

Information Literacy: Making asynchronous learning more effective with best practices that include humor.

ABSTRACT

It is becoming increasingly important for students to graduate from institutions of higher learning equipped with the information and digital literacy skills necessary to succeed in an ever-changing world. It is also important for the librarians teaching these literacies to ensure the maximum amount of learning can take place in the limited amount of time made available to them. One way to make the learning environment conducive to learning is to use accepted best practices, but this raises the question of which best practices are more suited to an online environment. This research aimed to explore the efficacy of using best practices that include humor in an asynchronous online library program where there was no built-in group discussion and no contact with the librarians unless initiated by the students themselves. Comparing the results of the pre-test and post-test using statistical data analysis on the university student sample population indicated the resulting library program was effective, while the students themselves confirmed their appreciation of the humor used by the librarians. Those best practices used for the program were organized into the construct of the ADDIE instructional design model and were included in this paper.

KEYWORDS

academic libraries, asynchronous online learning, digital literacy, humor, information literacy, instructional design

INTRODUCTION

The question of teaching effectiveness has long been of interest to researchers. An article written in 1896, for example, stated that at the time “numerous pedagogical works” had already been written (Kratz, 1896, p. 413). In this study, where pupils were asked to comment on their teachers, many of the pupils indicated their appreciation of teachers who were patient, polite, cheerful, smiling, merry, and “full of fun” (Kratz, 1896, p. 417). More than a hundred years later, researchers are still finding that learning “thrives in

environments filled with joy, laughter, fun, and enthusiasm” (Agius & Levey, 2019, p. 23). Although many educators today would agree with this way of thinking, the idea of using humor as a teaching tool was not universally considered until as late as the 20th century (Schriek, 2018).

Since King’s first reference to the “sage on the stage” method of teaching (King, 1993, p. 30), interest in the use of humor has increased, both on the part of teachers and of librarians. An interest that has seen humor being included in discussions on best practices, and that initiated an investigation by the librarians at the Singapore Institute of Technology (SIT) into those best practices most suited to the new online module being developed to teach information literacy (IL) to new students.

The purpose of the new module was to introduce first year SIT students to those IL skills necessary to start their university journey. Several learning units were designed to introduce the students to the library and help them learn or revise those skills necessary to plan a search, conduct a search, choose the right resources, and cite and organize the sources. To allow students to complete the module in their own time, and to be able to refer back to it when necessary, an asynchronous online approach was taken.

The purpose of this study was to determine if this new asynchronous online IL module was successfully able to give the SIT students a common baseline of foundational research skills upon which more customized programs could then be scaffolded. The research questions and alternative hypothesis of this study were:

- Research Question 1 – How does following instructional design best practice make it easier for the librarians to design and develop an asynchronous online IL module?
- Research Question 2 – How does adding humor to an asynchronous online IL module make it easier for the students to learn the necessary information and digital literacy skills?
- Research Question 3 – To what extent is the new asynchronous online IL module being offered to the students at SIT helping them learn the necessary

information and digital literacy skills?

- Hypothesis – Completing all the learning units in the online library module will have a positive effect on the students' post-test scores.

STUDY BACKGROUND

Established in 2009, SIT currently has almost 7,000 students taking 40 undergraduate and 9 postgraduate applied learning programs. The first IL classes were held at SIT in 2015. From three classes in 2016, the library staff were teaching thousands of students by 2019, but not all the students enrolled at the university attended a library class before they graduated. The decision to develop a self-directed online IL module was prompted to a large extent by the needs of a lean library team and the desire to help develop all the SIT students as life-long learners.

The new online module was piloted with first year students taking courses from three different degree programs. With the full cooperation of the Faculty, the IL module was made a compulsory component in their courses. By making the module available in the university learning management system, there was the bonus of the module being available to all other students and faculty who wished at any stage to review their IL skills.

LITERATURE REVIEW

A literature review was conducted to explore the latest approaches to online learning. Of interest were instructional design best practices for asynchronous learning, in particular those approaches that advocated the use of humor. For this study, humor was defined as a quality that instills pleasure, joy, or delight, and elicits a smirk, a smile, a laugh, or any other positive emotional response.

The research was not restricted to learning in libraries as the librarians wanted to include pedagogical approaches to teaching. Studies on gamification, game-based learning, fake news, irony, parody, and satire, were excluded as being outside the scope of this discussion. Although several recent studies were found that dealt with useful suggestions for developing online programs, not all the suggestions were identified as best practices.

For this study, all relevant practices were considered, and the literature revealed a number of practices that either were or could conceivably be applied to asynchronous online learning in libraries. These practices were grouped into the broad categories of general strategies, frameworks, instructional design (ID), and humor.

General Strategies

Of the general strategies recommended for both library and non-library programs, the most frequently mentioned was that of active learning (Acevedo 2020; Chickering & Gamson, 1987; Franklin et al., 2021; Gahl et al., 2020; Lierman & Santiago, 2019; Robinson & Bawden, 2017; Saunders, 2018). That is, learning where students are motivated to actively engage and not just click on links. The use of technology was seen as one way to encourage active learning (Acevedo, 2020).

Prevailing recommendations for the user interface included ease of navigation (Franklin et al., 2021; Lierman & Santiago, 2019; Robinson & Bawden, 2017), a high degree of learner control (Lierman & Santiago, 2019; Robinson & Bawden, 2017), multiple ways for the learner to contact the instructor (Acevedo, 2020; Lierman & Santiago, 2019), consistent design (Caskurlu et al., 2020; Robinson & Bawden, 2017), and an estimated completion time (Lierman & Santiago, 2019). A combination of different instructional techniques was suggested as a way to address different learning styles and diverse IL skills (Acevedo, 2020; Chickering & Gamson, 1987; Harrison & Deans, 2021; Lierman & Santiago, 2019; Robinson & Bawden, 2017).

There were also some suggestions for the content of online programs, the most widespread of which was to chunk the material into more easily digestible learning units (Acevedo, 2020; Franklin et al., 2021; Lierman & Santiago, 2019; Robinson & Bawden, 2017; Saunders, 2018). An assessment component was prescribed as a way of keeping both the learner and the instructor apprised of learning progress (Franklin et al., 2021; Robinson & Bawden, 2017; Saunders, 2018) especially when in the form of frequent low-stakes quizzes (Acevedo, 2020). To encourage learning and engagement, it was specified that real-world examples be used (Acevedo, 2020; Lierman & Santiago, 2019) and that the

language be informal (Lierman & Santiago, 2019). It was also mentioned that content should be well-organized with a logical structure (Acevedo, 2020) and not “text-heavy” (Itow, 2020, p. 451).

Other recommendations included embedding the program into the institutional learning management system (Acevedo, 2020; Franklin et al., 2021). Not only does this allow tracking of learner progress, but learners should not be expected to spend their time searching for the library program. Faculty support was seen to be critical (Harrison & Deans, 2021), as was collaboration with other experts (Franklin et al., 2021; Itow, 2020; Robinson & Bawden, 2017; Saunders, 2018). These experts could include other librarians, instructional designers, or media specialists.

