PhJLIS

EDITORIAL

Libraries Pop Up:
Where LIS and Pop Culture Intersect

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TikTok dance crazes, the Pantone color of the year, that TV series you binge watch, the photo card of your K-idol, the next drag superstar.

Pop culture is an inescapable and integral part of the human experience. Forms and elements of pop culture surround us from the moment we wake up to our return to sleep. It greatly influences the styles of clothing we wear, the music we listen to, our daily parlance and expressions, and even the food we eat. How pop culture shapes our lives and how we perceive the world significantly plays in what Fedorak (2009) refers to as the culture of everyday life. What's prevalent at a particular time is considered part of pop culture, including popular literature (e.g., comic books, magazines, etc.); mainstream music, television programs, and movies; advertisements; fashion; food; games, hobbies, and similar leisurely activities.

People are saturated with popular styles and trends at particular times, though traditional and purist thinkers might distinguish "high" and "low culture." But whether it is high or low culture, or it might be seen as something ordinary, trivial, or superficial, pop culture is an aspect of human life that deserves careful attention and examination, or at least some

consideration, especially in information, memory and cultural institutions such as galleries, libraries, archives, and museums (GLAMs). GLAMs have a long history and responsibility for providing access to information, promoting various literacies, and preserving and disseminating cultural heritage. Since pop culture plays a significant role in the lives of the individuals and communities we serve and interact with, it is only apt to include it in the institutional agenda for practices and services.

In this editorial, we argue that contemporary libraries have a significant influence on pop culture by embracing three roles: (1) as repositories, (2) as spaces, and (3) as agents. As we expound these roles, we provide possibilities for reframing our views of the role of libraries in their respective communities and how they fulfill their mission and goals in consonance with prevailing pop culture.

LIBRARIES AS REPOSITORIES OF POP CULTURE
The most evident intersection between pop culture and libraries is through the collecting function of the latter. Libraries can collect, curate, and display ephemeral materials for public use and consumption. As with other cultural forms, pop culture manifests itself

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through physical objects or material culture, one of which is ephemeral objects.

Ephemeral materials, or simply "ephemera," are defined as "the printed materials of everyday life" (Reitz, 2004, p. 252). These objects, such as show tickets, flyers, postage stamps, and stickers, are mass-produced and not usually collected intentionally. However, one may argue that these are still culturally valuable due to their artistic merits, informative content, and historical/socio-cultural context.

It is acceptable for libraries, archives, and similar information institutions to collect ephemeral materials as part of their collections. As part of the archives, museum collections, or special collections in libraries, ephemeral materials are gathered for education, research, and enjoyment. Like any other informative object, these materials show prevailing cultural trends at their moment of creation and use.

LIBRARIES AS SPACES FOR POP CULTURE

However, there are possibilities for community engagement beyond developing and managing information resource collections. Amid the convenience of having online information sources and software applications, libraries nowadays are being inventive to reclaim their title as community spaces where people can gather for their information-related pursuits.

Libraries are stepping up to bridge the gap resulting from the closure of brick-and-mortar bookstores (Cullotta, 2012). More than this, libraries could also fill other gaps that may exist in the community. Trends in library user services are moving towards adapting service models from other types of establishments. In the past decade, there has been a surge in adopting consumer-based services such as the bookstore model, where the genre is the major consideration for classifying resources (Woodward, 2005; Maker, 2008; Bucci et al, 2020), the café or coffee-shop model, integrating café service and allowing such food items within the library premises (Singh, 2002; Harris, 2007), and the rec center model, where

different recreational equipment and facilities are provided for users to enjoy. These models all embrace Oldenburg's (1989) concept of the third place, which are the spaces and locations other than the home and the workplace, most usually dedicated to recreation and interaction.

The interaction among members of a group is integral in the formation of culture, specifically in establishing norms and familiarizing each other with what is acceptable or not. The synergy among people drives pop culture forward.

LIBRARIES AS AGENTS OF POP CULTURE

Librarians might not be fully aware of it, but libraries can also become agents to influence popular culture within the communities they serve. The selection of materials for acquisition in itself is influenced by pop culture. Case in point: acquiring popular genres and forms of literature such as vampire lore and graphic novels.

Beyond collections and spaces, libraries are at the forefront of promoting and enriching intellectual and creative pursuits. For culture to flourish, relative freedom is given to members of the community to think, create, and share their creations and what they find likable (at the least) to those they deem useful and valuable.

Emerging paradigms in the 21st century embrace the principles of diversity, equity, and inclusivity. In response, libraries are encouraged to be more open to accepting the spectrum of pop culture manifestations and integrating them into library functions. Approaches in library marketing, such as cultural references and design considerations in promotional campaigns, are usually influenced by pop culture. We can further promote the study and practice through pop culture prompts as anchors or marketing hooks. For example, in the Rizal Library of Ateneo de Manila University, Sagun (2013) saw the effectiveness of Internet memes in driving marketing messages and the eventual increase in library usage. The Main Library of the University of the Philippines Diliman also staged unique and out-of-the-box strategies to invite patrons to visit Gonzalez Hall. Sporting events

such as UAAP and NBA games are shown on its lobby television screen (Dar Juan, 2016). Pop culture can even be integrated into the design of physical spaces, as in the case of the Sotero H. Laurel Academic Resource Center of the Lyceum of the Philippines University in Manila being inspired by the Korean drama "Start Up" (Noriega, 2022). Aiming to have an appealing library interior, it was hailed by one of its University officials as "inclusive, modern, and young" (Noriega, 2022, para. 4).

Gone are the days when book clubs, storytelling sessions, and reading camps are just the major types of activities in library programs. Not that reading is insignificant—we assert that reading comprehension and the culture of reading are important to be cultivated, regardless of age. Libraries can also be shaped as spaces where special interest groups beyond reading and literature, such as anime fans, gastronomists, and home gardening enthusiasts, or the so-called "plantitos" and "plantitas." More than reading, libraries could also consider hosting other information-related, and cultural activities promoting discourse, such as theatrical performances of all forms (including stand-up and drag), exhibitions and conventions (including fashion, interior design, and cosplay meets), and conferences, seminars, and lectures sharing best practices (e.g., pet care, handicrafts, and cooking). Cassell and Hiremath (2018) even devoted a portion of their chapter discussing the importance of having community experts as part of reference programming.

With the rise of the netizens as sources of opinion and also targets of persuasion (Hauben, 1996), libraries have to be more creative and proactive in reaching out to them. Being "in the loop" can help us identify ways to persuade them better and invite them to come to our spaces and listen to the messages we need to convey. It is also important for them to feel safe and properly heard in the GLAM spaces. Hence, we should be continuously inventive in framing our position as a community space where pop culture, history, and social facts converge.

If libraries would like to persuade more viewers and communities to come to their spaces and listen to their agenda and messages, then we should know how we can frame our position as a community space where pop culture, history, and collective knowledge intersect and interact. Libraries should assert their place in their communities as **centers of culture**, promoting inclusive acceptance of different forms of culture for all ages and all backgrounds.

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Autism in Comics:
How a Paradigm Shift from a Medical Model to a Social Model is Painting a More Inclusive Portrayal of Autism*

Bambi Eloriaga-Amago
Comic Book Writer

Abstract

A paradigm shift in framing the autism condition from a medical perspective to a more social model in the real world, is being mirrored in the printed page -- comics.

Keywords: Autism; Comics

INTRODUCTION

As a comic book writer, I mainly explore themes that are supernatural and folkloric in nature. However, in 2020, under our publisher Komiket, my illustrator-husband and I were able to release Doobiedoo Asks, a graphic novel unlike those we've produced before in that it is the first non-fiction we have ever worked on. In it, we describe our family's autism journey of discovery and eventual acceptance and understanding of the autism condition (Eloriaga-Amago & Amago, 2020).

Locally, Doobiedoo Asks has been hailed as the "first Filipino book about ASD (Autism Spectrum Disorder) which addresses itself to both ASD and NT (Neurotypical) families" (M. Tobias-Papa, personal communication, September 14, 2021), but in the course of my researching for my "Autism in Comics" talk delivered during the UPSLIS Webinar series last October 2021, I discovered that autism portrayal in Western comics is not anything new (Eloriaga-Amago, 2021). And though the portrayals prove controversial at first, throughout the years, the paradigm shift in the real world was reflected onto the paneled pages as well.

DEFINITION OF TERMS

Comics is combining text and images to tell a story through sequential panels.

The Medical Definition of Autism Spectrum Disorder
Autism Spectrum Disorder (ASD) "is a complex

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developmental condition involving persistent challenges with social communication, restricted interests, and repetitive behavior. While autism is considered a lifelong disorder, the degree of impairment in functioning because of these challenges varies between individuals with autism" (American Psychiatric Association, 2021, What is Autism Spectrum Disorder? section).

The term "disorder" carries a negative connotation. It suggests something "wrong" or quite simply, that which is "out of the usual order" of things. Therefore, among autism communities and advocates there has been a shift to the social model, this includes consciously adopting the use of more inclusive language.

The discourse on autism has been centered on it being a disorder and an inadequacy making people with autism less than human—and this has to be tackled through the social model of disability (Woods, 2017).

ASD WITHIN THE SOCIAL MODEL
According to Sarah Birge of the Pennsylvania State University:

> *The growing field of disability studies largely rejects the dominance of this medical model and instead considers disability within a social-constructionist framework. Under the social model, a physical or cognitive impairment only becomes a disability when society fails to fully include the person, who may face obstacles such as physical barriers, prejudice, or exclusion from social justice. (Birge, 2010, "Disability Studies and the Emphasis on the Physical" section)*

The paradigm shift involves changing the focus from an autistic person's deficits and difficulties (medical) and concentrating instead on building up their strengths, so that they can function as individuals and as productive members of society (social). This shifts the responsibility of providing accommodations and adjustments not on the autistic individual, but onto society. Or in other words, "inclusion."

IDENTIFIED VS. CLAIMED
Within mass media, we have characters that are "claimed" to be autistic by the autism community, and we have characters that are clearly "identified" as such

within the narrative (Baron, 2017). For example, in the 1988 film Rain Man, it is mentioned in the movie that the Dustin Hoffman character, Raymond Babbit, is autistic (identified). Whereas, Lizbeth Salander in the Millennium series (2005-2019) of books and films has been "claimed" as being autistic because of characteristics autistic persons can identify with.

AUTISM PORTRAYAL IN COMICS
According to "Waiting for Autistic Superman: On Autistic Representation in Superhero Comics" by Robert Rozema (2020) and published in Ought: The Journal of Autistic Culture, "The first explicitly named autistic character to appear in a superhero comic is Dehman Doosha (a.k.a. Johnny Do), a paranormal teenager who appeared in Psi Force, one of the eight Marvel titles created for the short-lived New Universe" (p. 12) which ran from 1986-1989.

A character with extremely awesome powers, but was portrayed as flawed because of his autism, Dehman was eventually lobotomized to get rid of the autism but leaving intact the more desirable pyrokinesis powers. It speaks volumes, doesn't it? That autism is seen as a flaw, but a destructive power like pyrokinesis is celebrated.

Then "in two fairly recent Fantastic Four series, Reed Richards [or Mr. Fantastic] has been overtly identified as autistic: first, in Grant Morrison's Marvel Knights: Fantastic Four 1234 in 2001-2002; and second, in Roberto Aguirre-Sacasa's Season One origin story in 2012" (Rozema, 2020, p. 26).

In the pivotal moment, Richards' dialogue reads, "I've self-diagnosed a mild case of autism, for which I'm currently inventing a cure. Otherwise, Alyssa, I assure you, I'm of sound mind" (Aguirre-Sacasa & Marquez, 2012, p. 4).

Not only does Mr. Fantastic imply that autism is akin to insanity ("I'm of sound mind"), but he also reacts to it as if autism is a medical anomaly that has to be "cured."

Before these controversial issues were released, Mr. Fantastic—portrayed as singularly focused on the pursuit of science and exhibiting hints of being socially awkward—was a superhero celebrated and claimed by the autism community. One can imagine then, the uproar and anger these particular issues caused when the character was finally identified as being autistic.

It needs to be stressed that autism is not a disease (refer to definitions above.) So there is no cure, but it is however, a lifelong condition that requires accommodations for impairments being experienced by the individual.

Dave Kot, creator of Face Value Comics said that other comic books that have featured characters with ASD "either shelved the characters or the characters were portrayed as criminals with dysfunctional behavior" (Muzikar, 2017, para. 28).

Perhaps in reaction to his observation, in 2014, he created Michael, whom he touts as "the first hero with the disorder among comic books" ("Comic Book Stars World's First Hero with Autism," 2014, para. 2). Michael's powers include "a mathematical mind, artistic gifts and an abundance of compassion" (para. 2).

The comic's plot revolves around "social issues such as curing disease, stopping hunger, and creating a society with economic parity" (Muzikar, 2017, para. 29). In Issue #1, Michael's parents tell him "Feel safe, feel wanted, and you'll be successful." Echoing the basic desire of inclusion: to not be viewed as different or as "the other" (para. 30).

From Dehman Doosha and Reed Richards to Michael, we see a shift from viewing autism as a medical anomaly to a condition that needs to be addressed collectively as a society.

But apart from the superhero genre, biographic comics are less sensationalist when it comes to depicting autism. Here are two examples. *The Ride Together* (2003) is a memoir describing creators Paul and Judy Karasik's experiences growing up with their autistic brother, David. While *Circling Normal* is a collection of strips which follows the experiences of a multiracial American family whose son Seth is diagnosed with autism at the age of two (Montague-Reyes, 2007). Their charm lies in their "ability to depict the complicated and communal experience of disability as shared by an entire family" (Birge, 2010, Autism in Comics section, para. 8).

> *Through their reworking of stereotypes and their unique portrayals of autism, Circling Normal and The Ride Together demonstrate the power of comics to rewrite (and redraw) traditional scripts of cognitive disability and break the confining cultural framework through*

> *which some people are seen and others overlooked (Birge, 2010, "Abstract" section).*

On the local front, in 2009, artist Gabby Atienza released "My Life as a Comic Book," an autobiography detailing his life journey with Asperger's Syndrome. In it, he mainly shows the difficulties he had, growing up misunderstood by both peers and even family, because this was the 1970s-1980s and the autism condition was still largely unfamiliar to most.

Fast forward, however, to the 2020s, and while most people by now are familiar with autism, our son's experiences show however, that the condition is still largely misunderstood.

When my son was in the third grade, suddenly the friends he had known since they were toddlers started avoiding him, his teachers started reprimanding him daily, until one day, he came home in tears and asked us, "Why don't they want to be friends with me anymore? What's wrong with me?" That same year, he was diagnosed with high-functioning autism or what was called Asperger's Syndrome before.

While a majority of us are already aware about autism as a condition, acceptance and accommodations geared towards people with autism are still lacking, mainly due to a lack of understanding. The negative experiences he had at school was due to his teacher not being equipped enough to provide an individualized plan of action for his needs, opting instead to isolate him from the rest of the class and exacerbating the feeling of being "othered."

I felt that my son's experiences, as well as that of artist Mr. Gabby Atienza and countless autistic individuals before them, are easily avoidable if only there is an abundance of understanding about the condition. Hence, I chose comics as a medium to break stereotypes surrounding autism. The format is appealing and accessible to readers of all ages and backgrounds. Comics has the potential to reach as wide an audience as possible.

Indeed, we have received feedback from people of diverse backgrounds: both comics and non-comics fans, parents, teachers, PWD's, non-professionals and professionals including dentists, therapists, and nurses, and even children. Their feedback includes finally understanding how to deal with a loved one on

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the spectrum or how to best help out a friend or a patient who has the condition.

HOW COMICS CAN HELP PERSONS WITH AUTISM

In my experience attending and exhibiting at numerous comic book conventions, I found that a lot of people on the spectrum are attracted to the medium. Whether it's the way the panels are structured or that it doesn't have intimidating walls of text, there's something about comics that they find attractive and appealing. Beyond this, reading comics can actually prove beneficial, not only to autistics, but to people with other reading and/or learning difficulties as well.

