Advisors were ecologists. Responding to this lack of knowledge, the Master of RVRC encouraged her to read up on environmental sustainability. Eventually, the embedded librarian focused on building her knowledge on the social and business aspects of sustainability. With this, the embedded librarian complemented the teaching team by being the de-facto advisor for projects on these two aspects of sustainability.

With the librarian embedded in RVRC, the previous team of RVRC librarians was disbanded. This meant these librarians could have more time to focus on their other ILPs, thus, releasing some strain on manpower resources. However, at least 50% of the embedded librarian's time per week is allocated to preparing for the tutorial, assessing, administering and attending weekly meetings. During the vacation period, a large portion of her time is working with the Academic Advisors on lesson plans. Although she has only one tutorial class, time was spent trying to understand students' learning needs and supporting these needs. This heavy investment of time in RVRC resulted in the allocation of the embedded librarian's other responsibilities to another librarian.

In conclusion, the embedded librarian initiative was a successful one in which many new things were learned. Investing in training passionate librarians to cultivate a habit of innovation, and giving them the freedom and time to explore, reaps worthwhile benefits. Whether the initiative is sustainable depends both on the Master of RVRC as a champion of information literacy and

NUS Libraries' continuous investment in the embedded librarian initiative. At present, the embedded librarian seeks to be a part of the student learning and academic community.

Moving Forward

Moving forward, RVRC is planning a second year programme starting Academic Year 2018/19. This programme allows first year students a chance to continue learning at RVRC after their first year. The second year programme is likely to be a basket of workshops, activities and programmes to nurture specific characteristics such as resilience and respect. The embedded librarian will be contributing to the development of the second year programme as she continues to be part of RVRC.

Considering the ready-adoption of PESTLE analysis as a framework of enquiry, NUS Libraries will continue to explore other frameworks that support enquiry in various disciplines. These frameworks need not only support critical thinking modules such as GEQ1917. An example is the Design Thinking components of feasibility, desirability and viability, which could be applied to demonstrate various primary and secondary information sources. There are various frameworks that could be used to guide students to ask questions and to delve deeper. The purpose is to connect learning information literacy skills to the subject discipline through enquiry. With this, NUS Libraries continues to support the Asking Questions pillar of NUS' General Education curriculum.

Achieving the deeper Co-Teaching level of embedment is a major milestone for NUS Libraries. The success of this initiative was shared with the other resource librarians at NUS Libraries. Resource librarians are encouraged to review their existing ILPs, and engage faculty members in conversations to seek opportunities and find more champions of information literacy on campus.

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