It was indicated that feedback to the learners be constructive and timely (Acevedo, 2020; Chickering & Gamson, 1987; Itow, 2020; Lierman & Santiago, 2019), and that technical constraints be kept in mind (Franklin et al., 2021; Harrison & Deans, 2021) as not all learners have the same access to technology or the same level of Internet connectivity, and not all instructors have the same technical skills. In addition, it was recommended that learning units be generic and easily modifiable (Robinson & Bawden, 2017) to increase their usability, and to allow for the necessary ongoing maintenance and revision (Acevedo, 2020; Franklin et al., 2021). A final best practice in this category, pivotal to the success of any program, is listed by Acevedo who advised putting one’s “heart and soul” into teaching (2020, p. 12461).

Frameworks

The concept of IL was first raised in the early 1970s, and various institutions have been developing definitions and frameworks ever since. The use of library frameworks and standards was identified as best practice in asynchronous online information literacy instruction (ILI) (Lierman & Santiago, 2019; Saunders, 2018), as best practice for online ILI (Franklin et al., 2021), as good practice in asynchronous online ILI (Harrison & Deans, 2021), and as good practice for online ILI (Robinson & Bawden, 2017).

As IL frameworks increased in complexity and began to include pedagogical principles,

'library orientation' evolved into 'information literacy'. Not all librarians, however, have advanced from primarily demonstrating processes to concentrating on teaching higher order thinking skills. This was highlighted in a study of online IL programs in college and university libraries (Saunders, 2018). Although this study was limited in that it could not include those programs that permit only authenticated user access, it did reveal a trend.

The use of pedagogical frameworks in ILI appears to have been "ad hoc" and "uncritical" (Robinson & Bawden, 2017, p. 717), despite evidence of their value. One pedagogical framework addressed in this review was that of backward design, an approach to teaching that starts the design of any instructional experience with the identification of the learning outcomes. It was identified as best practice in non-library programs (Acevedo, 2020), as well as in ILI (Franklin, et al., 2021; Saunders, 2018). Backward design was also highlighted - but not identified as such - by Itow (2020). The successful use of backward design by academic librarians was also detailed in a scoping review by Johnson-Barlow & Lehen (2021).

One of the better-known pedagogical frameworks that can be successfully used for online ILI is the Community of Inquiry (CoI) framework. This framework was used in a study of an asynchronous non-library program (Al Tawil, 2019), in ILI (Budhai & Williams, 2021), and in non-library programs (Caskurlu et al., 2020; Yandra et al., 2021). Garrison, Anderson, and Archer (2000), who first developed this framework, identified the three elements considered essential to a successful learning experience – teaching presence, social presence, and cognitive presence. Teaching presence is evident in the organization, design, and delivery of a course; social presence is the perception of oneself, of other learners, and of the instructor in an online environment; while cognitive presence is manifest when the learners start thinking critically. Together these three elements can help to minimize the isolating effects of asynchronous online learning.

Another well-known and relatively under-utilized pedagogical framework is that of Bloom's Taxonomy, which helps organize learning objectives into different levels of complexity to get learners to move beyond simply memorizing the material. The recommendation to include the teaching of higher order thinking skills is highlighted in the studies on

asynchronous online programs (Acevedo, 2020; Lierman and Santiago, 2019; Saunders; 2018) and in online ILI (Franklin et al., 2021; Robinson & Bawden, 2018).

Instructional Design (ID)

A number of studies raised the importance of ID in online ILI (Budhai & Williams, 2021; Franklin et al., 2021; Held & Gil-Trejo, 2016; Marchis, 2018; Robinson & Bawden, 2017). Lierman and Santiago recommended “conforming to instructional design principles” when developing asynchronous ILI (2019, p. 207), while a scoping review by Johnson-Barlow and Lehnen found several studies demonstrating the successful use of ID in asynchronous ILI (2021). Evidence was also presented to recommend the use of ID in non-library programs (Caskurlu et al., 2020).

One of the most commonly used ID models is the ADDIE model. Although there are different versions, at its most basic ADDIE consists of the steps of analyzing, designing, developing, implementing, and evaluating. Academic librarians are becoming increasingly more interested in ID, using ADDIE and other models either partially or in their entirety in their IL programs (Johnson-Barlow & Lehnen, 2021). Another useful model of ID identified but not often used by librarians in this review is that of Gagne’s nine events or steps of instruction (Johnson-Barlow & Lehnen, 2021).

Humor

As of September 2021, only two academic institutions were found to have examined the use of humor in their online ILI over the last five years - the Stanford Libraries in the United States (Marchis, 2018) and the Lehman College, City University of New York (Poggiali, 2018). Both institutions reported having successfully used animated characters in their online programs, although their measure of success was not based on any formal assessment.

The identification of the use of humor as a best practice in online ILI also appears to be a relatively under-explored field. A number of recent studies and reviews were found that investigated good or best practices within online ILI (Franklin et al., 2021; Johnson-Barlow

& Lehen, 2021; Lierman & Santiago, 2019; Robinson & Bawden, 2018; Steele, 2021) but only one of these papers mentioned humor and that was to advise “focusing on the delivery of content over attempts to be humorous” (Hess, 2014, as cited in Lierman & Santiago, 2019, p. 207).

Although much of the literature on humor referred to its use in the context of classroom or face-to-face teaching across different disciplines, the reasons given for using humor in teaching could apply to any method of instruction. Agius and Levey (2019) recommended using humor to gain the attention of a class of subjects with language disorders, while Tschakert, Blaber, and Chen (2019) suggested the use of humor as a tool to gain the attention of students in accounting classes. Other researchers who advocated the use of humor to gain the attention of a class and keep the learners engaged included Azadbakht (2019), Ryoo (2019), and Schriek, in an informally published work (2018).

The use of humor in teaching has been identified as another way to reduce stress and anxiety, both in library classes (Agius & Levey, 2019; Azadbakht, 2019) and in non-library classes (Acevedo, 2020; Ryoo, 2019; Schriek, 2018). Humor can also be used to stimulate creativity, make it easier to remember what is being learned (Azadbakht, 2019; Ryoo, 2019), and help make the instructor appear more approachable (Ryoo, 2019). In addition to recommending guidelines for the use of humor, Agius and Levey (2019) and Ryoo (2019) cautioned against using aggressive or self-defeating humor. Azadbakht advised to avoid the use of “inappropriate” humor (2019, p. 306), and Schriek stated the use of humor “should follow a golden first rule of research: Do no harm” (2018, p.57).

METHODOLOGY

Asynchronous Module Development

After having established the need for a self-directed online program for first year students, the first steps taken by the team of four librarians and one digital media specialist was to decide what should be included in this online module. Once the required content was agreed upon, the team gathered the learning objects and created multiple short quizzes to be included with the content. The plan was not to create everything from the ground up,

but rather to investigate the use of already existing material made available online. A resource developed by the University of Manchester Library was used almost unchanged in the form of a SCORM learning unit and with kind permission from the creators, as was a resource from the Virginia Tech University Libraries.

Various short videos from other libraries were also used in the various home-grown SIT learning units. The content was then organized into seven different sections, with two learning objects in the form of a video, an infographic, or a SCORM learning unit being included in six of the sections. The seventh section included the Qualtrics post-test and a feedback survey. Table 1 details the learning objects and learning outcomes for each of the sections of this module. Those learning units identified by an asterisk were informally graded. The other learning objects were not graded in any way.