> *Comic books don't intimidate struggling readers with an overwhelming page of text. They usually offer short and easy-to-read sentences, alongside other visual and text cues (e.g. character sighs, door slams etc.) for context. They're also helpful for children with learning difficulties; children with autism can learn a lot about identifying emotions through the images in a comic book. Children with dyslexia, who may find it frustrating to finish a page in a traditional book, often feel a sense of accomplishment when they complete a page in a comic book. ("The Awesome Benefits of Comic Books for Kids," 2015, "2. They give struggling readers confidence" section)*

Therefore, "they give struggling readers confidence" for context.

HOW LIBRARIES CAN HELP PERSONS WITH AUTISM
Have a comic book and graphic novel section.
As stated in the previous section, there are countless benefits to reading comics. Moreover, "Comic books that explore or touch on historical events, classic tales, wildlife, nature, positive relationships and more can provide a valuable supplement to other areas of learning" ("The Awesome Benefits of Comic Books for Kids," 2015, "5. They can be a valuable accompaniment" section).

Be sensory-friendly.
Silence and structure, these two things help make the library a safe space for PWA's (Person With Autism) or people who experience sensory overload. However, a designated sensory-friendly area can help make the library even more appealing. From having a room with muted lighting to offering the use of noise-cancelling headphones, there are many measures library staff can take to help autistic patrons.

As suggested in the article "Serving Autistic Library Users: Fostering Inclusion While Meeting Individual Needs" (2018), written by Eric Edwards of the Illinois State Library:

> *...There are a few steps that all libraries can take as a starting point to meet their mission to make their spaces and services as inclusive as possible. These include addressing any issues relating to noise and lighting, which ... affect many autistic patrons. ... A map of the library, or signage that is color-coded, is a good first step. (p. 20)*

Understand that one size does not fit all.
It is inevitable, most especially in an academic library, that a librarian will come across an autistic patron. However, exposure to misrepresentation in media and stereotypes may render the librarian unable to properly address the needs of an autistic person.

> *...It might be helpful for a library to consider how improving services for autistic patrons fits into the broader goal of making libraries more accessible and friendly for differently abled users in general. ... Regardless of library type, size, or location, it is likely that multiple users will visit who are differently abled and may face significantly varying challenges in navigating the library space. ... One challenge in recognizing the needs of autistic patrons is that it can often be a "hidden" condition, and the steps a library needs to take may not be as obvious as those for accommodating patrons in wheelchairs, for instance. (Edwards, 2018, p. 21)*

Just as important as offering a sensory-friendly environment is sensitivity training for librarians and staff. Institutions may contact the Autism Society Philippines (ASP; http://www.autismsocietyphilippines.org), which conducts trainings and seminars for free upon request.

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Included among the Philippine Star Life's list of women who changed local komiks for the better, writer **Bambi Eloriaga-Amago** is also a Journalism graduate (cum laude) from the University of the Philippines Diliman. She has worked on the editorial staff of various ABS-CBN publications and sat as Editor-in-Chief of Questor: The Ultimate Anime Magazine. Currently working as a full-time freelance writer, she adapts scripts of English language-licensed manga such as ToraDora and It Started With a Kiss, and has written original works that are internationally published including Moonlight Meow and the Carnal series of comics. Her current collaboration with artist-husband Roland is the well-received Doobiedoo Asks, a graphic novel which chronicles their family's autism journey. The book is an Official Selection of the first-ever Philippine International Comics Festival (PICOF), a Finalist for Graphic Literature at the 39th National Book Awards (NBA), a Readers' Choice Awardee at the 7th National Children's Book Awards (NCBA), and the Best Media Pitch Winner at the 2021 Asian Festival of Children's Content (AFCC) in Singapore.

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Regression in Isolation:
On the Quality of Education
Received by Learners With Disabilities
During the Lockdown

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Edited by Charis Loke, Jacob Goldberg, and Matt Surrusco
as it originally appeared in *New Naratif*

Keywords: Autism; Comics, Person with Disabilities, Covid-19, Lockdown

INTRODUCTION

First published by Southeast Asian-centric online news portal, *New Naratif* last April 13, 2022 under the title *"Learning in Lockdown"* (https://newnaratif. com/learning-in-lockdown), this piece examines the quality of education received by Persons With Disabilities during the lockdown period brought about by the Covid-19 pandemic.

Our son, who is on the Autism Spectrum, lost the in-person social and emotional support he was receiving from his teachers when the pandemic forced a shift towards remote learning. As parents, we worked to mitigate its effects—but not all families in the Philippines can afford to do the same for children with disabilities.

TERMS

- Neurodivergent: People whose brains function differently from what is considered normal or standard, such as people living with autism or ADHD
- Neurotypical: Person with no developmental issues

- Self-regulation: When a person can manage their emotions on their own and keep inappropriate behavior in check
- Sound sensitivities: Aversion to loud or sudden noises

NOTES

- For communities and advocates, a more person-centered term is preferred, but for the education sector, Special Education is the term currently being used. However, following passage of the Law for Inclusive Education (RA 11650) last March, there may soon be a change in terminologies. The law mandates that Special Education Centers become Inclusive Learning Resource Centers, for example. However, as of writing, the Implementing Rules and Regulations for RA 11650 have yet to be crafted, and seeing as the Marcos Administration has allotted zero budget towards Special Education, it is yet to be seen how effective this law will be in addressing deficits being experienced by LWDs (Learners With Disabilities.)
- Some interview dialogues have been edited for length and clarity.

ANNIVERSARIES ARE USUALLY A CAUSE FOR CELEBRATION. BUT NOT THIS ONE.

MARCH 2022 MARKED TWO YEARS OF LOCKDOWN DUE TO THE COVID-19 PANDEMIC IN THE PHILIPPINES AND MUCH OF THE WORLD.

DURING MOST OF THESE PAST TWO YEARS, CHILDREN IN MANILA AND OTHER HIGH-RISK AREAS WERE NOT ALLOWED TO SPEND ANY TIME OUTDOORS AT ALL.

WHEN THE PANDEMIC STARTED, MY SON WAS IN THE 4TH GRADE. NOW HE IS IN THE 6TH GRADE AND IS SET TO GRADUATE FROM THE GRADE SCHOOL LEVEL. HE HAS MISSED NOT JUST THE USUAL CHRISTMAS AND YEAR-END SCHOOL PARTIES, BUT ALSO TAEKWONDO MEETS, VOLUNTEER EVENTS AND WHAT WAS SUPPOSED TO BE HIS FIRST SOLO KEYBOARD RECITAL.

IN DECEMBER 2021, THERE WAS A DOWNTREND IN THE NUMBER OF REPORTED COVID-19 CASES. THE GOVERNMENT LIFTED RESTRICTIONS ON SOCIAL GATHERINGS. I BEGAN TO HAVE HOPE THAT MY SON COULD AT LEAST EXPERIENCE A GRADUATION CEREMONY FIRSTHAND. BUT THE OMICRON WAVE CAME AND CRUSHED THAT HOPE.

TAP TAP TAP

DING!!

New Message Received

1

...ool year is about to end. Despite the ...ic, we aim to celebrate the milestone of ...d through our virtual Graduation Day. ...epare for this impo...

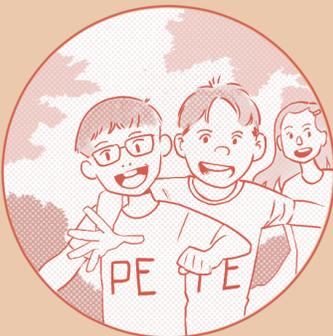ANOTHER EXPERIENCE MISSED DUE TO COVID.

MY SON IS ON THE AUTISM SPECTRUM. HE STRUGGLES WITH SOCIALISATION AND MANAGING HIS EMOTIONS.

BUT WHEN WE ENROLLED HIM AT A SCHOOL WITH SPECIAL EDUCATION SUPPORT, HE SLOWLY BUT SURELY BROKE OUT OF HIS SHELL.

CLAP CLAP

PERFORMED BEFORE A CROWD. DID NOT SUFFER ANXIETY OR STAGE FRIGHT.
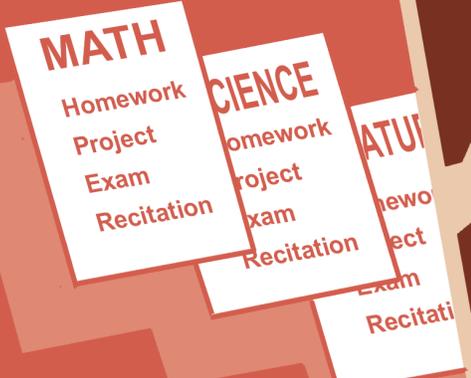
MADE A BEST FRIEND.

PE TE

MINGLED WITH OTHER CHILDREN. WAS NOT BOTHERED BY THE NOISE!

SCHOOL OUTREACH PROGRAMS

WHEN THE PANDEMIC HIT, FACE-TO-FACE CLASSES WERE BANNED. LIKE OTHER PRIVATE SCHOOLS—WHICH TYPICALLY HAVE A SMALLER STUDENT-TO-TEACHER RATIO THAN PUBLIC SCHOOLS—MY SON'S SCHOOL SHIFTED TO ONLINE CLASSES.

SPAK SPAK
BOOM BOO
CRACKLE CRACKLE
F S S S H

WAAH!

Too loud! Everything's TOO LOUD!

MATH
Homework
Project
Exam
Recitation

...CIENCE
...omework
...roject
...xam
Recitation

...ATU...
...omewo...
...ject
...xam
Recitati...

HAPPY NEW YEAR!!

HONK HONK

SUDDENLY, THE IN-PERSON SOCIAL AND EMOTIONAL SUPPORT HE WAS GETTING FROM TEACHERS WAS CUT OFF. WE EXPERIENCED SOME REGRESSION WITH HIS BEHAVIOURAL ISSUES.
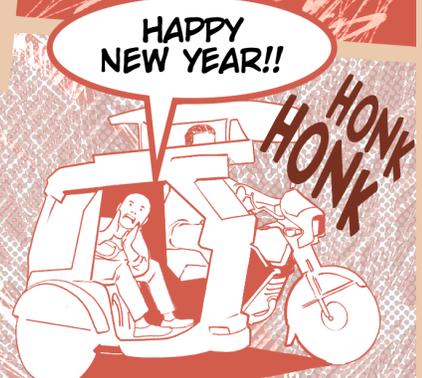
WE LIVE IN MANILA. IN MORE REMOTE AREAS, EDUCATIONAL RESOURCES ARE HARDER TO COME BY. INTERNET CONNECTIONS, WHICH ARE VITAL TO REMOTE LEARNING, RANGE FROM SPOTTY TO NONE.

600m *

IMPOVERISHED FAMILIES CAN'T AFFORD COMPUTERS OR TABLETS FOR ONLINE CLASSES.

Only a few pupils join online classes due to poor internet connections or no connection at all. This causes stress to parents and pupils who cannot attend online.

DRRRR

TOK TOK

Someone's building a house next door. The non-stop noise from the construction is very disruptive to my classes.

GEMMA TORRES, grade 2 teacher at San Antonio Elementary School, a public school in Parañaque City

MEET ONE OF MS. TORRES' STUDENTS. JOHN FRANCIS SORIA IS A SECOND-GRADER AT A PUBLIC SCHOOL IN PARAÑAQUE CITY.

JOHN FRANCIS

IS IT OKAY IF I INTERVIEW YOU ABOUT SCHOOL?

But I can't read!

JUST TELL ME YOUR ANSWERS AND I'LL BE THE ONE TO WRITE THEM DOWN.

NOD

WAIT, IF YOU CAN'T READ, HOW DO YOU ANSWER YOUR MODULES?

Papa helps when he's at home.

AND YOUR KUYA?

Sometimes. When he is not busy with his cell phone.

I SEE. SO BEFORE COVID, YOU WERE ABLE TO ATTEND CLASS IN SCHOOL, RIGHT?

Yes! Face-to-face!

WHICH DO YOU LIKE MORE, FACE-TO-FACE CLASSES OR STUDYING AT HOME?

Face-to-face.

REALLY? IS IT BECAUSE YOU MISS YOUR FRIENDS FROM SCHOOL?

Yes, but also because I understand better, 'cause teacher is there to explain.

JOHN FRANCIS STILL STRUGGLES TO READ. HE DOESN'T HAVE A DIAGNOSIS AND SO IS UNABLE TO RECEIVE EXTRA HELP AT SCHOOL TO OVERCOME THIS DIFFICULTY.

Public schools tried to offer online support to students with special needs in real time, but because of very slow internet speeds, and some families not being able to afford devices, they had to abandon it.

LUTZE-SOL VIDAL, assistant professor of education at the University of the Philippines

What state could the sibling's mental health be in, then? Doubling the workload, having to accomplish not just their own modules, but their sibling's as well?

INSTEAD, STUDENTS IN MOST PUBLIC SCHOOLS ARE SENT PRINTED WORKSHEETS TO COMPLETE AND RETURN AT THE END OF THE YEAR. THE MODULES ARE GRADED, BUT NO PERFORMANCE FEEDBACK IS GIVEN. NO SOCIAL AND EMOTIONAL SUPPORT NOR BEHAVIOURAL ACCOMMODATIONS ARE GIVEN TO STUDENTS WITH DISABILITIES.
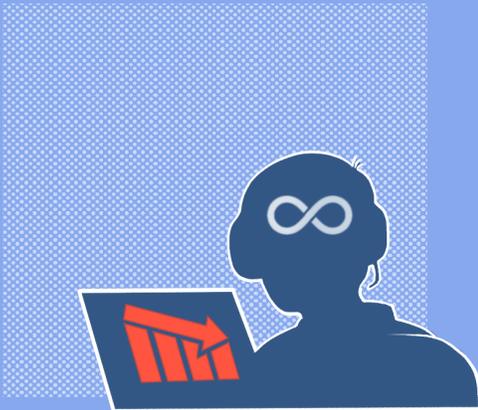
WORSE, IF THE CHILD IS UNABLE TO COMPLETE THE MODULES, THEIR PARENT OR A NEUROTYPICAL* SIBLING WILL ANSWER FOR THEM JUST TO COMPLY WITH THE SCHOOL'S REQUIREMENTS.

PROFESSOR VIDAL, WHO ALSO ASSESSES CHILDREN SUSPECTED OF HAVING LEARNING DISABILITIES, HAS BEEN RECEIVING REPORTS OF FAMILIES EXPERIENCING REGRESSION WITH THEIR NEURODIVERGENT* KIDS.

The goal is always towards self-regulation*.

Even for private school students attending online classes, progress towards self-regulation has slowed down.

For example, sound sensitivities* may seem to have lessened, but that's only because they are wearing headphones. What will happen if you put the students back in an environment with sound stimuli?

Teachers also are not emotionally and socially prepared for this pandemic set-up, and their skills are sorely lacking.

ALTHOUGH MS. TORRES RECEIVED TRAINING ON THE USE OF DIGITAL DEVICES AND CONDUCTING ONLINE CLASSES, IT IS STILL A CHALLENGE.

