

QUICKSTART IN LIS CLASSROOMS: MEDIA MATERIALS, TECHNOLOGY, AND THE PANDEMIC

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Abstract

This paper presents the approach undertaken in teaching the undergraduate course LIS 131: Media Materials and Technology, and its graduate equivalent LIS 264: Media Technology in Library and Information Science during the pandemic. These courses are offered by the School of Library and Information Studies, University of the Philippines Diliman. In the middle of the global pandemic, a quickstart student-content approach was done with the intention of getting the students up and running as quickly as possible, with enough know-how to help them along for tasks and projects associated with school and work. A comprehensive overview for each topic was formulated, only essentials were retained with familiarity and appreciation as the goal, and they were not explicitly meant to lead the students to professional work in media production. The quickstart student-content approach revolved around four main components: a. Concepts; b. Options; c. Demonstration; and d. Challenge.

Keywords: Media Materials, Media Technology, Educational Technology, LIS pedagogy, Emergency Remote Teaching, Emergency eLearning

Introduction

When the pandemic hit the Philippines, no one was ready nor was expecting the impact on our day-to-day lives. The University of the Philippines, as were others, was at a loss as to the scheduling of the semester. As a result of consultations and the rate of infection, the semesters for 2020 were shortened.

With the pandemic came anxiety (Baloran, 2020) and a shift to the work and study from home scenario in the Philippines. This sudden shift, especially in terms of educational and learning modalities, became a “forced” transition from face-to-face to remote teaching” (Carrillo & Flores, 2020, p. 466). This ‘forced’ transition called for emergency remote teaching and emergency eLearning, which, according to Bozkurt and Sharma (2020), should be

considered “a temporary solution to an immediate problem” (p. ii). With the health dangers and other related problems brought about by the COVID-19 virus, the educational systems around the world have been compelled to respond with “‘emergency eLearning’ protocols, marking the rapid transition of face-to-face classes to online learning systems” (Murphy, 2020, p. 492). The online mode of delivery of content during the long quarantine periods suddenly shoved media materials and technology into the limelight with libraries and information centers grappling with their capabilities to extend their services to their clientele. The schools and universities are also adjusting the modes of teaching, and the content preparation and delivery. For instance, in the University of the Philippines Diliman, which shifted to remote learning during the

first semester of 2020, various needs and capability assessments of students and teachers were done, as well as preparations and amendments of the subject offerings and available resources without compromising the learning outcomes and objectives. The current iterations of the subjects have taken these concerns to heart and the subject matter and approach have been slightly modified accordingly to address the times.

In this paper, I will reflexively talk about the pedagogical quickstart student-content approach which revolves around four main components: a. Concepts; b. Options; c. Demonstration; and d. Challenge. The discussion of these approaches and the suggested resources would help LIS teachers teaching media materials and technology.

The Professor's Prerogative

I teach elective subjects in the University of the Philippines School of Library and Information Studies (UPSLIS) that deal with media materials and technology in libraries and information centers. These subjects are the undergraduate course LIS 131: Media Materials and Technology, and its graduate equivalent LIS 264: Media Technology in Library and Information Science.

Although the courses have a basic outline based on formats of media materials and their associated technologies in libraries and information centers, there are factors that influence how the courses are taught. One factor would be that these subjects are elective courses, and another would be the accompanying academic freedom that professors have at the university. This leads to different lenses in framing the tackling of media materials and technology in libraries and information centers. In addition, the profession of librarianship and information science changes with the times, and thus so do the courses.

The first times the courses were offered, the focus of the discussions was towards evaluation, acquisition, organization, and use of media materials, sort of a traditional spin on how courses were taught at the school. This meant the topics centered more on

cataloging and classifying of materials. Some iterations of this course focused on management during the time when leadership was the battle cry of the profession. Another iteration incorporated how media materials are used in school libraries and how they tie in with school library media programs. This was probably due to the cancellation of another elective, LIS 159: The School Library, in the late 90s. This led to the dispersal of the management, literature and media materials topics to their current courses.