Unless otherwise stated, all the learning units in the table were SCORM content packages of 10 to 15 minutes duration and produced using Articulate Storyline or the iSpring Suite, a PowerPoint-based authoring toolkit. Camtasia was also used during the development of this module for the two introductory videos. It should be noted here that when it comes to the selection of what software to use, there is no gold standard or best practice (Robinson & Bawden, 2017) because not all libraries are equal when it comes to available budgets and staff capabilities.

Table 1

SIT Library Essential Research Skills module content (informally graded)*

SECTION	LEARNING UNITS	LEARNING OUTCOMES
Quick Introduction to the SIT Library	1. A short video highlighting what the library has to offer the students (3 minutes) 2. A brief video on how to use OneSearch, the library search portal (1 minute)	Identify the library services, resources, and facilities

Introduction to Essential Research Skills	1. An infographic introducing the contents of the library module 2. * The pre-test, inspired by Northstar Digital Literacy, was packaged as the story of a student needing to find information for a job interview essay	• Develop a deeper understanding of the research process
Starting with Research	1. * How to define and scope a research topic 2. “Planning Ahead: Making Your Search Work” (by the University of Manchester Library)	• Determine the extent of the information needed • Access the needed information • Use information effectively to accomplish a specific purpose
Finding Resources	1. A short interactive presentation describing the timeline of information (5 minutes) 2. * How to find reliable research resources	• Determine the extent of the information needed • Access the needed information • Access and use the information ethically and legally • Evaluate information and its sources critically • Use information effectively to accomplish a specific purpose • Present and communicate information

Choosing the Right Resources	1. * How to use the CRAAP test to quickly evaluate the information found 2. * What steps to take if a search is not successful	• Access the information needed • Evaluate information and its sources critically
Citing and Organizing the Sources	1. * All about plagiarism and citing 2. “Getting Started with the Mendeley Reference Manager” (by the Virginia Tech University Libraries)	• Access and use information ethically and legally • Manage and organize information • Use a combination of technologies to research, communicate, and perform tasks
Overall Assessment and Feedback	1. Pre-quiz survey to find out if the students had attended any other library programs 2. * Post-test 3. Feedback survey	• Demonstrate a deeper understanding of the research process

The guidelines and best practices identified in the literature were carefully considered for inclusion in the design and development of the IL module, with a table in Appendix 1 indicating how the practices were adapted at SIT into best practice suggestions within the construct of the ADDIE model. After many years of providing support for students studying for diplomas in the creative industries, this researcher has recognized the importance of the look and feel of any learning program. The literature also provided evidence in support (Al Tawil, 2019; Saunders, 2018). As a result, the ADDIE model in this research study was adjusted:

- Analyzing – thinking about the learners.

- Designing – considering the look and feel and usability of the program.
- Developing – including the content within accepted pedagogical frameworks.
- Implementing – delivering the program.
- Evaluating – deciding what worked, what did not work, and what needs changing.

Most of the general strategies from the literature were included, with the notable exception of active learning. While the SIT students were encouraged to think critically as they engaged with the learning, the asynchronous and self-directed learning approach precluded any group discussion.

Existing frameworks were also used, with learning outcomes being mapped to the SIT SITizen Industry Ready Professional Framework, the Singapore Ministry of Education Digital Literacy Framework, and the IL framework known as ANCIL (Secker & Coonan, 2011). Mapping to these frameworks allowed the expansion of the SIT IL curriculum to include digital literacy (DL) skills. DL was indirectly covered when the students were expected, for example, to successfully complete the tasks in the online learning units, and to use reference management software. DL was also included in the follow-up face-to-face classes where the students were taught how to use online annotations to answer questions by the instructor, and how to investigate open source article reliability.

The pedagogical framework of backward design was used to ensure the test questions and the content of each learning unit were designed and developed to support specific learning outcomes. In addition, despite there being no opportunities to allow the students to build a sense of the other learners to mark social presence from the Col framework, every effort was made to include the sense of the librarians as being approachable people with a strong teaching presence.

Every effort was also made to ensure the students would be taken as far up the levels in Bloom's revised taxonomy pyramid as possible, resulting in the provision of opportunities for the students to remember, understand, apply, analyze, and evaluate what they were learning. Gagne's nine events of instruction were used with the librarians addressing each event of the Gagne model as outlined in Table 2. In addition, Chickering and Gamson's

(1987) seven principles for the best approach to teaching undergraduates were also used, as listed in Table 3.

Following the first step in Gagne’s nine events of instruction, extensive use was made of attention grabbers in the form of brightly colored slide designs, music, videos, voiceover, and unexpected sounds – see Appendix 2 for example screenshots. One of the learning units used a squawking parrot as an attention grabber. The students were then asked if listening to the parrot squawk was almost as painful as trying to find the right resources for their assignments.

Humor was deliberately employed in the six home-grown learning units, but in a subtle manner. The inclusion of two student characters, for example, allowed the librarians to try to invoke positive emotional responses with dialogue and changing facial expressions. These two characters, named Sarah and Ryan and pictured in four of the screenshots in Appendix 2, appeared regularly as vector images giving comments or asking questions.

Informal language and the local Singapore slang, Singlish, were used, as well as slightly ridiculous quiz answer options. For example, when asked what to do if a search yielded no results, one of the answers suggested an option to burst into tears. The short videos used from other libraries were selected to display a preference for the more light-hearted approach.

Table 2

How the SIT Librarians Addressed Gagne’s Nine Events of Instruction

Events	Methods
Gain Attention.	From orchestral music to the sound of a bus engine, attention grabbers were used at the beginning of each learning unit. The sound of a bus, for example, was played before segueing into a conversation between two students at a bus stop. The use of humor, informal language, bright colors, and

	infographics was widely used.
Inform Learners of the Objectives.	The introduction to the Library module began with a simple explanation of what to expect. All the learning units also began and ended with the objectives that were expected to be achieved. This is particularly important for adult learners who like to know exactly what is expected of them.
Stimulate Recall of Prior Learning.	A few weeks before work began on this program, a student asked the librarians how to find information for an essay that had to be written as part of a job interview. As this is something many of the students will have experienced, the concept was used to form the basis of the pre-test. Entitled Sarah's Story, the pre-test took the students through a series of steps and decisions designed to help Sarah find information for a job interview essay.
Present the Stimulus	The stimulus, or content, was presented in an organized and consistent manner, in a variety of ways that also included video. The same design was used in each learning unit, with only the content and the colors changing. All the quizzes in the learning units were presented on the same color background so the students would know when it was time to apply what they had learned.
Provide Guidance for the Learners	Clear and simple instructions were given throughout. The consistency in the use of slide design and quiz background color was also used to provide guidance. Each slide title alerted the students about what to expect, for example, 'Understand the Issue', 'Tips', 'MORE Tips'. This flow of titles also helped to gain attention and introduce the stimulus.