Critical Error
Sign out now
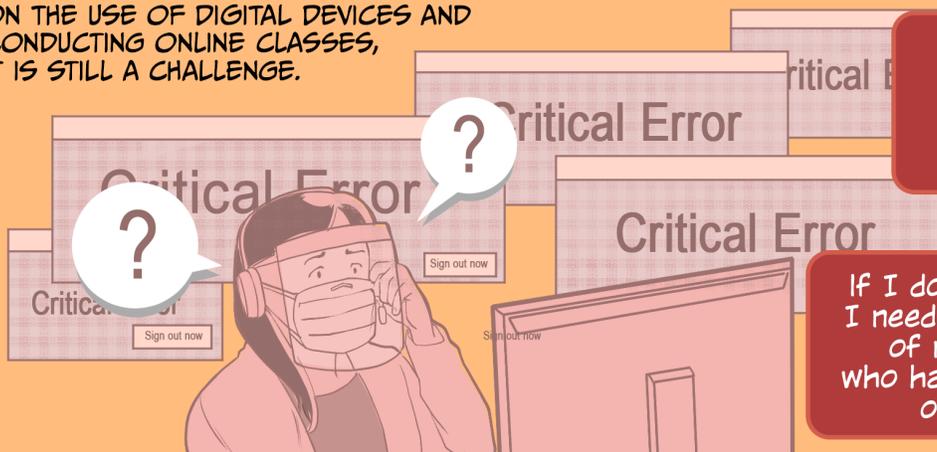
I am not computer literate. My mind is still adjusting from traditional teaching to teaching online.
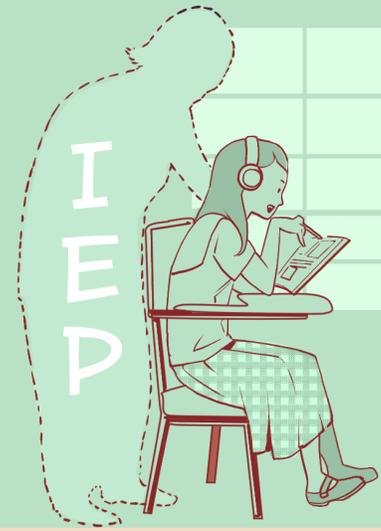
If I do online classes, I need the assistance of my daughter, who has online classes of her own.
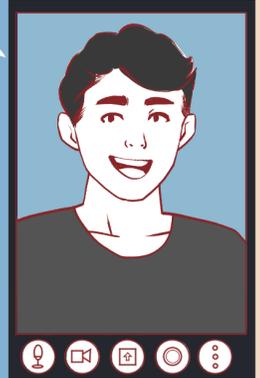
With the remote set-up, the special education curriculum is hard to implement.

Individualised assistance and intervention (known as individualised education plans) became difficult to execute for teachers.

JEAN DE GUZMAN ZURBANO, school head of Learning Garden Montessori School, a private school in Parañaque City

IF ALL WE CAN DO IS HUNKER DOWN AT HOME AND WAIT UNTIL IN-PERSON CLASSES RESUME, THEN HOME IS WHERE WE'LL FIND THE SOLUTION. **THE ANSWER MAY LIE WITH FAMILIES.**

There are advantages to the remote set-up. We were able to finally target goals and address problems [for neurodivergent students] occurring at their home that were not observed during face-to-face sessions.

Part of the strategy to address deficiencies is making sure to keep constant communication with the parents.

RICKIE MOLINAR, occupational therapist at Kids' SPOT Learning and Therapy Center in Parañaque City

Hi. Today he did...

Mom | Dad

O.T.

I also noticed...

Building a routine [with caregivers] would really help in providing consistent progress.

Positive results both in school and children's behaviour are best achieved with the assistance of parents providing neurodivergent students with scheduled routines.

AS OF WRITING, THE DEPARTMENT OF EDUCATION HAS BEGUN TRIALLING FACE-TO-FACE CLASSES IN SELECT PUBLIC SCHOOLS, WITH THE GOAL OF REOPENING ALL SCHOOLS WHEN THE NEW SCHOOL YEAR BEGINS, THOUGH THE DATE HAS STILL NOT BEEN ANNOUNCED.

BY SOME—PERHAPS SERENDIPITOUS—COINCIDENCE, THE **LAW FOR INCLUSIVE EDUCATION** WAS SIGNED ON 15 MARCH 2022, WHICH IS THE TWO-YEAR ANNIVERSARY OF THE NATIONWIDE LOCKDOWN. THE LAW AIMS TO "RECOGNIZE, PROTECT, AND PROMOTE THE RIGHTS OF ALL LEARNERS WITH DISABILITIES...TO EDUCATION BASED ON EQUAL OPPORTUNITY...ENSURING THAT NO LEARNER WITH DISABILITY IS DEPRIVED OF THE RIGHT OF ACCESS TO AN INCLUSIVE, EQUI-TABLE, AND QUALITY EDUCATION."

R.A.11650

The law is a great win for all. Any move toward inclusive education would always be helpful in lessening the non-positive impact of remote learning, as long as there is individualisation and contextualisation in addressing needs of learners with disabilities.

HOWEVER, PUTTING THE LAW INTO PRACTICE WILL TAKE TIME, SO IT IS VITAL FOR PARENTS TO STEP UP.

BUT FOR THOSE WHO WORK ALMOST THE ENTIRE DAY TO MAKE ENDS MEET, OR WHO LACK ENOUGH EDUCATION TO PROPERLY GUIDE THEIR CHILD, THE CURRENT LACK OF GOVERNMENT SUPPORT REMAINS AN OBSTACLE.

IT MAY STILL BE TOO EARLY TO UNDERSTAND THE EXACT REPERCUS-SIONS OF TWO YEARS OF REMOTE LEARNING ON FILIPINO STUDENTS' PSYCHOSOCIAL DEVELOPMENT, BUT EDUCATORS SAY WITH A SUPPORTIVE FAMILY, SOME DEFICITS WILL AT LEAST BE MITIGATED.

FOR JOHN FRANCIS' FAMILY, IT MEANS SETTING ASIDE A PORTION OF THEIR MODEST INCOME TO HIRE A TUTOR.

E-G-G.

Eeegg?

Yes! Good job!

FOR MY SON, SUPPORT CAN COME IN THE FORM OF SOMETHING AS SEEMINGLY MUNDANE AS A DAILY PLANNER.

So, you can put stuff in there, like this project is due on Monday.

Or even your cousin's birthday!

THIS HELPS HIM FOLLOW A ROUTINE AND GIVES HIM A SEMBLANCE OF CONTROL, EVEN DURING THESE UNPREDICTABLE TIMES.

- Page 3, panel 1 is based on the experiences of a 6-year-old student in Bohol province who has to walk 600 meters from his house to a hilltop to get decent mobile internet signals. (source: https://newsinfo.inquirer.net/1334660/glitches-bug-digital-learning?fbclid=IwAR2c1Vj9Xgr1mtbub1Y-bYDv5PhyR61SMc3ELtypP2C9l4ev-iU5WKedOR0)
- Page 4, panel 2 shows a group of schoolchildren helping each other answer printed modules provided by the Department of Education. (source: https://international.thenewslens.com/article/142537?fbclid=IwAR2iZIwf9xrz3AzIB9L2wln3WYckpeW4S23m4xaHI98GyLd5ipS_Tir3UhU)

DECLARATION ON AUTHORSHIP
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DECLARATION ON CONFLICTING INTERESTS
The author and artist declared no potential conflicts of interest with respect to research, authorship, and/or publication of this article.

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UPOU Networks. (2021, August 4). *OPEN talk episode 11: Remote learning para sa SPED at katutubo, paano nga ba?* [Video]. Facebook. https://www.facebook.com/UPOpenUniversityNetworks/videos/879997229388874

INTERVIEW RESOURCE PERSONS
Gemma Torres, Grade 2 teacher at San Antonio Elementary School, a public school in Parañaque City

John Francis Soria, Grade 2 student at San Antonio Elementary School

Lutze-Sol Vidal, PhD, Assistant Professor at the College of Education at the University of the Philippines Diliman

Jean De Guzman Zurbano, School Head of Learning Garden Montessori School, a private school in Parañaque City

Rickie Molinar, Occupational Therapist at Kids' SPOT Learning and Therapy Center, Parañaque City

AUTHOR AND ARTIST BIOGRAPHIES

Included among the Philippine Star Life's list of women who changed local komiks for the better, writer **Bambi Eloriaga-Amago** is also a Journalism graduate (cum laude) from the University of the Philippines Diliman. She has worked on the editorial staff of various ABS-CBN publications and sat as Editor-in-Chief of Questor: The Ultimate Anime Magazine. Currently working as a full-time freelance writer, she adapts scripts of English language-licensed manga such as ToraDora and It Started With a Kiss, and has written original works that are internationally published including Moonlight Meow and the Carnal series of comics. Her current collaboration with artist-husband Roland Amago is the well-received Doobiedoo Asks, a graphic novel which chronicles their family's autism journey. The book is an Official Selection of the first-ever Philippine International Comics Festival (PICOF), a Finalist for Graphic Literature at the 39th National Book Awards (NBA), a Readers' Choice Awardee at the 7th National Children's Book Awards (NCBA), and the Best Media Pitch Winner at the 2021 Asian Festival of Children's Content (AFCC) in Singapore.

Email: *bi_bams@yahoo.com*

Roland Amago is an award-winning illustrator starting to make waves in the Filipino comics scene. He is known for his work on the supernatural comic series Carnal Tales which was been nominated for the 2020 Komiket (indie comic) Awards in the Philippines. Roland graduated from the University of Santo Tomas with a degree in Architecture.

Eloriaga-Amago, B. & Amago, R. (2022). Regression in isolation: On the quality of education received by learners with disabilities during the lockdown. *Philippine Journal of Librarianship and Information Studies, 42*(2), 10–17.

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Consumer Health Information Services in Philippine Libraries: Navigating Obstacles and Capitalizing on Opportunities*

Joenabie Encanto Arevalo
Librarian, Ateneo de Manila University
School of Medicine and Public Health
Lecturer, University of the Philippines
School of Library and Information Studies

Abstract

The limited role of medical libraries in providing consumer health information services in the Philippines presents a challenge. To address such a challenge, this paper suggests that information professionals, healthcare providers, and the government must collaborate to meet the information needs of healthcare consumers. Information professionals can be crucial in promoting health literacy by providing access to reliable and easy-to-understand health information. They must be equipped with the necessary skills to assess the readability of resources and identify signs of low literacy among library patrons. Librarians should develop more relevant and effective health information services tailored to the specific needs of their communities. Professional organizations and library schools must work together to provide comprehensive training for librarians by identifying current trends and gaps in the field and incorporating them into the curriculum. By working together, these stakeholders can overcome the challenges faced by medical libraries and provide healthcare consumers with the information and resources they need to make informed decisions about their health.

Keywords: Consumer Health Information, Consumer Health Information Services, Consumer Health Librarians, Health Information Services, Medical Libraries

Initial research conducted via email and social media chat showed that medical libraries in the Philippines do not extensively provide consumer health information services. The researcher contacted various medical libraries in the country to gather information and insights on their services for the general public. It was discovered that there are significant gaps in the availability and accessibility of consumer health information resources in these libraries. However, libraries in hospitals and academic institutions provide information services to medical practitioners. The literature suggests that medical practitioners are responsible for giving information to patients, their relatives, and the public as health consumers. The Code of Ethics of the Medical Profession (2019), jointly approved by the Philippine Medical Association (PMA) and the Professional Regulation Commission (PRC),

"requires physicians to provide relevant, simple yet understandable information for patients and their clientele" (Philippine Medical Association, 2019, Section 3.6).

The COVID-19 pandemic affected consumers' health consciousness and influenced the proliferation and utilization of health information resources. Under these circumstances, Huber and Snyder (2002) maintained that the debate around who should be responsible for fulfilling the information needs of healthcare consumers continues. This holds true up to now. In this pandemic, good health literacy has never been more crucial. This paper argues that collaboration between information professionals, healthcare providers, and the government is necessary to meet the information needs of healthcare consumers. Information professionals can improve health literacy by providing access to accurate and understandable health information. In the context of the Philippines, where they may be individuals who do not have access to health information, information professionals can partner with community organizations, schools, health centers, and other non-government organizations to provide health literacy programs and resources.

Health literacy can protect our health and prevent problems. According to the World Health Organization (WHO), health literacy is "the personal characteristics and social resources needed for individuals and communities to access, understand, appraise, and use information and services to make decisions about health" (Dodson et al., 2014, p. 12). Should health problems arise, health literacy can help better manage them and help us understand our health choices and their consequences. To understand these choices and their consequences, we need to be able to locate and use health information.

The Canadian Public Health Association Expert Panel on Health Literacy further highlights the significance of accessing and re-evaluating those resources to make informed decisions and promote and protect health (Rootman & Gordon-El-Bihbety, 2008). According to the expert panel, research shows that health-literate patients can make healthy lifestyle choices, communicate better with healthcare providers, access information and services, manage chronic disease, and engage with health education and promotion. Health literacy is also a way to promote, maintain and improve health across the life course.

The 2019 PMA President, Dr. Jose P. Santiago Jr., emphasized the importance of health information literacy. During the 2019 PMA Annual convention, he asked, "What is the use of hospitals and clinics and an abundance of doctors, nurses, and other medical personnel, if a great number of the population is not informed or literate enough to understand how to make use of them?" (Santiago, 2020, p. 1). Dr. Santiago further stated that low health literacy is linked to poor health outcomes, such as higher rates of hospitalization and less frequent use of preventive services. As a workaround, Dr. Santiago suggested two approaches. First is preventive and promotive, and second is curative and rehabilitative.

As information professionals, we can take part in the first approach. We can participate in the awareness campaign about having a healthy lifestyle and proper hygiene and sanitation. The basics such as handwashing, observing cleanliness, eating nutritious food, and using clean can prevent sickness. Immunization is also part of the preventive aspect of care. It is best for librarians to only share credible information about vaccines or other health-related information, for that matter.

The second approach, curative and rehabilitative, has to do with seeking professional advice and support at the onset of illness. As information professionals, we should refer our clients to medical practitioners, even though we know where to find correct information about a particular illness, disease, drug, or treatment. We should direct our users to the correct information and direct them to the medical professionals who can give them sound professional advice. We should refrain from interpreting medical information and keep our opinions to ourselves.

CONSUMER HEALTH LIBRARIANS AND CONSUMER HEALTH INFORMATION

In 2008, the Medical Subject Heading (MeSH) term "Consumer Health Information" was introduced. According to the National Library of Medicine (n.d.), consumer health information "is intended for potential users of medical and healthcare services. There is an emphasis on self-care and preventive approaches as well as information for community-wide dissemination and use." According to Nancy C. Seeger (2015), in the book Meeting Health Information Needs Outside of Healthcare, consumer health information is:

Arevalo, J. E. (2022). Consumer health information services in Philippine libraries: Navigating obstacles and capitalizing on opportunities. *Philippine Journal of Librarianship and Information Studies, 42*(2), 18–23.

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Designed to be educational and can help individuals make decisions about health-related behavior and medical treatments. It differs from clinical information—that is, information written by and for medical professionals— because consumer health information is developed with the layperson in mind, with less technical language and more user-friendly formats. Consumer health information may include resources about prevention rather than cure, more about self-care and wellness, diseases and conditions, sometimes about treatment, health care options, and more. (p. 118)

Several studies have identified the job title "consumer health librarian" as a specialized job position within the field of library and information science. Cooper and Crum (2013) identified consumer health librarian as one of the four new twists to old roles. Ma et al. (2018) stated that consumer health librarians meet the information requirements of patients, their families, and the broader community by providing user-friendly access to a wide range of information resources. Other job titles who perform similar roles may be "health librarians" or "health information specialists." Their duties involve managing the collections, from selection to circulation of consumer health information; providing guidelines for online databases and selecting quality websites; preparing publications for specific health topics; coordinating with medical professionals; and supervising staff. Consumer health librarians are medical librarians focusing on consumer health, but they can also be academic, public, or special librarians with consumer health as a subject specialty. Consumer health librarians may be working in hospital libraries, where they may also be medical librarians who support clinicians, nurses, and other staff. Consumer health librarians may also work in patient resource centers, health agencies, and academic and public libraries.

The Medical Library Association (MLA, n.d.) offers training for librarians on Consumer Health Information Specialization (CHIS). According to their website, this training is intended for medical librarians, public librarians, librarians working in consumer health libraries, allied health professionals, information professionals, and anyone who cares about providing accurate and valuable health information to the public. The requirement to earn CHIS is organized around

eight Core Competencies for Providing Consumer Health Information Services and two levels of accomplishment (MLA, n.d.). Level I CHIS requires coursework in Competencies 1-5. These are:

1. Know the Community
2. Know the Health Consumer
3. Knowledge of the Subject Matter and Resources
4. Evaluation of Health Information
5. Communication, Health Reference, and Instruction

Level II CHIS requires coursework in all eight competencies. In addition to the Level I competencies are the following three:

6. Literacy and Health Literacy
7. Technology and Health
8. Ethical and Legal Issues (MLA, n.d.).

The first competency, Know the Community, involves discovering the characteristics of the community served by the library, including demographics, special populations, health status indicators, and needs of community members. Librarians must understand that beliefs, customs, and values of different cultures can influence thoughts and actions around health, illness, and health care decisions. Librarians must be respectful and responsive to all user groups. Librarians must practice cultural humility through self-reflection and awareness that one's own beliefs and experiences can impact interactions with others; and be open to learning about the experiences and cultural identity of others as a lifelong endeavor.