Elicit Performance	The quizzes in the learning units provided multiple opportunities for the students to apply what they had learned in each unit.
Provide Feedback	Feedback was provided after each quiz answer submission. The overall feedback form included a section for the students to indicate if they needed the librarians to contact them, and this contact was carried out at regular intervals.
Assess Performance	Each of the low-stakes quizzes in the learning units was included to help the students gauge their progress along the way. The post-test, based on the overall learning outcomes, was included to assess how much the students had learned upon completion of the module.
Enhance Retention and Application	Apart from the frequent quizzes, one of the best ways to enhance retention and application is to ensure the IL program is run not long before the students are to submit an assignment. The follow-up Zoom class where students could ask questions and apply what they had learned in the online module also helped in this regard.

Table 3

How the SIT Librarians Addressed Chickering & Gamson's Seven Principles of Undergraduate Education

Principles	Methods
Encourages Contacts Between Students	Substituting Librarians for Faculty, the design of the welcome messages, orientation video, guiding instructions, and

and Faculty	learning units were all calculated to portray the librarians as friendly and approachable. This included the use of humor, the overall tone, the layout, and the use of informal language, color, and images. Contact details for the librarians were also inserted in as many places as possible, including at the end of each learning unit.
Develops Reciprocity and Cooperation Among Students	Reciprocity and cooperation were found to be difficult to achieve with asynchronous online learning, although an attempt was made to minimize any competitiveness by not awarding formal grades in the individual learning units. The quizzes were graded, but as they were designed for practice and revision alone, these grades had no bearing on students' overall academic grades.
Uses Active Learning Techniques	There were quizzes throughout the learning units where the students could immediately apply what they had learned. No collaboration between the students was involved, however, so this was not authentic active learning.
Gives Prompt Feedback	All the quizzes in the learning units had detailed responses to any question answered incorrectly, and the responses were supplied immediately after each answer was submitted. If the students indicated in the overall feedback form that they needed the librarians to contact them, this contact was carried out at regular intervals.
Emphasizes Time on Task	By making the learning self-directed, clearly stating how much time it would take to complete each learning unit, and keeping each learning unit duration to less than 15 minutes, the librarians allowed the students to use their time more effectively. A learning unit could be completed on the bus on

	the way home, for example.
Communicates High Expectations	This is probably one of the most important of the seven principles. No one likes to be patronized, which can happen with the 'sage on the stage' approach. High expectations were also communicated in the quizzes and tests where it was not memory that was being tested but understanding, more specifically, the ability of the students to apply what they had learned. In addition, the post-test questions were not so difficult as to demoralize the students, but neither were they so easy the students were not expected to think before answering. Including in the instructions the simple phrase "We know you will do well" would also have communicated these expectations.
Respects Diverse Talents and Ways of Learning	The techniques employed to address this principle included using the minimum amount of text, lots of color and images, and multimedia. The original plan was to provide voiceover for all the learning units, but various factors prevented this from happening. As the Library was closed at the time for a nationwide Circuit Breaker, the Singapore version of "lockdown", most of the recording had to be carried out with no professional equipment in the librarian's home.

Research Methods

To address the research question from more than one perspective, both quantitative and qualitative data were gathered. The research subjects were originally those first year SIT students from the three selected degree programs who completed all the learning units in the online IL module, including both the pre-test and post-test. It was subsequently found that 16 more students from other degree programs had also completed the entire module, so these students were also included in the study. This sample of students was not

randomly selected, but the fact that students from five different clusters or faculties were involved made it possible to allow the results of this study to be extended to the rest of the SIT student population.

To ascertain how much of an impact the online module had on student learning, the pre-test and post-test scores were compared using a paired samples *t*-test from the Excel statistics functions. In addition, a number of these students were asked to complete a survey on their perceptions of the use of humor and attention grabbers in the IL module. Although race, ethnicity, sex, and gender were ignored as being irrelevant to this study, the age of the students had to be considered.

RESULTS

Pre-test and Post-test

After seven months, 468 students had completed either the pre-test or the post-test, and at least one learning unit. 232, or approximately one third of the first year students from the selected degree programs, had attempted all the learning units and completed both the pre-test and post-test. With the inclusion of the 16 students from the other programs, only the data from these 248 students were used for the statistical testing. This was because the librarians wanted to ascertain if the completion of the whole module had a positive effect on the post-test scores.

Figure 1 includes the average scores of these students for the pre-test and post-test, as well as for the scores for each home-grown learning unit that was graded. The average post-test scores increased by 17% from the pre-test scores. To explore the statistical validity of the difference between the pre-test (61%) and post-test (78%) scores, the paired samples *t*-test was used. The results of this test can be seen in Table 4 where it is evident that the *p*-value was less than the 0.05 significance level. This means that, with a confidence level of 95%, the difference between the pre-test and post-test scores was statistically significant, and as such, the null hypothesis could be rejected.

Figure 1

Average Scores for the Tests and the Home-Grown Learning Unit Grades

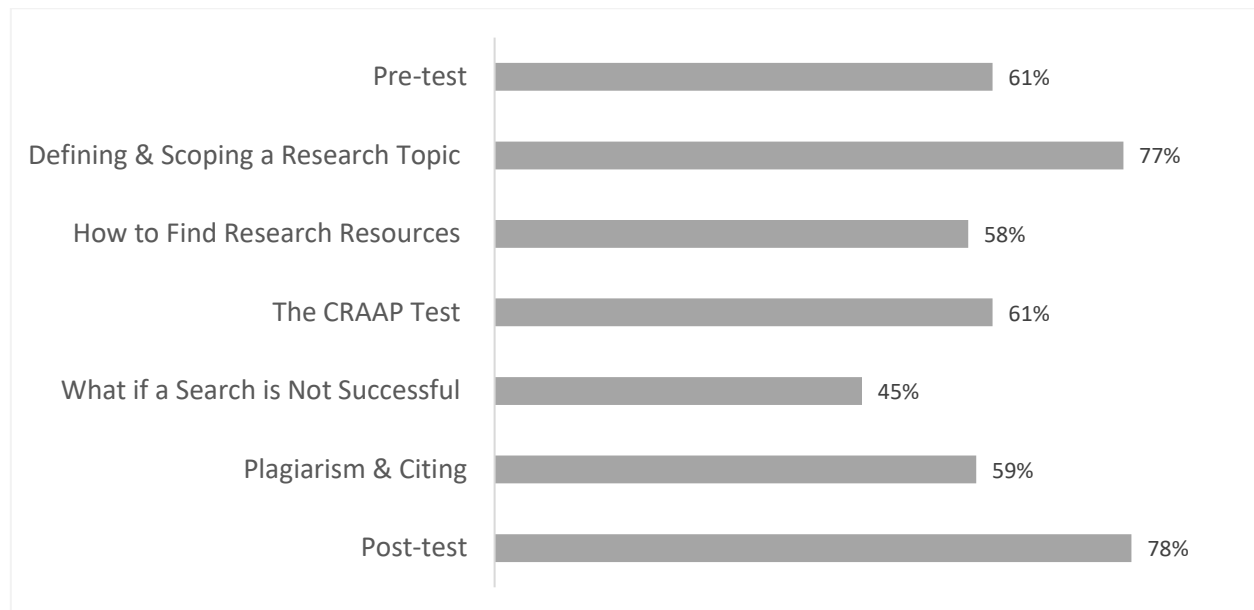


Table 4

Paired samples t-test for the student grades before and after the intervention

	<i>Pre-test</i> n=248	<i>Post-test</i> n=248
Mean	60.72	77.96
Standard Deviation	19.87	17.65
Standard Error Mean	1.26	1.12
DF	247	
<i>t</i>	-11.35	
<i>p</i>	0.00	

Survey

To get an idea of whether or not it was the addition of attention grabbers and humor that helped increase the test scores, a survey was given to a select number of students. The questions were based on the findings on humor from the literature. To minimize recall bias, a colorful infographic containing selected screenshots of the learning units was also sent to these students. Of the 22 students who responded, the results were positive. These responses are indicated in Figures 2, 3, and 4.

Figure 2 shows that the majority of the respondents agreed or strongly agreed with using humor in the IL module, while most of them agreed or strongly agreed that the attention grabbers captured their interest. In Figure 3 it is evident that the students felt the top four benefits of using humor in an IL program were to catch attention, make it easier to remember the learning points, encourage learning, and make the librarians more approachable. One student added another benefit that was to “help us stay awake from food coma after lunch”, and not a single student responded that there were no benefits.

Figure 2

How the students felt about the Humor and Attention Grabbers

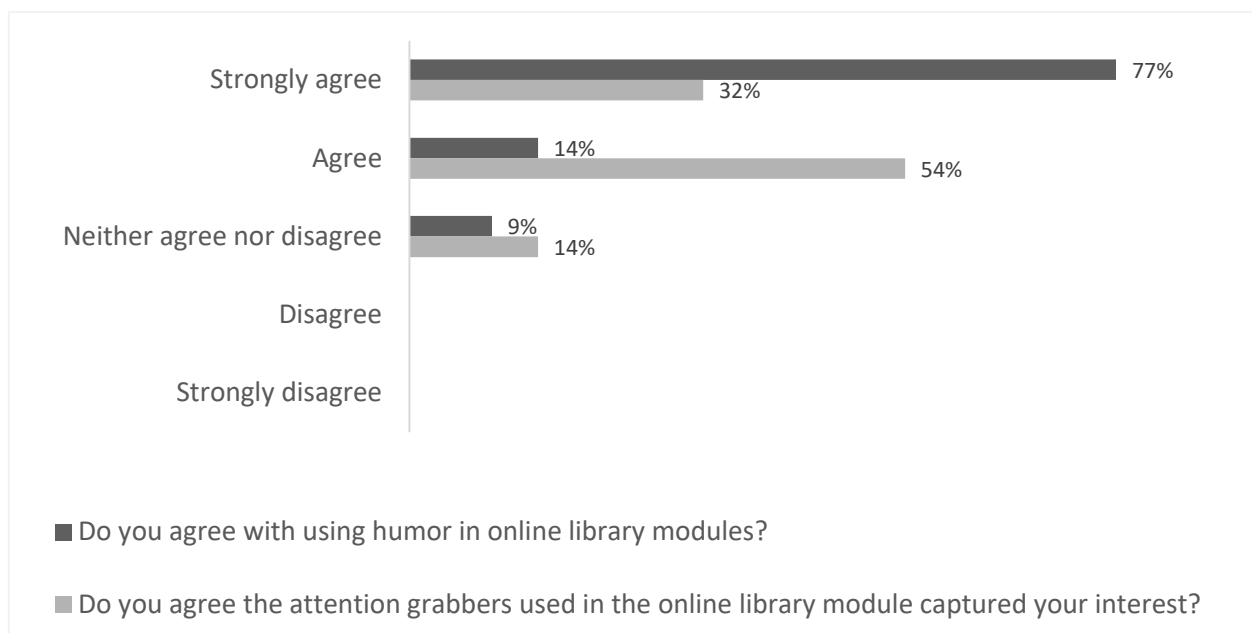
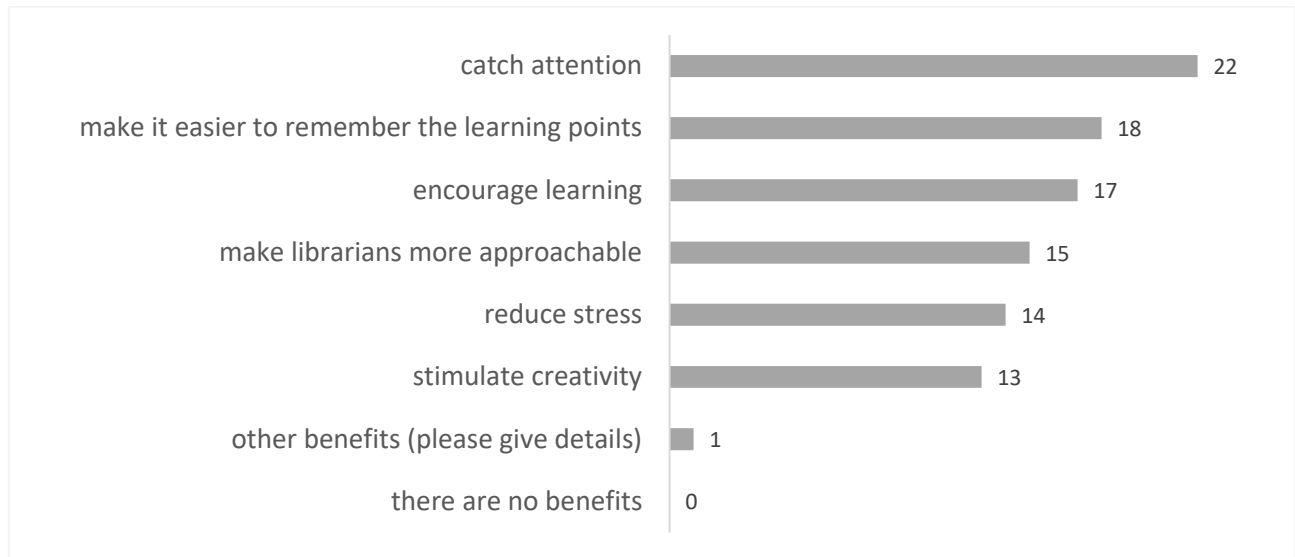


Figure 3

What the students considered to be the benefits of using humor in online IL modules



In Figure 4 the top four most effective uses of humor and attention grabbers for learning were shown to be the use of informal language, videos, and music, with the use of Singlish (local Singapore slang). Bright colors were also popular. When the students were asked what they considered to be the top three least effective uses of humor and attention grabbers, on the other hand, the answers were the use of unexpected sounds, voiceover, and Singlish. Experience has shown that while some students find the use of Singlish funny, other students prefer the use of more conventional language. Five of the students indicated there were other forms of humor and attention grabbers that were either the most or the least effective, but only one student indicated what this form was, that is, videos that were too long were seen as not being effective for encouraging learning.