The second competency, Know the Health Consumer, requires understanding the principles and practices of providing appropriate, relevant information services to meet the needs of different types of users, including patients, caregivers, educators, students, and health practitioners. Librarians must understand and respond to the issues and barriers faced by health information seekers.

The third competency, Knowledge of the Subject Matter and Resources, requires solid knowledge of specific resources for general and specialized health topics and specific population groups or users with special needs. Librarians must know the library's print collection, both circulating and reference materials. Librarians must be well-versed in library subscription databases, including the coverage of materials, currency, and appropriateness for specific requests.

Librarians must know quality web-based resources and strive to stay current as resources change or are replaced with new resources.

The fourth competency, Evaluation of Health Information, involves understanding the principles of evaluating consumer health information for quality. Librarians must apply quality criteria when selecting items for the print or electronic collection. Librarians must also be able to critically examine and filter materials from web-based and other resources when choosing an appropriate resource for a particular patron. Librarians must also provide users with sound evaluation criteria and guidance for finding appropriate health materials.

For the fifth competency, Communication, Health Reference, and Instruction, librarians must know and apply effective communication techniques; understand and apply the additional components of health reference interviewing. Librarians must recognize and take advantage of teachable moments with patrons. Librarians must effectively teach users how to use search engines, library catalogs and subscription databases, reference materials, and online resources.

For the sixth competency, Literacy and Health Literacy, librarians must understand the related issues of literacy and health literacy and the principles and practices of serving users with low literacy skills or low health literacy, including knowledge of understandable and appropriate print, online, and multimedia health materials. Librarians must be able to gauge the readability of a resource and be aware of signs of low literacy in patrons. Librarians must recognize that low health literacy can affect anyone regardless of education or socioeconomic level.

The seventh competency, Technology and Health, requires librarians to understand current technology used by patrons within and outside of the library. Librarians must know emerging technology trends in health-related social networking, mobile access, electronic health records, and personal health records. Librarians must have proficiency in assisting users with library computers, the library catalog, subscription-based health information resources, Internet searches, and web-based health resources.

Finally, the eighth competency, Ethical and Legal Issues, involves understanding ethical issues surrounding the provision of medical information, including the use of discretion and the patron's need and right to privacy. Librarians must know and apply the library's policies regarding disclaimers when providing medical information. Librarians must only provide recommendations for health information resources and never provide medical advice. Librarians must understand the limitations of the librarian's role and always recommend that the user discusses the information received with a health professional.

These competencies will enable librarians to develop more relevant and effective health information services tailored to the specific needs of the community. Consequently, these will help health information users identify trustworthy sources and navigate the vast amount of information available. Awareness of ethical and legal issues ensures that services are conducted legally and ethically, protecting the privacy of users. To make informed decisions about their health, librarians must provide users access to relevant and understandable health information.

CHALLENGES AND OPPORTUNITIES IN MEDICAL AND CONSUMER HEALTH LIBRARIANSHIP IN THE PHILIPPINES

In the Philippines, there are no established programs in formal higher education offered for medical librarians, even more so for consumer health librarians. Only the University of the Philippines School of Library and Information Studies (UP SLIS) offers electives for medical and health librarianship, but students are not required to take them. The Medical and Health Librarians Association of the Philippines (MAHLAP) provides venues for medical librarians to share best practices and expertise. MAHLAP also provides training and upskilling for medical and health librarians to keep up with trends and serve their communities better.

The National Library of the Philippines (NLP) does not have a medical or consumer health corner. However, NLP offers a wide range of resources, including health-related publications, both online and in print, to encourage health literacy in communities. There are health-related publications available in NLP reading rooms and NLP-affiliated public libraries. On the other hand, libraries in government hospitals do not cater to patients and their relatives. Library resources are for hospital staff only. The only medical library that entertains the general public as clients is the Department of Health - Central Library in Sta. Cruz, Manila. To

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access the library collection, clients are highly advised to check the electronic library system through http://elibrary.doh.gov.ph.

For libraries planning to offer consumer health information services, the key is identifying the spectrum of services to be offered. Each service must be tailored to the needs of the community. Librarians must have the necessary skills and training to provide the service. So, what can we do to provide health information responsibly?

Librarians are always expected to assist in finding information, no matter what type it is. So first, medical and health librarians should help refine information requests. Librarians need to recognize that there will be complex questions, not just simple directional questions and that there will be follow-up questions. Most importantly, librarians should remember not to give personal medical advice. Librarians should not interpret medical information for their clients; these clients should be referred to health professionals. Secondly, librarians need to know what resources are available; are these authoritative? Are they from reliable sources? Librarians should always remember that we must have good information to counter bad information. Below are some of the recommended questions to ask when picking a resource:

- Is the information appropriate for the user?
- Can the person understand the information?
- Does the information answer the user's question/s?
- Is the information accessible?

Librarians should prepare appropriate materials based on who is asking and always observe confidentiality. Consumers of health information have health issues, so librarians should always be compassionate and considerate to users. We must be able to know our professional boundaries and be able to direct our users to health professionals. We must be cautious in offering health information related to symptoms and treatment options. There's a thin line between providing health information sources and giving personal medical advice. Librarians can receive training and improve their skills through professional organizations like the MAHLAP. By working together, professional organizations and library schools can offer more comprehensive training for librarians. Library schools can work with professional organizations to identify current trends

and gaps in the field and to incorporate these into the curriculum.

In conclusion, the limited role of medical libraries in providing consumer health information services in the Philippines presents a challenge. This highlights the need for collaboration among information professionals, healthcare providers, and the government to improve health literacy and provide access to accurate and understandable health information.

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Crafting an Infodemic Response through Information Literacy

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Abstract

Information literacy has long been seen as an empowering tool, useful in helping people navigate the information landscape and make informed decisions. This paper discusses how information literacy could be used to address concerns pertaining to the infodemic, as well as the different approaches selected groups and institutions have taken to address these concerns. It also discusses new information practices that have emerged during a pandemic and the kinds of information disorder that came with it. Through these discussions, this paper could be useful for librarians and information literacy educators as they develop and implement their respective information literacy programs.

Keywords: Information Literacy, Information Literacy Programs, Pandemic, Infodemic, COVID-19, Health

INTRODUCTION

Information literacy is the ability to locate, evaluate, and use information to address an information need (American Library Association [ALA], 2000), make balanced judgments, and engage in society (Chartered Institute of Library and Information Professionals [CILIP], 2018). It is an empowering skill that helps people make informed decisions applicable to different aspects of their life, whether for citizenship, education, health, the workplace, or their finances. In recent years, the meaning of the concept has shifted from being related to research skills to one that can be applied to academic purposes. Through this redefinition of the concept, the way it is taught has also evolved. Today, topics such as information disorder, along with other related literacy concepts such as health information literacy, political literacy, environmental literacy, and financial literacy, are also associated with information literacy. Learners are taught to examine both information uses and information abuses as seen in these contexts. They are also educated on the ways to determine information's validity by being more critical of the information they receive. The importance of information literacy, specifically in the context of health, is further highlighted today, amidst the COVID-19 pandemic.

Research on information literacy and information disorder promotes the idea that the issue can be addressed by information literacy education (De Paor & Heravi, 2020). As such, this paper deals with discussions of the following areas: the information practices that have emerged during the time of the COVID-19 pandemic, the examples of information

disorder associated with it, and the steps employed by different institutions in using information literacy as a tool to address not just the pandemic but also the infodemic. Further, the end goal of this paper is to serve as a guide for librarians and information literacy educators in developing and implementing their information literacy programs. While the approaches covered here are mainly about the COVID-19 infodemic, the paper may also be used as a guide for other information literacy issues, not just for health-related information and sources.

Being "Information Literate" Today
The Chartered Institute of Library and Information Professionals (CILIP) gives an in-depth discussion of the contexts in which information literacy can be applied. These five contexts are everyday living, citizenship, education, the workplace, and health. Focusing on its application to health—information literacy, when discussed in this context, could be referred to as health literacy. It espouses the idea that information-literate people make informed choices relating to their health and well-being. Finding reliable sources of information in managing health concerns and the applicable preventative approaches is vital for individuals. This involves using credible and reputable healthcare sources when looking for information about their condition, corresponding treatment, and prognosis. In addition, being information literate in the context of health also enables people to converse with their health providers and make informed decisions. To be information literate now means that a person can distinguish between real news and "fake news" and engage in informed discussions on politics, health, or other pertinent issues using information (CILIP, 2018).

The use of different information literacy frameworks in teaching the topic is very helpful, and the use of current issues where the value of information literacy can easily be associated is expected. Information literacy skills in finding, evaluating, and using information are taught as part of the information literacy instruction, whether in one-shot information literacy training or actual information literacy classes. There are also established ways of determining which information sources must be consulted for specific information needs. However, this might be slightly different when teaching health information literacy, as some issues exist concerning the readability of health resources (Daraz et al., 2018) and how this could potentially lead to misinformation. Since the goal of

information literacy education is to empower individuals to discern the reliability and validity of the information they find so that they can make informed decisions, this might be hindered by the level of readability of the resources they consult.

Contemporary topics and issues related to information literacy are incorporated into how the concept is instructed. This is due to the observed need for more concrete and relatable applications of the concept of information literacy so that its learners will easily understand such concept. Information literacy education is seen and promoted as one tool, if not a solution to problems concerning information disorder. Information literacy skills, while still understood as helpful tools for students and scholars in the conduct of research, can also be applied to other practical problems, some of which impact the politics, health, finances, or decision-making of information users.

The Infodemic
The nature of information literacy, as something that enables people to become more critical and evaluative, could help information users discern what is factual versus what is misleading. Such concern is indeed very timely now as the world is going through a health crisis. The COVID-19 pandemic has brought us concerns not just regarding our personal well-being and health but also about the prevalence of information disorder associated with it. The term used to describe this concern is *infodemic*. The World Health Organization (2021) defines an infodemic as:

> *Too much information including false or misleading information in digital and physical environments during a disease outbreak. An infodemic causes confusion and risk-taking behaviours that can harm health. It also leads to mistrust in health authorities and undermines the public health response. It can intensify or lengthen outbreaks when people are unsure about what they need to do to protect their health and the health of people around them. With growing digitization—an expansion of social media and internet use—information can spread more rapidly. This can help to more quickly fill information voids but can also amplify harmful messages.*
> *("Overview" section, para. 1)*

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The use of the term *infodemic* has been studied by other institutions as well, such as the Arts and Humanities Research Council (AHRC), and the concept has been associated with other phenomena, such as conspiracy theories (Infodemic, n.d.) and other forms of counterknowledge (Doessel, 2011). Since there has been a rise in COVID-19-related information disorder, it has been recognized as another problem we are currently battling, aside from the actual pandemic.

The problem with a polluted information landscape is not new; the concern has been around for a while, even before the COVID-19 pandemic. The International Federation for Library Associations and Institutions (IFLA) has earlier released a call to governments to discuss the surfacing of fake news, misinformation, and disinformation. The belief is that for a person to engage fully in society, make better decisions, and form informed opinions, a person should be able to distinguish information from other deceptive uses of information (IFLA, 2018). This deceptive use of information has been called many names, such as alternative facts (Conway, as cited by Blake, 2017) and fake news (Wardle, 2017). Still, for the people at the Public Data Lab in Amsterdam, it is called information disorder (Boenegru et al., 2017). So here it is established that these information disorders we regularly see online have existed for a while. It has only become more noticeable and rampant now because internet connectivity has aided its propagation.

Kandel (2020) labeled the act of sharing information disorder examples as information disorder syndrome. He proposed a grading for information disorder syndrome and proposed interventions to address it. His grading for information disorder syndrome is divided into three levels, with each level corresponding to the kind of information disorder one shares and/or creates. People under Grade 1 share fake news on social media and in physical or virtual groups. The people categorized here are those who share information without fully understanding whether the information is correct or not. Also included in this category are people who share disinformation and malinformation while not being the creator or creator of what they share. Grade 2, however, is one step more extensive than Grade 1, in which people share or develop misinformation or disinformation to make money and gain political influence. Grade 2 includes people who created disinformation and aim to capitalize on existing information disorder. Examples of actions under Grade 2 include predatory conferences, as well as

dubious travel and hotel recommendations containing false information. Finally, Grade 3 information disorder includes people who share or develop misinformation and/or disinformation with the intent of harming people with or without the intent to make money. This includes the anti-vaccination movement. The management strategies proposed by Kandel (2020) will be discussed in the section further below.

LITERATURE REVIEW
Information Practices during the Pandemic
Identifying the novel ways of teaching information literacy supports the investigation made by Lloyd and Hicks (2021) in their research on how people's information work and practices changed during the COVID-19 pandemic. As one of the first research papers to talk about information practices during the pandemic, one of the aims of the research was to determine how information literacy practices developed as a response to the pandemic.

The research found that people transitioned into a new information environment during the pandemic via three phases. These three phases began with an *unfolding* phase where people became acquainted with the pandemic for the first time and familiarized themselves with the actors in the pandemic as well as the possible changes it could cause to daily living. Information literacy practices at this phase focused on targeted information seeking concerning the pandemic and observing.

The next phase is the *intensifying* phase, where people attempt to understand the pandemic and its short-term and long-term effects. This phase is marked by information literacy practices like "hoovering" up information, which describes people's propensity to absorb all available information about the pandemic. This includes new practices expected from people, which were all part of the adjustments implemented in the daily practices of people living amidst the pandemic. Another information literacy practice that stemmed from this is *mediating*, where people share learnings and new information about the pandemic to allay fears about what is happening. The next stage is *documenting*, which is the use and creation of reflective text and visual images to represent the present experience while experiencing the pandemic.

The third phase is *maintaining*, where people remain to have an informed view of the pandemic and exercise more control over it. The stage presents information literacy practices such as

compartmentalizing, which functions somewhat as the opposite of hoovering. People became avoidant or more selective of the information they absorbed. Tapering off is another information literacy practice borne out of this stage, choosing and narrowing down their preferred information sources to remain in the know about the pandemic.

After determining these phases, an overarching theme of safeguarding was identified. It is characterized by protecting oneself, other people, and institutions when accessing and using information. The act of safeguarding represents the value of context, a central concept in understanding information literacy. All three phases discussed in the previous paragraphs are set against the backdrop of the pandemic. The information literacy practices borne out of it may be broad, but they focus primarily on minimizing risks and how the effects of the pandemic may be mitigated.

Information practices are driven by the information need and context. Following this belief, the paper by Zimmerman (2021) talked about how the COVID-19 landscape affected the health information-seeking behavior of people. The paper aimed to determine the differences in health information-seeking behavior of two groups: one from 2019 and one from April 2020. The research also hoped to explore shifts in information-seeking behavior during the pandemic and determine the participants' health information literacies concerning information-seeking. Using three different assessment tools: the Tool for Real-Time Assessment of Information Literacy Skills (TRAILS), the Health Literacy Skills Instrument (HLSI), and the Brief Health Literacy Screening (BHLS) tool, participants were tested on their information literacy competence. Following these assessments, it was determined that there was a significant rise in the use of news sources as health information sources during the COVID-19 pandemic. In this case, the most preferred news source is online newspapers, followed by national and local news presented on television. The study also found that social media sites, such as Twitter, Facebook, and Instagram, and forums like Reddit were also preferred sources for health information. Lastly, the difference between the health information-seeking behavior of the two groups was that more health information seeking was happening in the 2020 group over the 2019 group.