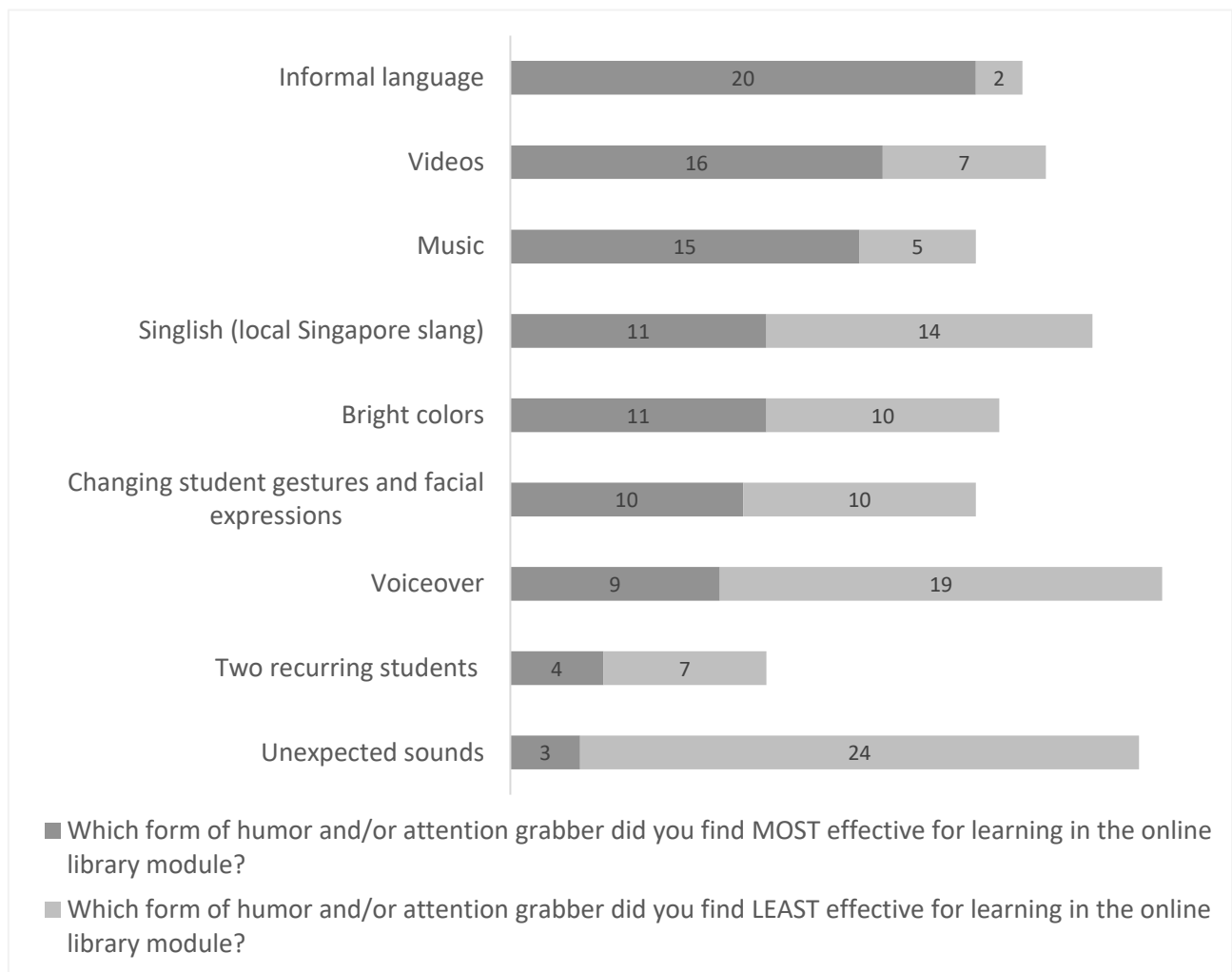
Feedback

At the time of writing, 195 SIT students had completed the feedback form at the end of the IL module. The feedback, which also came from those students not included in this study, was positive, with more than 80% of the students finding the library module to be “Good” or “Excellent” overall. The written feedback included the following selected responses:

- Thank you for the lesson! I was very pleasantly surprised at how fun and informative it was.
- How easily approachable our SIT librarians are if we ever need help!
- Thank you very much for this interactive and clear lesson.

Figure 4

*What the students felt was **MOST & LEAST EFFECTIVE** about the Humor and Attention Grabbers*



DISCUSSION

The main purpose of this study was to investigate the effect of SIT's new asynchronous IL module on student learning and to see if the use of best practices made it easier to design

and develop the module. With many useful suggestions on best practices and guidance from the literature, this researcher found it beneficial to list in a guide those practices that worked best at SIT within the ADDIE instructional design model – see Appendix 1. When coming up with a new program to encourage student learning there are always a variety of issues to consider, and a well-structured guide can help ensure a systematic approach. Such an approach can also help librarians with the maxim “teach less, learn more” which has taken on new importance as educators find themselves contending with such problems as ‘virtual fatigue’.

This study highlighted a concern that online programs are still thought to be inferior (Al Tawil, 2019; Caskurla et al., 2020; Gahl et al., 2020). The prevailing negative impression of online programs may be attributed to several different factors including but not restricted to the issues that:

- some educators struggle with the transition to teaching online as it requires substantial course adaptation and redesign;
- not all educators have access to, or can use the digital technology required to create interesting and engaging programs;
- not all educators or learners have the same access to the Internet or digital infrastructure, even in the developed countries; and
- the isolating effects of online programs can impede learning and increase the dropout rate.

The librarians also wanted to find out if the use of humor in this online module had a positive effect on learning. The responses from the survey sent to the students were positive, revealing that humor can be successfully used in online ILI. None of the students disagreed with the addition of humor and attention grabbers in the SIT Library online program, and only five of them indicated their ambivalence about the addition. Neither did any of the respondents indicate they thought the use of humor had no benefits in the library module.

Along with several valid reasons for using humor in online ILI is the fact that humor can

make librarians more approachable. This is important because, unlike faculty, librarians do not usually have prolonged daily or weekly contact with the same groups of students. In addition to this, library staff approachability has become even more important during the COVID-19 pandemic as students struggle to find their way amid the unprecedented global upheaval.

There is, however, a scarcity of available research in recent years on using humor in online ILI. This scarcity could be due to an impression held by librarians that they should concentrate on the content of a program instead of trying to include humor. It could also be because it can be difficult to decide what type of humor to use, as well as when and how to use it. A common refrain is that librarians are not comedians but, as this study has shown, humor does not necessarily involve outright laughter.

The definition of humor used at the beginning of this paper, therefore, bears repeating with the reassurance that one does not have to be a comedian to instill pleasure, joy, or delight, or elicit a smirk, a smile, a laugh, or any other positive emotional response. The recommendation is to know the learners well and use the humor with which both the learners and the librarians are comfortable. Caution is advised with regards to using pop culture, however, as trends change so rapidly these days it can be difficult to keep up to date.

LIMITATIONS

One of the limitations with the results of the survey on the use of humor in this study was the relatively small number of students who took part. It was encouraging, therefore, when a subsequent survey gave similar results. 134 students taking the online IL module in the next iteration were asked the same questions about the use of humor, and their answers supported the responses of the original study subjects. Almost 90% of the students agreed with the use of humor in the online module, stating that the top benefits were to catch their attention, encourage learning, and make it easier to remember the point being learned. Another limitation arose with the bias inherent in the non-random sample selection. With the student subjects coming from all the different clusters or faculties, however, the results

could be applied to the rest of the SIT student population with some degree of assurance.

CONCLUSIONS

This research aimed to see if the new asynchronous online library module could provide the SIT students with the IL skills necessary to begin their university studies. To address the three research questions, the latest best practices and guidelines provided by librarians and teachers were examined, in both library and non-library situations.

The first research question investigated was:

1. How does following instructional design best practice make it easier for the librarians to design and develop an asynchronous online IL module?

The outcome of this research indicated the use of best practice makes the production of asynchronous online IL programs easier in a number of ways. Passion and enthusiasm, a best practice identified by Acevedo (2020), make the creation of online ILI less onerous. The use of practices that have been tried and tested by other educators helps ensure the librarians create a more rewarding learning experience while maximizing the use of their time. The organization of these best practices within the construct of the ADDIE model of instructional design has the added advantage of ensuring an organized and systematic learner-centered approach.

The second research question in this study was:

2. How does adding humor to an asynchronous online IL module make it easier for the students to learn the necessary information and digital literacy skills?

The research findings revealed this area to be under-explored, the literature referring instead to practices used in classroom or face-to-face teaching across different subject areas. Most of these practices did, however, translate into online IL and were used by the SIT librarians with positive results. The majority of the students indicated the humor helped catch their attention, made it easier to remember the learning points, encouraged their learning, and made the librarians seem more approachable. All of these reasons to use

humor have become even more important during the global pandemic. Both students and faculty are struggling with the effects of COVID-19 on the world, and this is where the librarian can contribute by offering support in addition to the teaching of learning and life skills.

The third and final research question on interest was:

3. To what extent is the new asynchronous online IL module being offered to the students at SIT helping them learn the necessary information and digital literacy skills?

Based on the pre-test and post-test scores, a paired samples *t*-test allowed the null hypothesis to be rejected. This allowed the researchers to conclude the asynchronous online IL module was, to a significant extent, successful in helping the SIT students learn the necessary IL skills.

This researcher believes that even without years of teaching experience, and with limited access to the latest technology, the use of instructional design best practices that include humor can improve asynchronous online ILI. The best practices listed in this paper are offered as a guide (Appendix 1). Future research can consider how to increase reciprocity and cooperation among students in asynchronous ILI, and to report the successful use of humor in other online ILI across the world.

ACKNOWLEDGEMENTS

This research did not receive any grants or funding and was approved by the Singapore Institute of Technology Institutional Review Board (Project number: 2021113). The author would like to acknowledge and thank her library colleagues, Afida A. Rahim, Jenny Wong Pei Hong, and Lim Siew Khim, for their work on this online library module. The author is especially grateful to the University Librarian, Joan Wee Jee Foon, for her work on the module, her editing expertise, and her strong support.

REFERENCES

- Acevedo, M. A. (2020). Teaching quantitative ecology online: An evidence-based prescription of best practices. *Ecology and Evolution*, 10(22), 12457–12464. <https://doi.org/10.1002/ece3.6607>
- Agius, J., & Levey, S. (2019). Humor intervention approaches for children, adolescents and adults. *Israeli Journal for Humor Research*, 8(1), 8-28. http://www.israeli-humor-studies.org/media/02-humanintervention_approaches_for_children.pdf
- Al Tawil, R. (2019). Nonverbal communication in text-based, asynchronous online education. *The International Review of Research in Open and Distributed Learning*, 20(1). <https://doi.org/10.19173/irrodl.v20i1.3705>
- Azadbakht, E. (2019). Humor in library instruction: A narrative review with implications for the health sciences. *Journal of the Medical Library Association*, 107(3), 304–313. <https://doi.org/10.5195/jmla.2019.608>
- Budhai, S. S., & Williams, M. (2021). Humanizing virtual library instruction: Anchoring teaching presence in online information literacy sessions. *Journal of Library & Information Services in Distance Learning*, 15(3), 204–217. <https://doi.org/10.1080/1533290X.2021.1961968>
- Caskurlu, S., Meada, Y., Richardson, J. C., & Lv, J. (2020). A meta-analysis addressing the relationship between teaching presence and students' satisfaction and learning. *Computers & Education*, 157, 103966. <https://doi.org/10.1016/j.compedu.2020.103966>
- Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin*, March, 3–7. <https://files.eric.ed.gov/fulltext/ED282491.pdf>
- Franklin, K. Y., Faulkner, K., Ford-Baxter, T., & Fu, S. (2021). Redesigning an online information literacy tutorial for first-year undergraduate instruction. *The Journal of Academic Librarianship*, 47(1), 102277. <https://doi.org/10.1016/j.acalib.2020.102277>

- Gahl, M. K., Gale, A., Kaestner, A., Yoshina, A., Paglione, E., & Bergman, G. (2020). Perspectives on facilitating dynamic ecology courses online using active learning. *Ecology and Evolution*, ece3.6953. <https://doi.org/10.1002/ece3.6953>
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2–3), 87–105. [https://doi.org/10.1016/S1096-7516\(00\)00016-6](https://doi.org/10.1016/S1096-7516(00)00016-6)
- Harrison, S. J.-A., & Deans, M.-J. O. (2021). The methodology used to deliver information literacy instruction by a select group of academic librarians: A case study. *Asian Association of Open Universities Journal*. Advance online publication. <https://doi.org/10.1108/AAOUJ-01-2021-0006>
- Held, T., & Gil-Trejo, L. (2016). Students weigh in: Usability test of online library tutorials. *Internet Reference Services Quarterly*, 21(1–2), 1–21. <https://doi.org/10.1080/10875301.2016.1164786>
- Itow, R. C. (2020). Fostering valuable learning experiences by transforming current teaching practices: Practical pedagogical approaches from online practitioners. *Information and Learning Sciences*, 121(5), 443–452. <https://doi.org/10.1108/ILS-04-2020-0106>
- Johnson-Barlow, E. M., & Lehnert, C. (2021). A scoping review of the application of systematic instructional design and instructional design models by academic librarians. *The Journal of Academic Librarianship*, 47(5), 1-16. <https://doi.org/10.1016/J.ACALIB.2021.102382>
- King, A. (1993). From sage on the stage to guide on the side. *College Teaching*, 41(1), 30–35. <https://faculty.washington.edu/kate1/ewExternalFiles/SageOnTheStage.pdf>
- Kratz, H. E. (1896). Characteristics of the best teacher as recognized by children. *Pedagogical Seminary*, 3(3), 413–460. <https://doi.org/10.1080/08919402.1896.9943604>