Information Disorder during the COVID-19 Pandemic
When conducting information seeking online, as mentioned in the Zimmerman (2021) paper, some respondents preferred using some social media sites as an information source; one would inevitably encounter misleading information. Even pre-pandemic, this has already been a concern. Igbinovia et al. (2021) conducted research on the importance of information literacy competence in curtailing fake news about the COVID-19 pandemic. The objectives of the paper were to study the role of information literacy competence among LIS undergraduates in Nigeria in addressing misinformation caused by the COVID-19 pandemic. Using a survey, 138 undergraduates from different universities in Nigeria were studied. The information literacy competence of the participants was determined and correlated with their ability to discern fake news about COVID-19. Those with higher information literacy competence are more able to discern fake news. Findings indicated that the respondents could define and express the nature and extent of their information needs and had the ability to identify valid sources of information easily. Further, it was determined that while there was a low level of fake news prevalent among the participants, the two major causes of fake news among participants were:

1. The bombardment of information related to the COVID-19 pandemic. This could be from different sources: media outlets, television, and the internet.
2. The challenge of discerning authenticity among the rapid circulation of information from different information sources.

A related study by Hansson et al. (2021) studied the types of harmful information prevalent in selected European countries in the context of the COVID-19 pandemic. The countries examined were France, Italy, Norway, Finland, Lithuania, and Estonia. Through the compilation of 98 case studies from news media outlets, scientific reports, and other documents discussing information disorder, the researchers identified six different forms of potentially harmful information related to COVID-19. These six were:

1. Discouraging safety precautions and measures against catching and/or spreading COVID-19. This includes information that questions the value of using face masks as well as the promotion of anti-vaccination ideas.
2. Promoting the usage of false and/or harmful cures and remedies, such as promoting the belief that cheese and colloidal silver are COVID-19 remedies.

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3. Providing false information regarding the transition of and immunity to the virus, such as the claim that type O blood groups are less susceptible to the infection.
4. Trivializing the consequences caused by the pandemic. This includes false predictions giving exact dates to when the pandemic will end. It also includes COVID-19 denialist claims.
5. Various scams that exploit people's fears regarding the pandemic.
6. Causing and enacting stigma and prejudice against certain groups with a high infection rate. This involves hostile behavior towards refugees and minority groups during the quarantine period.

Approaches to Addressing Battling the COVID-19 Infodemic through Information Literacy

Now is the time for strengthening information literacy education more than ever. Looking at the information literacy practices and related concerns presented in the previous portion, it is very obvious that a more robust approach to information literacy instruction should be implemented. While multiple aspects of information literacy skills can be covered, following the discussions above, the aspects of searching behavior and information evaluation should be highlighted. What other approaches in information literacy education could be used to address the COVID-19 infodemic?

It has long been accepted that librarians play a crucial role in instruction. This is no different now. The same is highlighted by Young et al. (2020) in their discussion of the role of libraries in misinformation programming. The American Library Association has released information and resolutions that oppose the spread of information disorder. Other library associations have done so as well, strengthening the call to librarians that they hold an important responsibility in solving information disorder-related concerns. As librarians are seen to have always been at the forefront of addressing this and promoting critical thinking when dealing with information, some measures look at how they can adapt existing information literacy frameworks to solve the current predicament of the infodemic.

Young et al. (2020) also recognize that while addressing information disorder is expected from librarians, there are limitations, such as the insufficiency of pointing users to LibGuides or checklists when looking for information. Young et al. also argue that librarians must also remember to adapt the information literacy skills they teach to increasingly online environments and provide training on social media use and journalism, as these are crucial elements people must also understand when talking about information disorder. Another key suggestion is for librarians to remember the psychological aspect of misinformation. This is an excellent reminder of the importance of using more relatable illustrations of information disorder and looking at other explanations of the root of the problem, for example, the emotional triggers some information disorder provide that lead to them being viral.

Another research that talks about the role of librarians in addressing information disorder is from De Paor and Heravi (2020). They studied how the field of librarianship can help solve the problem concerning information disorder. The goal of their research was to serve as the foundation for the development of initiatives in librarianship to solve information disorder-related problems. They conducted an evaluation of existing literature in LIS, discussing the themes and patterns used by librarians in their quest to solve the issue of information disorder. Following their evaluation of the literature, the researchers discovered that fake news varied in what perspective it favored but could be categorized as either for financial gain, deceit, or entertainment. The findings highlighted the need to understand not just how it is created but also how it is disseminated. Along with this, information users must be taught not just to evaluate information but also to understand the environment where information is formulated and shared.

In another related research by Guo and Huang (2021), the response of academic libraries against COVID-19 was discussed. After conducting a content analysis of information literacy education through mini-classes in 42 academic libraries in different universities in China, it was determined that these institutions employed a multitude of responses to address the concerns regarding the pandemic. These approaches ranged from:

1. Recommending reliable information sources to users.
2. Developing and gathering current information on COVID-19 cases.
3. Resisting misinformation and disinformation.

While these attempts were greatly helpful, it was still marred by obstacles such as poor planning, lack of updates, and lack of resources. Suggestions on

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improving these approaches include creating courses with multi-platform linkage, developing innovative teaching models with online and offline functions, and using teaching opportunities and content according to new information needs and fighting misinformation.

Bonnet and Sellers (2021) took an innovative approach to addressing COVID-19 misinformation by designing a program called the COVID-19 Misinformation Challenge. The program aimed to teach and develop critical thinking by quizzing participants regarding their COVID-19 knowledge and getting feedback on the different approaches participants could take in validating information found in various resources. This initiative is particularly interesting as it took a step forward than just seeing how well the participants were informed about COVID-19. Giving suggestions on how information can be verified and showing examples of reliable resources when giving feedback to the participants would help them understand that there might be more to what they already know. This feedback could either strengthen their information search practices or improve their practices in finding information. While the program is designed specifically for COVID-19 information, information literacy skills concerning locating information and verifying information could also be applied to other topics or other activities where a person would be in pursuit of information.

Kandel (2020) discussed three levels of information disorder syndrome and suggested interventions for each level. Some of his recommendations on how to manage the syndrome include rumor surveillance. He cited examples of social media companies monitoring where information disorder originates and target messaging to remove false information posted online. For this kind of approach, he cited some government efforts to bust myths with evidence-based information. Another approach Kandel recommended is psychosocial counseling, particularly for those exhibiting Grade 2 and Grade 3 information disorder syndrome. He posits that there might be a relationship between narcissism and excessive online activity. The most critical intervention for this would be to remind people that not all posts on social media are real. Though Kandel recognizes that this is quite challenging, his approach to managing information disorder seems more grounded in medical approaches, such as his suggestion to conduct counseling for people exhibiting Grade 2 and Grade 3 behavior. However, it is still important to remember that information literacy is a key aspect of managing the infodemic.

Buchanan (2020) goes a step further in identifying solutions to the information disorder problem, reiterating the need to raise digital media literacy to address disinformation concerns. He also adds that pre-existing beliefs of people regarding the truthfulness of what they see online could also contribute to why some people are more likely to spread false information. Further, he suggests that repeated exposure to media and information containing correct information could be helpful too. This echoes previous mentions of using evidence-based information to 'counter' false information available online.

DISCUSSION

All the resources examined in this paper, along with the corresponding discussions of each: understanding the new information literacy practices (Lloyd & Hicks, 2021; Zimmerman, 2021), the different information disorder concerns that emerged along with COVID-19 (Hansson et al., 2021; Igbinovia et al., 2021); and the approaches that various institutions have taken in addressing these concerns (Bonnet & Sellers, 2021; Kandel, 2020; Young et al., 2020; Guo & Huang, 2021) could be the basis of an information literacy program that focuses on health information and health literacy. This approach aligns with the information literacy perspective that information literacy is embedded in information-rich social practices, as Addison and Meyers (2013) studied. Following this perspective would not highlight the instruction of information literacy skills. Instead, it would focus on the understanding that there are other aspects of a person's life where information is used. These areas are beyond school and research and must also be highlighted so that people would still appreciate the importance of using the right information and information sources in making decisions.

The contents of an information literacy program must always be mindful of real-world events so that the lessons would remain relatable for the clientele. This supports the importance of context in discussions of information literacy practices, as these practices are borne out of the context where they are situated. Since the announcement that COVID-19 is a global pandemic, changes should be incorporated into information literacy programs to give them a more contemporary tone and to ensure it remains relevant to the actual experiences of the learners undergoing training. Some new content that could be introduced should be anchored to the current information environment: current issues concerning the pandemic,

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resources discussing it, examples of information disorder related to it, and the tools that information seekers can use to find useful information. Echoing what was mentioned in the introduction, since one of the five contexts of information literacy from CILIP is health, this could be a starting point in developing an information literacy program. Examples of contemporary issues under this topic that could be included in the program are concerns regarding vaccine hesitancy, pseudo-scientific practices to supposedly cure COVID-19, and health information sources selection and evaluation, among others. To further inform learners about the problem caused by the information disorder surrounding COVID-19, activities where students have to discuss their encounters with COVID-19-related information disorder could be added to the information literacy sessions. Doing this helps contextualize information literacy instruction and promotes the appreciation of its application beyond doing schoolwork as a research tool but as something that could help the learners survive the pandemic. Since health literacy and scientific literacy are concepts related to information literacy and infodemics, the inclusion of topics on these may be usesful for information literacy programs. For health literacy, topics that emphasize familiarity with health resources and health databases may be added to a program. Another useful approach could be in helping information users evaluate credibility and authority in health and other related areas. This approach could be supplemented by discussing the contextual nature of authority in health (Association of College & Research Libraries, 2015). Understading that authority is contextual may be helpful in instilling to information users that not all perspectives explaining health issues are trustworthy. This awareness is not just applicable to health-related concerns, but for other concerns as well. As for scientific literacy, a good introductory approach could be through a review of the scientific process. This approach may further be reinforced by introducing examples of counterknowledge. Doing this could serve as a springboard for discussions on how scientific knowledge is produced and disseminated, and how the spread of counterknowledge on issues such as health and the environment may be addressed. Aside from including the above-mentioned topics, changes in the way the program is delivered may also be implemented. Instead of utilizing a lecture or seminar-type approach to instruction, gamifying it or adding a myth-busters element to an information literacy program might also be appealing to learners.

Considering that the pandemic is still ongoing as a public health concern, this area is still a very relevant information literacy topic. There are still prevalent examples of information disorder surrounding COVID-19, and these must still be debunked or corrected. Legitimate health sources and proven scientific practices must also be communicated or made available for people for them to be able to access relevant health information and make informed decisions.

CONCLUSION

The complex landscape of the information society people live in today shows that while information can be accessed very easily compared to the past, it does not necessarily mean that the information one can gather should automatically be considered reliable. Information literacy education remains crucial in ensuring that people use information sources effectively and do not fall victim to information disorder, especially when they pursue information for their health. As such, it takes enormous effort for librarians and information literacy educators to develop information literacy programs to ensure that their clientele is information literate. These efforts are not in vain, though, specifically in the context of health: if people can use information sources properly and make sound decisions based on this, the beneficial effects to the broader community reward the efforts of people involved in information literacy education.

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OCR-Enhanced Digital Asset Management System: Prototype Design and Construction

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Abstract

Digitization initiatives have become increasingly prominent for libraries and information centers. These initiatives have, in turn, also led to an increase in the use of digital management systems to store digitization outputs. Since these are large volumes of documents, potential alternatives to providing access to these materials aside from manual data entry processes such as indexing and cataloging are explored. In this area, the potential of Optical Character Recognition (OCR) mechanisms is gaining prominence as the tool that can process a large number of documents and provide automated text recognition at high speed. Leveraging the potential of OCR, this paper describes the design of a digital asset management system and the application of Tesseract, an open-source OCR engine, to create a functional and adaptive system to manage digital assets and retrieve information from these contents.

Keywords: Optical Character Recognition, Document Retrieval, System Analysis and Design, Digital Asset Management Systems

INTRODUCTION

A fundamental purpose of the information profession is to provide and give access to quality information. Significantly for information centers such as libraries, archives, or record centers, information is contained in formats primarily in print. Fortunately, with decades of technological advancements, ways to facilitate information retrieval from these materials have extensively progressed. Digitization initiatives have become a growing effort today to preserve physical materials and to make information available and accessible. Parallel to this is the effort to adopt mechanisms that enhance the chance for access and retrieval of information from these sources, hence the use of digital asset management systems or information retrieval systems. These systems use indexing methodologies to categorize and lift information from sources, and human intervention may be necessary for this process. But opportunities to aid in information retrieval have grown as well, particularly with machine use and systems that enable fast retrieval of information that are raw and plain keywords aside from controlled and limited descriptors has become pivotal. Among these is optical character recognition (OCR).

To further describe the process of using an OCR, this paper presents its brief history and its applications. It proceeds with the rationale for developing a prototype system that explores the use of OCR and its design, features, and functionality. The result of the prototype testing and the potential future of OCR for libraries will also be discussed.

DEVELOPMENT OF OCR TECHNOLOGY

The ability to retrieve data extensively from full-text sources is a crucial process that the OCR mechanism can enable. OCR is a technology that enables computers to recognize text or characters from an image automatically (Salimah et al., 2021) and a process that converts letters on a digitally scanned printed document to digital characters (Reitz, 2013).

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OCR technology has been consistently improved up to the point that it can produce exploitable results on mainstream documents (Chiron et al., 2017).

Earlier development of the OCR traces back to the early 19th Century, as detailed by Raj and Kos in their 2022 paper. Notably cited was Edmund Edward Fournier d'Albe's machine, which he called "exploring optophone" (Raj & Kos, 2022; Thomas, 2021). This device converts light to sound and enables blind individuals to hear it. According to Thomas, in September 1913, d'Albe demonstrated a prototype of the reading optophone that later on would not be used commercially but influential in the further development of OCR. Furthermore, at the height of the First World War, E. Goldberg invented a machine that could read a text and convert it into telegraph code, which he further developed to become the first electronic document retrieval system (Raj & Kos, 2022).

In the early '90s, OCR gained prominence and has consistently increased in usage in different ways. For instance, OCR was used to recognize handwritten text in the study of Gillies et al. in 1995. Their study recognized handwritten text from census forms, which aimed to aid the encoding of census data to a system that will convert it to a computer-readable form. The handwritten text came from the 1990 census, totaling 9,000, and yielded a field error rate of below 4%. Furthermore, OCR was also used to recognize language-specific text in the study of Robby et al. (2019), where they collected a dataset for Javanese characters from digital and handwritten sources with a total of 5880 characters. Image enhancing methods, such as "rotation, filling the missing of Javanese characters, noise removal and clarify the stroke of handwritten Javanese characters" (Robby et al., 2019, p. 501) were performed for handwritten characters that exhibit blurriness, noise, misalignment, and missing of font component. Neural-Network API from Tesseract OCR was used to train the dataset they collected. Upon completing their study, they infer that the characters "i" and "e" of Javanese characters are hard to distinguish from one another, thus causing lower accuracy on the result.

Application with OCR functionality
OCR can be used to power different systems, such as mobile applications or computer-based applications. Watanabe et al. (2003) developed a mobile application that extracts Japanese characters from a scene and translates them into English. The application enables the user to manually select the text region to be translated, which makes the translation available to users at the soonest possible time. One hundred forty-one scenes where Japanese characters were extracted were used to test the application. Findings indicated that the mobile application has an 85% performance rate.

Another study conducted in 2012 by Chammas et al. utilized OCR to enable a mobile application to translate Arabic text to the user's preferred language. The study focused on translating the names of villages and towns and restaurant menu entries. The mobile application was also able to recognize both handwritten and printed text resulting in a 2% error rate.

In 2014, Nurhayati et al. conducted research to integrate OCR in a mobile application that scanned the cooking recipe. They utilized Tesseract to convert scanned images to text and enable the users to search for recipes by their ingredients. They implemented this using a mobile application that a user can bring with them anytime, thus freeing the user from the need to bring a recipe book with them.

In a study by de Luna (2020), the researcher created a microcontroller-based braille platform utilizing a raspberry pi and Tesseract OCR engine. The platform utilized OCR to generate braille characters from the scanned text in a tactile display. They determined that a font size of 12 and below for Arial font results in an accuracy of 0%. de Luna further stated that 85% accuracy could be attained if the font size is increased to 18, thus concluding that an increase in accuracy could be attained if the font size of the material being processed is also increased.

Another notable use of OCR is on plate number recognition. Patel et al. (2012) conducted a study to extract text from vehicle plate numbers using Tesseract. They noticed that converting images to grayscale yielded an increase in the accuracy of text extraction compared to colored images. They also compared Tesseract to a proprietary OCR tool Transym OCR. The researchers observed that Transym OCR converts an image to grayscale before it performs character recognition. To compare correctly, the group of Patel also converted the vehicle plate number to grayscale using an algorithm they developed before feeding it to Tesseract OCR. Results of the test they conducted revealed that Tesseract OCR, although a command-line-based tool, was able to extract text from vehicle plate numbers more accurately compared to Transym OCR.

Singh and Bhushan (2019) created an automatic number plate recognition (ANPR) system using Tesseract to identify and extract text present in plate numbers of vehicles flying through India's roads and highways. Employing deep neural networks to identify text within a vehicle plate number, they were able to get a 99% accuracy rate.

In a similar but more recent study, Adedayo and Agunloye (2021) created a real-time plate number recognition and detection system using Tesseract in Nigeria. They detect plate numbers from stationary vehicles using any input source. The acquired image is then processed using OpenCV, a python library for image processing. Their study resulted in 75% accuracy in recognizing license plate numbers. Researchers also recorded an average of 90 milliseconds for the OCR engine to process the license plate numbers properly.

It is prevalent in the literature that the result of OCR is not 100% accurate for the time being. Good results can be obtained by subjecting source images to some form of preprocessing, such as converting images to black and white. Several studies mentioned above also provided insight into how fast OCR engines can extract text from a source image.

OCR Applications in the Philippines
Regarding research conducted abroad, it is safe to say that OCR technology is getting much attention, which is also true in the Philippines. Researchers in the Philippines also conducted studies that utilized OCR in digital document classification, counterfeit currency detection, and transliteration of Baybayin text.

In 2020, Jayoma et al. created an OCR-enhanced application for the Department of Social Welfare and Development (DSWD) Caraga. The application accepts digital document files, extracts texts, classifies the documents, stores and makes them available for searching. The researchers aim to automate the classification process for documents of the DSWD Caraga. They used Python-Tesseract (PyTesseract), a Python-based wrapper for the Tesseract OCR engine. According to the researchers, the developed system was hosted on a local server within the ICT Center of DSWD Caraga.

Apoloni et al. (2022) developed a Philippine counterfeit currency detector equipped with OCR. The prototype was developed using Raspberry-pi and could detect the watermark, asymmetric serial number, see-through print, and security tread, all of which fall under the level-1 security features of Philippine currency. Their research utilized Tesseract OCR to identify data within the captured image and transform it into a string. The researchers subjected a combination of authentic and fake Philippine currency denominations from 20 to 1,000-peso bills to an experiment using the counterfeit currency detector. In their experiment, they observed that the detector worked best with the 200-peso bill as it shows an accuracy of 100%. Furthermore, the overall result of their experiment shows an average accuracy rating of 95.86% for all the banknotes. They concluded that the detector could distinguish between counterfeit and authentic Philippine currency.

Pino et al. (2021a, 2021b, 2022) conducted different studies on recognizing Baybayin characters. Their first study, published in 2021, utilized a support vector machine in classifying a Baybayin script. The OCR system they developed identified whether an image contains Baybayin or Latin script with a 98.41% accuracy rating. In a succeeding study published in the same year, they proposed a system that would perform transliteration of Baybayin text to its Latin equivalent at a word level. The researchers employed the OCR system, which utilized a support vector machine that they developed and implemented in an earlier study. Experimenting with 1000 publicly available images containing Baybayin written word, the system recorded a 97.9% accuracy rating. A more recent study by the authors published in 2022 implemented an OCR system that distinguishes between Latin and Baybayin text on a block level. Their system converts the identified Baybayin words to their corresponding Latin equivalent while the Latin text is displayed as it is. Furthermore, the system they developed identifies the Baybayin transliterated word by putting a red rectangular indicator to the word. They subjected the system to an experiment using 110 Baybayin and Latin block text images, among which 103 were correctly identified.

MOTIVATION
Adding OCR capability to a digital asset management system is a promising tool that will not only lessen the workload of information professionals in indexing and processing data but also make the digitized materials readily available and content searchable to its users.

Leveraging OCR leads to developing a simple document retrieval tool using available open-source

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software. The aim is to exploit the potential of OCR and utilize it to query the text content of digitized materials.

Several OCR software is available on the market, both proprietary and open-source. Well-known proprietary OCR software are Google Cloud Vision, Asprise OCR SDK, OmniPage, and Abbyy FineReader. Free OCR software, such as OCRFeeder, GOCR, OCRopus, and Tesseract, can be used, modified, and shared with others. For this prototype, Tesseract, one of the most advanced, free OCR software supporting more than 100 languages listed in its GitHub repository (Tesseract OCR, 2021), was utilized. Although lacking a graphical user interface, this poses an advantage for developers as it can easily be integrated into the information retrieval system being developed.

SYSTEM DESIGN
System Business Process
The prototype follows the system process as illustrated in Figure 1. The process starts by uploading digitized documents from which text will be extracted. The extracted text, together with other document characteristics like title and filename, will be saved to the database while the file will be saved on file storage within the server. Users of the prototype will be able to search data stored in the database.

Figure 1
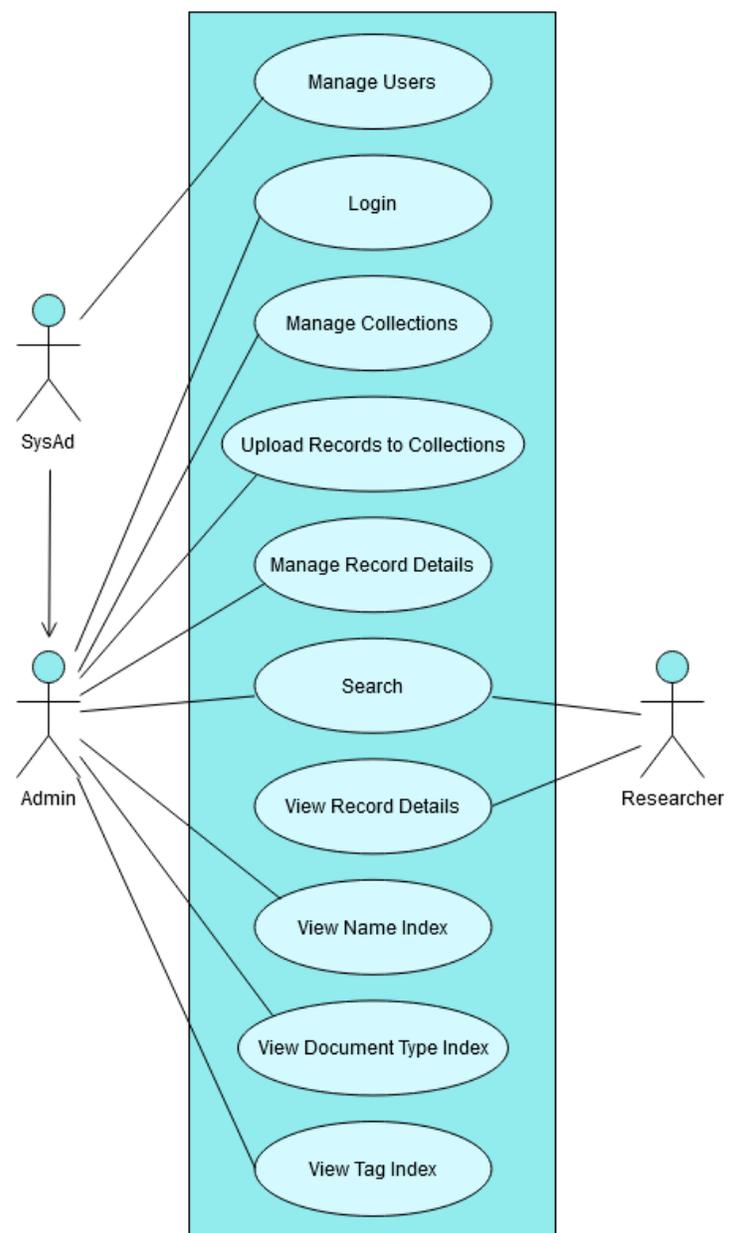*System Process*
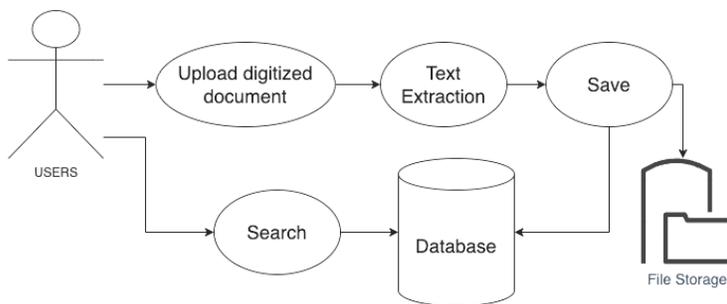
System Use Case
The prototype's design (Figure 2) is intended for three types of users: System Administrator (SysAd), Admin, and Researchers. Admin users can log in, manage the collection, upload records to collections, manage records details, search, view name index, view document type index, and view tag index within the prototype. A particular type of Admin user, the

SysAd, has the added capability to manage users of the system. Researchers are non-authenticated users that can search and view record details.
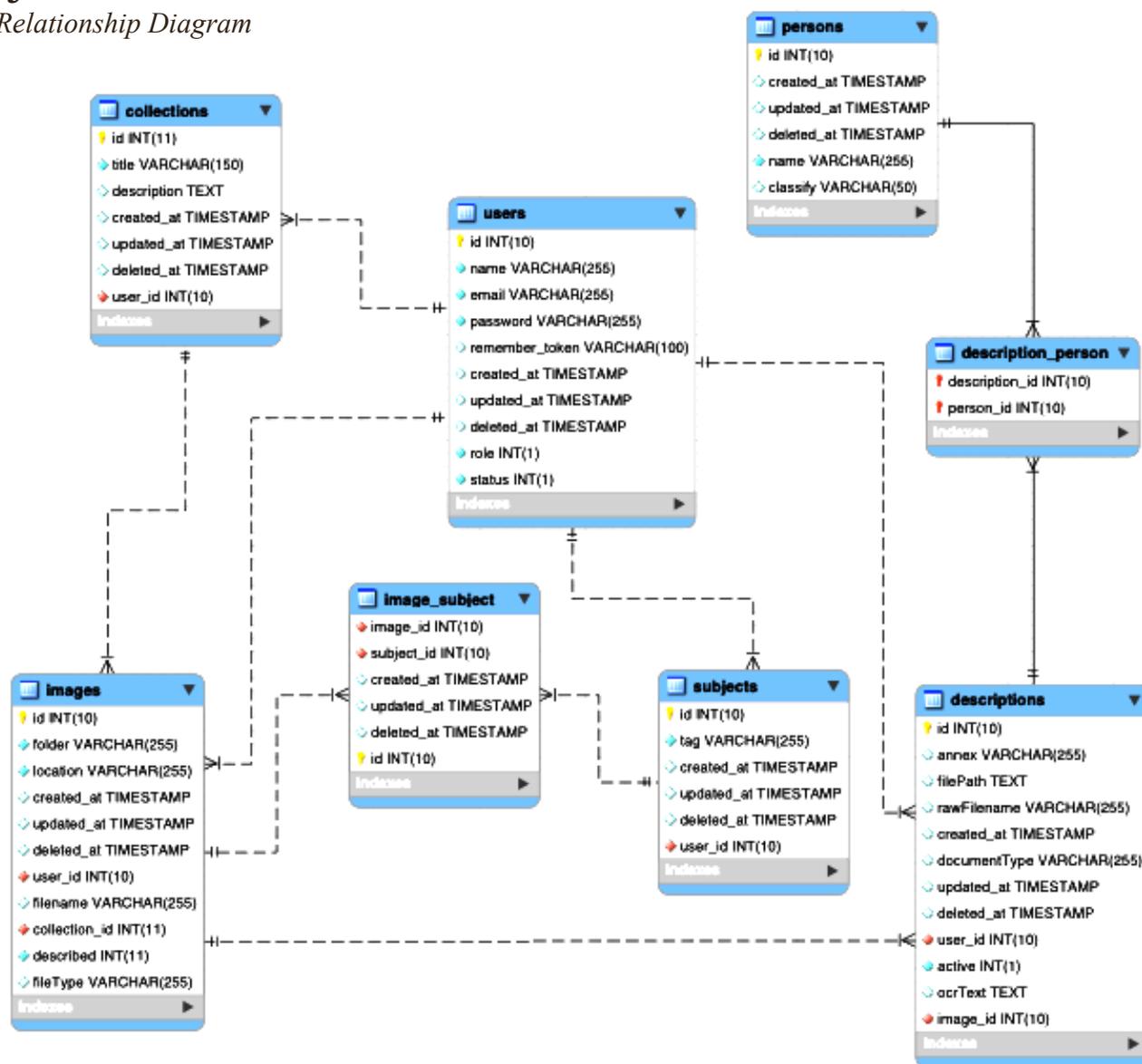
Entity Relationship Diagram
The entity-relationship diagram in Figure 3 represents the database system used in the prototype. The database comprises six main entities: users, collections, records, subjects, persons, and descriptions. Each entity stores related records using the assigned primary key, thus making it easy to retrieve linked entries.

Figure 2
System Use Case

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Figure 3
Entity Relationship Diagram

Software

The prototype was developed using Laravel, Tesseract, Ghostscript, MySQL, PHP, and Apache HTTP Server, which was implemented in local development. These kinds of software are open-sourced and readily available in different operating systems.

PHP: Hypertext Preprocessor or PHP is an open-sourced, general-purpose scripting language used for web development. PHP started in the mid-1990s and grew as one of the leading languages powering the web (PHP Group, 2022).

Apache HTTP Server is a mature software developed in February 1995 (Apache HTTP Server Project, n.d.).

Developed using collaborative development, it provided a well-documented, commercial-grade, and robust HTTP (Web) server.

Laravel is a PHP-based framework that makes prototype development a lot quicker. This framework utilizes a model, view, and controller architecture. In this development architecture, the system logic is separated from the view.

Ghostscript is a free interpreter with 30 years of active development for PostScript language and PDF files (Artifex Software, 2022). Ghostscript can convert a PDF document to an image in TIFF format.

Tesseract is an open-source software currently hosted by Google and can recognize more than 100 languages (Tesseract OCR, 2022). Tesseract was developed originally at Hewlett-Packard between 1985 and 1994 before the same company open-sourced it in 2005. Tesseract currently supports different output formats such as plain text, hOCR (HTML), PDF, and invisible-text-only PDF.

MySQL, currently owned by Oracle Corporation, can be used as an open-source product or with a standard commercial license from Oracle (MySQL 5.7 Reference Manual, 2023). MySQL servers can be used in mission-critical and heavy-load production servers.

PROTOTYPE DEVELOPMENT

Prototype development was done using Ubuntu 20.04.3 desktop edition, an open-source operating system (The Story of Ubuntu, n.d.). Ubuntu desktop can be downloaded from https://ubuntu.com/desktop.