- Lierman, A., & Santiago, A. (2019). Developing online instruction according to best practices. *Journal of Information Literacy*, 13(2), 206–221.
<https://doi.org/dx.doi.org/10.11645/13.2.2649>
- Marchis, B. (2018). Putting levity into literacy: Professionally produced library instruction videos. *Journal of Information Literacy*, 12(2), 113–120.
<https://doi.org/10.11645/12.2.2488>
- Poggiali, J. (2018). Student responses to an animated character in information literacy instruction. *Library Hi Tech*, 36(1), 29–42. <https://academicworks.cuny.edu>
- Robinson, L., & Bawden, D. (2017, September 18-21). Identifying good practices in information literacy education: Creating a multi-lingual, multi-cultural MOOC. In S. Kurbanoglu, J. Boustany, S. Špiranec, E. Grassian, D. Mizrachi, & L. Roy (Eds.), *Information literacy in the workplace* [Symposium]. 5th European Conference on Information Literacy, Saint Malo, France. https://doi.org/10.1007/978-3-319-74334-9_73
- Ryoo, J. J. (2019). “Laughter is the best medicine”: Pedagogies of humor and joy that support critical thinking and communicative competence. In E. Manalo (Ed.), *Deeper learning, dialogic learning, and critical thinking: Research-based strategies for the classroom* (pp. 177–192). Routledge. <https://doi.org/10.4324/9780429323058-11>
- Saunders, L. (2018). Information literacy in practice: Content and delivery of library instruction tutorials. *The Journal of Academic Librarianship*, 44, 269–278.
<https://doi.org/10.1016/j.acalib.2017.12.022>
- Schriek, M. (2018). *Exploring humour as a learning management tool: A case study of mature students in a SW university*. <https://doi.org/10.13140/RG.2.2.12782.05443>
- Secker, J., & Coonan, E. (2011). *A new curriculum for information literacy: Transitional, transferable, transformational*. http://ccfil.pbworks.com/f/ANCIL_final.pdf
- Steele, J. E. (2021). The role of the academic librarian in online courses: A case study.

The Journal of Academic Librarianship, 47, 102384.

<https://doi.org/10.1016/j.acalib.2021.102384>

Tschakert, N., Blaber, Z., & Chen, L. (2019). Using engagement triggers in forensic accounting classes. *Journal of Forensic and Investigative Accounting*, 11(3), 465–483.
<http://web.nacva.com/JFIA/Issues/JFIA-2019-No3-6.pdf>

Yandra, F. P., Alsolami, B., Sopacua, I. O., & Prajogo, W. (2021). The role of community of inquiry and self-efficacy on accounting students' satisfaction in online learning environment. *Jurnal Siasat Bisnis*, 25(1), 1–16.
<https://doi.org/10.20885/jsb.vol25.iss1.art1>

Appendix 1. Best practices for online programs; mapped to the ADDIE model.

KEY AREA 1 – BEFORE you begin

- get the support of your university management and other stakeholders
- get the support of Faculty
- decide if cross-departmental cooperation is necessary, e.g., the support of the IT department
- select the software and apps to be used; as there is no gold standard here these are usually those best suited to the available budget and the skills of the staff who will be using them.

KEY AREA 2 – ANALYZE or think about the learners and the approach

- identify the learners who will be taking the program, e.g., first year students
- prepare to map to the frameworks selected by your library and/or your institution, e.g., ANCIL, Community of Inquiry
- clearly state the Learning Objectives to describe what the students will be learning (also known as backward design).
- determine the Learning Outcomes to provide detailed descriptions of what the students should be able to do when they have completed each micromodule or learning unit.

KEY AREA 3 – DESIGN or consider the look and feel and usability

- ensure the learning units can be easily updated
- chunk the content into smaller segments for easier retention
- limit the amount of information provided onscreen at any one time
- include plenty of white space

- use simple and intuitive navigation
- give the students as much control as possible, e.g., allow them to play, pause, move backwards and forwards, and repeat
- include a table of contents
- indicate of learning time duration
- create strong Community of Inquiry (Col) Social and Teaching Presence using
 - bold, bright colors with interesting or unusual images
 - quirky and/or informal language
 - attention grabbers
 - humor, defined as a quality that instills pleasure, joy, or delight, and elicits a smirk, a smile, a laugh, or any other positive emotional response
 - multiple ways for the students to contact the Library Staff

KEY AREA 4 – DEVELOP or include the content within acceptable pedagogical frameworks

- pedagogical frameworks
 - try to get as high up in the Bloom’s Taxonomy pyramid as possible, i.e., higher order thinking as opposed to simply memorizing
 - follow Gagne’s Nine Events of Instruction
 - use Chickering and Gamson’s Seven Principles of Undergraduate Education
 - consider the Community of Inquiry framework
- be learner-focused
- teach skills, not procedures
- use examples from the real world
- if jargon cannot be avoided, provide simple explanations
- increase engagement levels with multimedia

- avoid unnecessary animation and images

KEY AREA 5 – IMPLEMENT or deliver the program

- make the program compulsory
- embed into an existing degree program or award credits for completion
- make the program available in the same place the students find their other instructions, e.g., the university learning management system
- provide constant, prompt, consistent, and constructive feedback
- monitor usage closely and adapt or revise when necessary
- follow up with a face-to-face session, in the classroom or online, where the student can ask questions and apply what they have learned
- keep abreast of changes or updates in both content and technology.

KEY AREA 6 – EVALUATE or decide what worked, what did not work, and what needs changing

- link directly to the relevant learning outcomes
- try to use both formative (throughout) and summative (at the end) assessment
- avoid simple memory tests, get the students to apply what they have learned
- if possible, try to go beyond simple tests, e.g., look at the quality of references used in assignments, or the quality of a video produced by the student
- analyze all student feedback carefully, remembering not to take any harsh criticism personally
- analyze the grades and test scores, e.g., if most of the students are failing a particular learning unit, either the learning unit is not meeting its objectives, or the quizzes and tests are too difficult.

Appendix 2. Examples of humor and attention grabbers used in the online module.



LIBRARY

Essential Research Skills

Can you hear the music?

orchestral music

You can continue without sound but it won't be quite as interesting! Select the NEXT button to continue.

Starting with RESEARCH

bus motor sound

Parts of this learning unit use audio. If you can hear the bus, select the NEXT button to continue.

FINDING Resources

parrot squawks

Parts of this learning unit use audio. If you can hear the parrot, you are ready to begin

CHOOSING the right resources

bouncy music

Parts of this learning unit use audio. When you hear the music, select the NEXT button to begin

Please take Note

facial expressions

You may answer each question once. Take as much time as you need. If you don't know the answer, just say so. Your scores will not count towards your overall grade.

The Friend

humorous touch

Well, my Granny says that microwaving your food will give you cancer. Friday next week.

FINDING Resources

recurring student

Was listening to the parrot squawk almost as painful as trying to find the right resources for your assignments?

Plagiarism & Citing

informal language

Yikes! If you think you feel a bit like Sarah does, then this learning unit was developed especially for you.

Singlish

humorous touch

Mah... I don't need to cite these sources. Just anyhow Google can!

A good research question should be clear and focused, clearly stating what the write needs to do. Which of the following is the better research question?

humorous touch

What is the environmental impact of water be?

videos

humorous touch

Write these down as you find them:

So How?

humorous touch

The kind of CRAAP we are talking about stands for:

- Currency
- Relevance
- Accuracy
- Authority
- Purpose

Bus stop © Elena Akifeva, Lightbulb © syuzannam, Orchestra © Artisticco LLC / 123RF.com

Students by pikisuperstar / freepik.com

Bus by A|Les, Forest by Gordon Johnson, Librarian by Chrystal Elizabeth, Musical notes by mohamed_hassan, Parrot by Hannah / pixabay.com