The application has five main functions; staff management, collection management, search, name index page, document type index page, and subject index page.
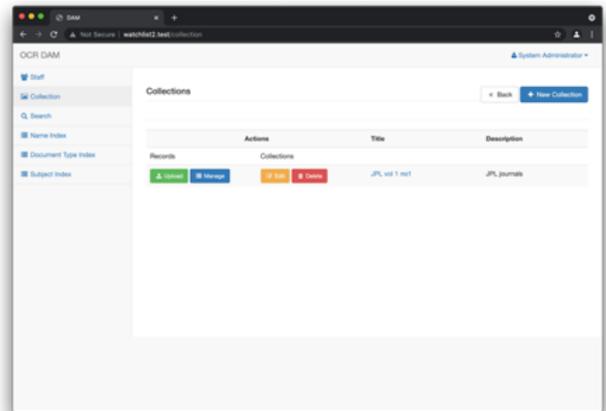
Interface

Figure 4 shows the staff page of the OCR-enhanced information retrieval system. A list of system users with their roles is displayed. System administrators can also edit the details of each system user using this page. The functionality to add a new system user can also be found on this page.
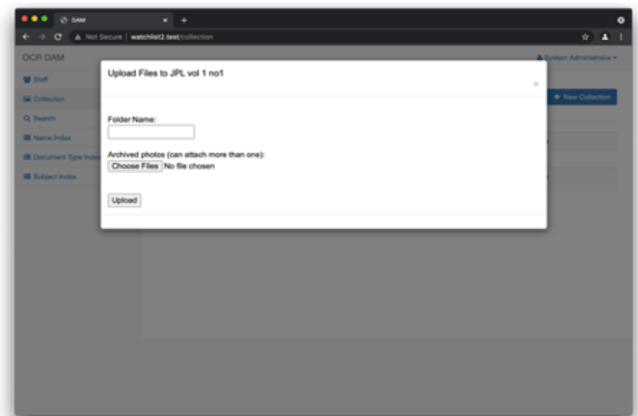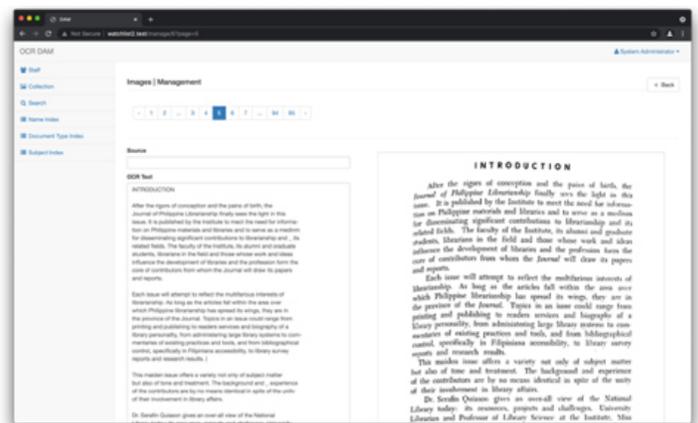
Figure 4
Staff Page
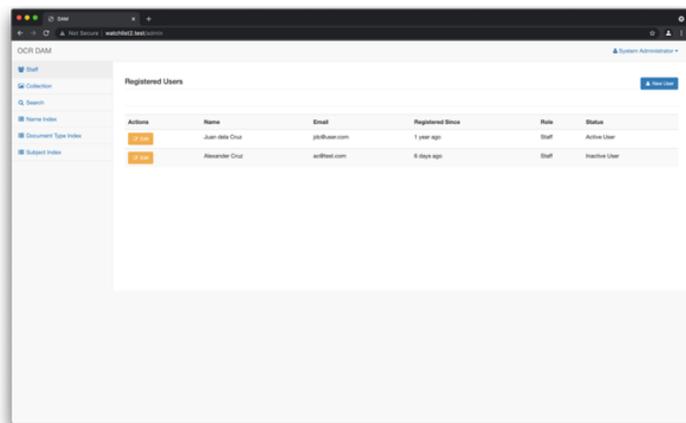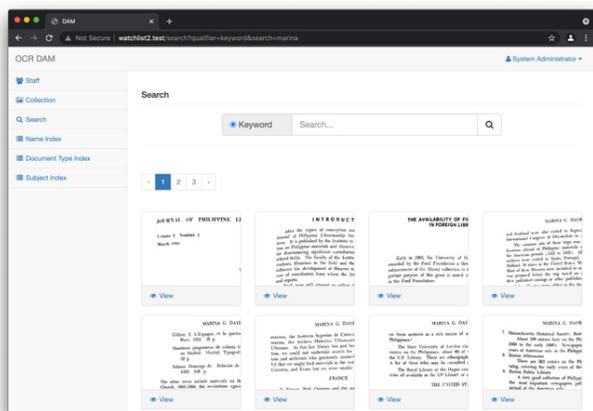

Figure 5
Collections Page

Figure 6
Uploading Record Interface

Figure 7
Manage Function Page

Figure 8
Search Page

Figure 9
Name Index Page

Most system functionality is located on the Collection page (Figure 5). Within this page, system users can add a new collection, edit, and delete it. The functionality to upload records to a specific collection is accessible using the upload button. Figure 6 shows the interface where the system user indicates the folder and selects the images to upload to the system. A system user can utilize the "Manage" function to check, edit and tag an image. The Manage function page displays the extracted text from the image and some input fields for tagging individual names and adding a specific subject to the image. Figure 7 is an example interface where the extracted text from the document is presented alongside the document. This functionality allows Admin users to further improve the text acquired by OCR.
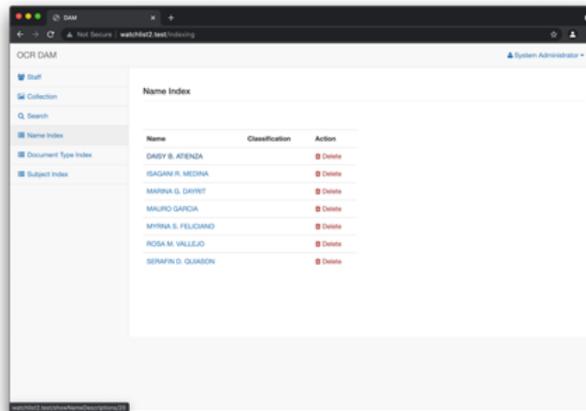
The search interface is found in Figure 8. On this page, a user provides a keyword to search the system. If that keyword is present in the system, the image containing the provided keyword is displayed on the screen. The images displayed to the user can be clicked, and a larger version of the image will be presented.

Figures 9, 10, and 11 are the different index pages: Name Index, Document Type Index, and Subject Index. On these pages, different terms are displayed, and once a term is clicked, images tagged with specific terms are displayed. The displayed images can also be clicked to enlarge.
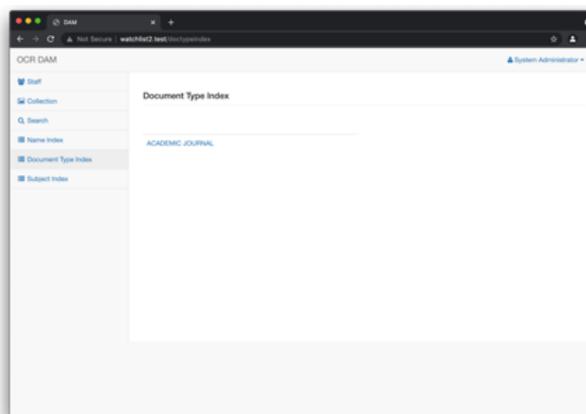
Figure 10
Document Type Index Page

Figure 11
Subject Index Page

TESTING
To check if the system can extract words from an image and store it in the database, 15 images containing Filipino words were scanned. A flatbed scanner was used to scan the images, and they were saved in a portable network graphic (PNG) type.
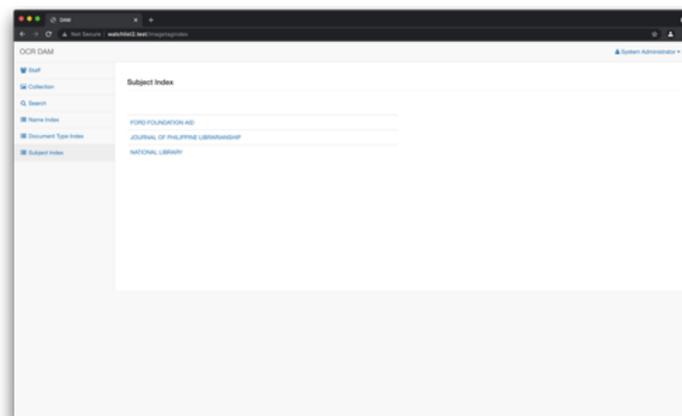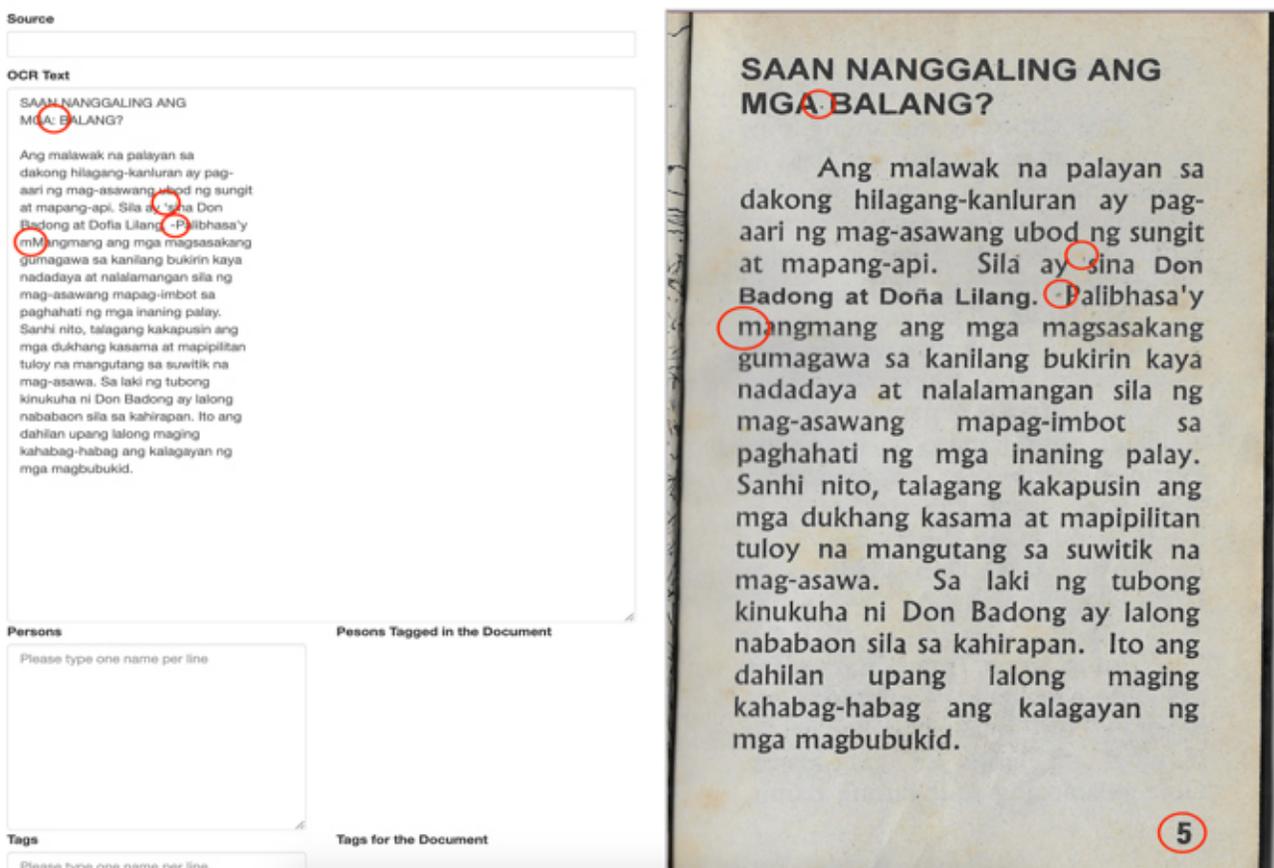
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Figure 12
OCR Sample A

Note. Sample page from *Sari-saring alamat tungkol sa mga hayop, halaman at pook: pantulong sa mga guro at mag-aaral!* (p. 5), by T.C. Basadre, 2003, TCB Book Supply. Copyright 2003 by TCB Book Supply and Teresita C. Basadre.

Table 1
OCR Word Count

SCANNED IMAGE	WORD COUNT	OCR TEXT		PERCENTAGE
		Correct	*Error*	
T1	50	47	3	94.00%
T2	97	92	5	94.85%
T3	103	99	4	96.12%
T4	91	88	3	96.70%
T5	99	93	6	93.94%
T6	104	99	5	95.19%
T7	89	85	4	95.51%
T8	83	79	4	95.18%
T9	189	189	0	100.00%
T10	212	207	5	97.64%
T11	181	178	3	98.34%
T12	242	236	6	97.52%
T13	116	104	12	89.66%
T14	205	193	12	94.15%
T15	170	164	6	96.47%
TOTAL	2031	1953	78	**96.16%**
AVERAGE	135.4	130.2	5.2	**96.16%**

Figure 13
OCR Sample B

Note. Sample page from *Sa mga kuko ng liwanag* (p. 6), by E. Reyes, 2007, C&E Publishing. Copyright 2007 by C&E Publishing and Edgardo M. Reyes.

Words from each of the pages were counted and recorded in Table 1. Images were uploaded as-is, and no image enhancements were done. The result of the OCR was then checked using the manage function of the OCR-enhanced information retrieval. OCR text was evaluated against the scanned image text, and the number of errors and correct text was counted.

Table 1 shows the OCR results for the 15 images uploaded to the OCR-enhanced digital asset management system. In total, 2,031 words were counted from the 15 scanned images; each image contained 134.5 words on average. The OCR-enhanced information retrieval system was able to recognize and record 1,953 words correctly, and 78 errors occurred during the OCR process. On average, 130.2 words were recognized and recorded, and an error of 5.2 words per image was observed. The system shows a 96% accuracy rate in terms of words recognized.

Figures 12 and 13 are examples of images fed to the OCR-enhanced asset management system. The image in Figure 12 displays a light speckle on the page, which was interpreted as a period in the OCR text. The image in Figure 13 was not properly aligned, resulting in discrepancies in the OCR-extracted text. Looking closely at the errors produced by the OCR (see Figures 12 and 13), it can be observed that these were the results of poorly prepared images. The result shows that image preprocessing, such as image alignment, image cleaning, and conversion to black and white, affects the accuracy of OCR results.

CONCLUSION
A functional document retrieval tool using open-source software was successfully developed by integrating OCR functionality. Initial testing proved that it could help in information discovery. Notably, the use of Tesseract is not perfect, but its capability to

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recognize more than 100 languages and embed them in a digital repository is valuable in information discovery and retrieval.

The prototype developed in this paper is very much in the early stages and needs more enhancement and development to further improve its capabilities and functionalities. The success of this prototype showed potential for the future of OCR for libraries and information centers. With the abundance of open-source technologies, designing and implementing an OCR-enhanced information system is attainable for system developers at a low cost.

Libraries, archives, and similar information centers can take advantage of the potential of an OCR-enhanced system. As its main thrust is to provide searchability and access to its collections, implementing an OCR-enhanced information system makes it possible for materials to be readily searchable and thus gives quick access to raw and plain contents on each material.

DECLARATION ON CONFLICTING INTERESTS

DECLARATION ON SOURCES OF FUNDING

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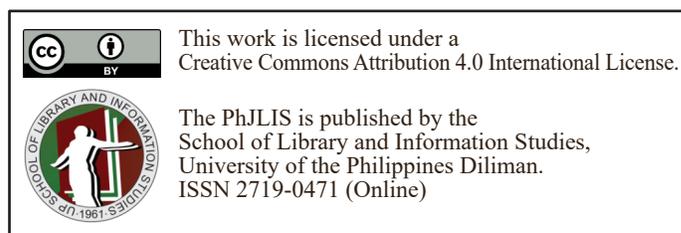
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Designing for Education, Research, and Service:
The University of the Philippines
School of Library and Information Studies
(UP SLIS) New Building

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Abstract

This paper presents a case study of the new building of the University of the Philippines School of Library and Information Studies. It examines the design concerns for a facility that supports LIS education, research, and extension services through building standards for university buildings, libraries, and archives spaces. The study highlights the importance of communication between project stakeholders, the representation of different interest areas in a building committee, and familiarity with architectural plans and construction language. The case study offers insights for architects, designers, and policymakers involved in designing and constructing a building for a library and information studies school.

Keywords: Library and Information Science Education; College Facilities; Higher Education Facility Planning

INTRODUCTION

The University of the Philippines School of Library and Information Studies (UP SLIS) is the first library science school in the Philippines and Southeast Asia, and it is the only LIS school in the Philippines recognized by the Commission on Higher Education (CHED) as a Center of Excellence in LIS education (Golfo-Barcelona, 2021). As an academic unit and part of the University of the Philippines System, UP SLIS has responsibilities mandated by the University of the Philippines Charter of 2008 (Republic Act No. 9500), among which are to:

- lead in setting academic standards and initiate innovations in teaching, research, and faculty development;
- serve as a graduate university and provide

advanced studies and specialization;
- conduct, promote, and disseminate research;
- provide community, public, and volunteer services; and
- provide scholarly and technical assistance to the government, the private sector, and civil society (Republic Act No. 9500, Sec. 3, 2008).

Consequent to this mandate, the UP SLIS requires specific facilities in addition to typical classrooms, such as laboratories, to support teaching, research, and extension services. An opportunity to create a purpose-built space arose when the General Appropriations Act for Fiscal Year 2019 (Republic Act No. 11260) allocated funds for the construction of an LIS building on the site of the former Zoology Building in the UP Diliman campus. The former

Zoology building was in a state of disrepair due to termites and weathering when it was transferred to the School. The architects and design consultants thus opted to demolish internal walls while maintaining and reinforcing the shell of the building. This approach enabled the placement of new rooms and spaces for specific applications, alongside the addition of a third level for additional space.

This new building was designed with several functions in mind:

- spaces for teaching, discussion, and study to support the undergraduate LIS courses with 15-30 students and graduate courses in LIS and Archives and Records Management (ARM) with 5-15 students;
- laboratories and collaboration areas to support research activities;
- specialized laboratories to conduct extension services and programs while also accommodating the teaching of students;
- storage areas for UP SLIS records and University records;
- spaces for exhibitions, public lectures, and research dissemination; and
- a functional library that may also serve as an experimental space for LIS services.

UP SLIS formed a building committee chaired by the Dean that includes representatives from the faculty with a familiarity with the specifics of various courses, particularly those using the specialized laboratories, the college librarians who are best acquainted with collection, services, and needs of the UP SLIS Library, and members of staff who are involved in procurement and managing student records. This diversity allowed for the representation of a variety of interests and perspectives that might not otherwise have been highlighted in building design.

This paper examines the different standards that apply to the different functions of the UP SLIS New Building and evaluates the design and construction of a purpose-built space for LIS education using a case study approach as seen through the author's experiences as a building committee member who joined in the middle stage of the design process in 2019 to advise on the specific technical requirements of the building. The study serves as a reference for other LIS schools that plan to build a new facility or renovate existing buildings.

STANDARDS FOR UNIVERSITY FACILITIES

In the Philippines, most universities fall under the supervision of CHED. The CHED *Manual of Regulations for Private Higher Education* (2008) requires "adequate" provisions on fire safety, hygiene, lighting, ventilation, furnishing, rooms, and laboratories designed in conformity with the National Building Code of the Philippines (Presidential Decree No. 1096; 1977).

The specific requirements of interest in the Building Code are those on ceiling heights, ventilation, and fire protection. As a three-story building, the Code requires a ceiling height of 2.70 m for the first story, 2.40 m for the second story, and no less than 2.10 m for the third. Section 807 of the Code also requires a minimum air space of 3.00 m^3 for school rooms with 1.00 m^2 of floor area per person. Given the minimum height of 2.10 m for a room, a classroom needs to have a floor area of 1.43 m^2 per student. As a standard undergraduate class would have a maximum of 30 students, a room with a minimum floor area of 42.86 m^2 is required. This highlights the importance of calculating the number of students as part of the building design stage.

Furthermore, as UP SLIS offers a general education course with larger class sizes, classrooms of varying sizes are needed. This was addressed in the design by creating large classrooms by default and dividing the room with movable partitions to accommodate multiple classes with fewer students. The ceiling height of the SLIS classrooms was constrained by the existing floors of the building but more than meets the standard at 3.45 m. Two big classrooms were created, one that was intended for 90 students, which is 111.28 m^2, and the other intended for 60 students, with a floor area of 74.24 m^2. Rooms such as computer laboratories and conference rooms intended for 15 or fewer students had an average floor area of 36 m^2. These floor areas still fit the air space requirements of the Building Code because of the high ceiling space.

The Building Code also requires automatic fire-extinguishing systems in every story as it has an area of more than 200 m^2 and clearly has an occupant load of more than 20. As a three-story building, the Code calls for interior wet standpipes with an internal diameter "sufficient to deliver 190 L of water per minute under 2.0 kg per cm^2 pressure at the hose connections" (Sec. 1212, (c), 2.1). It is important to note that the Building Code does not contain provisions for inert gas and chemical agent

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suppression systems other than a clause that all fire-extinguishing systems should meet the approval of the Bureau of Fire Protection.

The Building Code further details requirements for doors, exit points, windows, lighting, and load that should be familiar to architects and building engineers and accommodated by default in a design. However, it is still worth verifying that these were considered during the consultation process.

STANDARDS FOR LIBRARIES AND ARCHIVES BUILDINGS

The Philippine Association of Academic/Research Librarians, Inc. (PAARL) publishes the 2022 *PAARL Standards for Academic Libraries.* Assessment Area 7.1.4 of the Standards indicates the need for the head of the library to be consulted in all aspects of planning and design. This was done by directly showing the floor plans and architectural drawings to SLIS librarians over several sessions and examining different areas of concern during each session, such as the floor layout, placement of lights and electrical outlets, location of collections and library services, office spaces, and security concerns.

This was an important consideration as the UP SLIS Library was allocated half of the total space of the new building, that is, its own wing. This far exceeds the seating requirement in the standard, which calls for space for 10% of the total user population. Of note during the consultation process was that provisions for security systems were not originally in the electrical and wiring plans of the building. The comments from library and faculty stakeholders resulted in the identification of this gap and the amendment of the plans before construction, saving a potentially costly after-the-fact installation of CCTV and access control systems.

The laboratory and research spaces in the building were identified by referencing and mapping the requirements of each course in the undergraduate Bachelor of Library and Information Science (BLIS), postgraduate Master of Library and Information Science (MLIS), Master of Science in Library and Information Science (MSLIS), and Master in Archives and Records Management programs, as well as through benchmarking the facilities of LIS schools overseas. Further, these facilities were identified with an eye towards improving UP SLIS's capability to support university functions, such as providing digitization and conservation services to the university libraries and housing a records office for administrative units.

A big body of work had to be undertaken in the design of the digital preservation laboratory. Because of the bulkiness of different machines involved in processing paper, books, photographs, film, and moving image formats, the architects requested a list of all equipment that will be used so as to properly calculate the structural and electrical loads, decide on the placement of electrical outlets and sinks, and the allocation of space for the lit and dark sections of the laboratory. It was a daunting task to compile a list of equipment when there was uncertainty regarding the availability of funds for their procurement. Nevertheless, it was important to specify the ideal layout so that the space would be fit for purpose once the equipment is actually procured.

There is a gap in standards for laboratories used in LIS programs in the Philippines. The CHED Revised Policies, Standards, and Guidelines for the Bachelor of Library and Information Science (BLIS) Program (CMO No. 24, s. 2015) simply notes that specialized laboratories should be maintained without any indication of how those laboratories are designed or furnished.

In the case of computer laboratories, the CHED Revised Policies, Standards, and Guidelines for Bachelor of Science in Computer Science (BSCS), Bachelor of Science in Information Systems (BSIS), and Bachelor of Science in Information Technology (BSIT) Programs (CMO No. 25, s. 2015) contains more specific requirements. It specifies that the number of terminals should be at least ⅓ of the total number of students, and there should be a 1:1 computer-to-student ratio in each laboratory class. This requirement should be in excess of what is required by an LIS program, given that not all courses would require the use of terminals, unlike in a computer science program.

To meet the specific needs of different courses, UP SLIS designed three different computer laboratories, each with a capacity of 15 students. This is a total of 45 terminals, equivalent to 22.5% of the total number of students. The three laboratories, while similarly intended to be equipped with the same computers, were arranged differently according to the classes they would host. It was necessary to decide this in the design stage for the architects to determine electrical and network outlet placement. One computer laboratory was designed with computers arranged in rows, similar to seats in a lecture classroom. This was intended for classes where the instructor would be

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demonstrating code or how to use an application, where students can comfortably face the screen. Another laboratory has computers surrounding the walls of the room, with the middle area empty. This allows all students to easily see each other's terminals and to collaborate with each other, even across the room. This layout is ideal for classes on data science and digital humanities, where students would be developing ICT solutions and software to address specific issues. The third laboratory has computers arranged in rows but with larger desks and dividers between each terminal. This laboratory was designed to include telephones and recorders for use in research data gathering and oral history projects.

The conservation laboratory, similar to the digital preservation laboratory, required the equipment to be specified during design. While there was no shortage of literature on the layout and equipment for conservation laboratories (Archives Society of Alberta, 2016; Henry, 1992; MacLeod, 1990; Yale Library, n.d.), a lot of these equipment units are sourced from specialty suppliers not in the Philippines. Because there was no certainty on the availability of specific models of workbenches, presses, and racks, the laboratory was designed to accommodate the movement of most furniture apart from the sinks, which were placed to divide the room between a discussion or lecture area and a work area.

The final rooms that required specific design attention were the records center office and storage spaces. The most recent standard on storage spaces is the *Conservation of Cultural Heritage – Specifications for location, construction and modification of buildings or rooms intended for the storage or use of heritage collections* (BS EN 16893:2018). This standard specifies the use of insulation and moisture barriers to achieving environmental stability with passive or low-energy structures, with a goal of keeping temperature variation within 10 °C. The standard also requires the air infiltration rate to be less than 0.5 m per m^2 per hour at 50 Pa.

BS EN 16893:2018 also recommends that windows are, at the least, double-glazed with UVA filters and that shutters, louvers, or blinds are to be used in addition. Furthermore, unlike classroom spaces, storage spaces should not have false ceilings that might harbor pests or combustible materials. The most significant aspect of the standard that was referenced during building design was on fire detection and firefighting, particularly on the use of

higher sensitivity smoke detection systems and the installation of inert gas and chemical agent suppression systems. As the water used in wet standpipes would cause as much or more damage to the collection as the fire it was intended to suppress, a suppression system using a clean agent, specifically 3M Novec 1230, was deemed essential for the protection of physical and digital collections, that is today, the records storage spaces and the server room.

PRACTICAL CHALLENGES
The complexity of the building's design comes from its multifaceted role as an LIS school, a research institution, a service provider, and a records center. This necessitated the reconciliation of the varying standards for those types of institutions and a compromising mindset to balance the standards' requirements with cost and university priorities.

Communicating standards to architects and design consultants
While most of the referenced standards used clear language in their requirements, the building designers were not necessarily familiar with these standards. Further, this was also their first time building a facility for an LIS institution, and they were not necessarily aware of library services or of the function of specific laboratories that informational professionals might take for granted. This resulted in more attention being paid to aspects of the building the consultants were more familiar with, such as the classrooms and server room, over the specialized laboratories and record stores.

Hans-Peter Jost (2003) highlighted the importance of collaboration between project managers, designers, construction managers, and the users of the building. This dialogue is essential so that the functional requirements of the building project are communicated, understood, and built into reality.

One of the barriers faced was communicating changes in architectural plans. Not all members of the committee were familiar with reading blueprints and designs. This was exacerbated by the original plans being sent as static PDF documents, which were hard to read because of their size. This was resolved by working with the CAD files instead. It was easier to indicate changes, such as the placement of furniture or an electrical outlet, when the CAD file could be edited. However, this requires someone on the committee who is both familiar with architectural plans and the use of AutoCAD software. As the

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project progressed and the design was only receiving minor revisions, perspective drawings also assisted all parties to better visualize the end result.

Advocacy and end-user signoff

The management structure for the construction of the UP SLIS building had complexities specific to UP's nature as a government institution. Because it is a government building built with public funds, the project was implemented by the Department of Public Works and Highways (DPWH), with UP as the beneficiary. The UP System Office of the Vice President for Development (OVPD) stood as the on-paper "end user" and coordinated with the project consultant and contractors. Consequently, the role of the UP Diliman Office of the Campus Architect (OCA) and UP SLIS as project stakeholders was primarily to give recommendations.

A key responsibility of the UP SLIS Building Committee was thus to negotiate and advocate for its active involvement in the building design. This was done by establishing a regular dialogue with the various offices involved in the project. This requires a lot of goodwill and the strategic use of both formal and informal channels of communication.

Continual updates and on-site inspections

A building project is executed in phases starting from its foundation and structural components, progressing to electrical, network, lighting, and water, then the installation of doors, windows, and other fixtures, and culminating in furnishing. Having updates and evaluation meetings during and after each phase allows for revisions and adaptation in response to identified blockers or new concerns.

While the architectural plans are meant to be the authoritative reference for the building design, what is on paper may not necessarily be the reality on the ground. Deviations might result from issues relating to the availability of materials or having to work around existing fixtures. For example, one wall in the entry hall was supposed to be an area for hanging cabinets, but it was found that there was a pre-existing fire hose cabinet in the location.

It could also be easy to miss some details on a blueprint with a top-down perspective. Walls, doors, and windows are rendered as cross-sections, and the existence of windows in the records storage could go unnoticed until they have been built. There are also aspects of the design that require specialist knowledge

to interpret, such as the electrical plan, and evaluation by a third-party consultant would be beneficial.

Procurement and Cost

It is also important to highlight the role of procurement during the design process. As previously mentioned, the various laboratories required the listing of all equipment to the extent of specific models and dimensions to allow for the sufficient allocation of space, structural load, and the routing of electrical and network wiring. Consequently, it is essential to identify and communicate with vendors early on, even if prices might change or new models are released. This also facilitates compliance with the Government Procurement Reform Act (RA 9184, 2002) as it enables the institution to identify potential bidders and ascertain either the existence of sufficient competitors or the need for limited source bidding due to the specialized nature of the equipment.

Cost is also one of the key drivers in the design and subsequent revisions of the UP SLIS building. While it would have been preferable to use chemical agent fire suppression systems in all areas where records would be kept, including the library and conservation laboratories, the availability and cost of installing 3M Novec 1230 are prohibitive and resulted in only the records stores and the server room being thus equipped. Because these changes were clearly identified and communicated, they can be accounted for through policymaking and workflow management, for example, through rules that records should be returned to storage at the end of the day and not kept out in a laboratory and that records outside the store should be boxed for protection against water damage.

However, it should be stressed that compromises arising from cost have to be considered and agreed upon by all stakeholders. Stakeholders should be given sufficient opportunity to advocate for the use of fiscal resources in specific areas of the building, with an eye towards demonstrating the benefit of their services or explaining the consequences of inaction.

FUTURE CONCERNS

The UP SLIS is in a privileged position to be able to design and build a new building from practically the ground up. While the current priority has been to support and progress the ongoing construction project to support curricular instruction and services the soonest, attention should also be paid to the environmental sustainability of the building, with an eye towards achieving net-zero emissions in the

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future. Tests should be conducted once the building has been constructed to determine if the insulation in storage spaces provides sufficient stability in temperature and humidity to reduce the use of air conditioning, which is by far the largest electrical load. Landscaping of the surrounding area post-construction should also be in harmony with the surrounding environment and green spaces in the University.

It is hoped that this case study can serve as a reference for other LIS schools that seek to renovate or develop their premises. There is an opportunity to research the existing facilities of LIS schools in the Philippines, with an eye towards developing a building standard or a facilities roadmap. It would also be interesting to revisit the SLIS building a few years after it was built and examine how the use of each room and laboratory has changed from the design intent.

Ultimately, the purpose of a building is in its use. The test of a truly effective LIS building is in how well it supports the classes, laboratories, research, and services of the School.

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