Nowadays how the subjects are taught really depends on the approach the professor undertakes. In my case, I believe appreciation is the start of learning about something, and to truly develop an appreciation for something, you must at least experience creating or producing it. To appreciate literature, you must try to write. To appreciate art, you must try to draw. To appreciate music, you must try to sing or play an instrument. So in this case, to truly appreciate media materials, I believe we have to try to create them and use the technology associated with the processes. I believe that in developing this appreciation the view of media materials and technology in libraries and information centers comes full circle.

The Quickstart Approach

The experience of producing media materials and understanding the underlying technologies has taken on a more in-your-face meaning in the past year. The most obvious challenge would be the remote mode of learning brought about by the pandemic. This poses a challenge both for the educator and the student. From initial experiences by the school and the university, the problems encountered during the start of the semester centered around access. Not everyone had devices needed to access learning management system-based subjects. Connectivity was also a problem since the country is not known for having consistently stable internet connections. As such, a quickstart student-content approach was done with the intention of getting the students up and running as quickly as possible, with enough know-how to help them along for tasks and projects associated with school and work. The subjects were

delivered asynchronously with occasional synchronous catch-up sessions to keep track of progress.

The decision was made to deliver the topic content asynchronously via YouTube videos, email and Facebook groups to allow students the opportunity to view content at their leisure and pace themselves accordingly at their own convenience. The minimum equipment and other requirements necessary for participating in the classes would be a photo and video-capable camera and/or cellphone with camera, desktop or laptop with at least 4GB RAM, and an internet connection.

Schwartzman (2020) notes the perils of synchrony during the pandemic. Synchrony can “enact a pedagogy of privilege reaffirming the systemic inequities that a pedagogy of liberation (Freire, 2000, as cited in Schwartzman, 2020) attempts to remediate” (Schwartzman, 2020, p. 507). An insistence on “exclusively synchronous instruction communicates insensitivity to life circumstances” and “can reproduce systems of privilege” if time and access constraints are not recognized (Schwartzman, 2020, p. 507). This train of thought factored greatly in the decision to go asynchronous, though I believe it will really be hard to overcome systemic inequalities.

In her article, Yates (2014) concisely explains several theories on the underlying processes on distance learning. One theory in particular supports our approach: Anderson’s (2003) theory of equivalency. Three types of student interaction exist for distance learning: student-tutor, student-content and student-student. In the theory of equivalency, even if you only have one of the types of interactions the environment is still conducive for learning with little loss in educational effectiveness as long as that interaction is strong (Anderson, 2003). Our approach for the subjects is centered around the student-content interaction.

Lastly, there were no judgements as far as aesthetic quality was concerned, the reason being that we are a media materials and technology class, not a fine arts

class. The main goal was for them to be able to demonstrate how tools are used to come up with an output, as simple as that.

The Course Implementation

With the given time frame a more comprehensive overview for each topic was formulated—only essentials were retained with familiarity and appreciation as the goal, and they were not explicitly meant to lead the students to professional work in media production.

The subjects revolved around the quickstart approach with four main components:

1. Concepts
2. Options
3. Demonstration
4. Challenge

Concepts discussed per topic revolved around only the most important subject matter for the topic. Examples of these would be: the role of light in photography, layers in raster graphics, how vector graphics rely on math versus the pixel by pixel approach of raster graphics, how sound is represented by a wave, the different camera movement techniques, etc.

Options, specifically software, are presented via a price point, features, hardware requirements, and OS compatibility comparison. Industry standard applications are also pointed out. Source links are also discussed in case students would wish to explore these options.

Demonstration covers download sites, installation instructions, dependencies, settings, menus, tools, palettes, and basic use. Sample projects undertaken reflect scenarios a library and information professional would most likely encounter during the pandemic, e.g. making an institutional announcement graphic meant for posting in a social media account, or an instructional video on resources use, etc.

Challenge is a submission challenge for the student. Sample submissions are encouraged to simulate or reflect real scenarios a library and information

student or professional would most likely encounter during the pandemic, e.g. making an institutional announcement graphic meant for posting in a social media account, an instructional video on resources use, etc.

The Whole and its Parts

When I was young, I saw a documentary on how Walt Disney Studios made "Snow White and the Seven Dwarfs". Animators would paint elements of a scene on different panes of glass then stack them on top of each other and take a photo of each frame. A little movement of a character, they took a shot. A movement of the bushes, another shot. They did this until they had an entire animated feature on their hands. It left an impression on me. This is a concept so simple and taken for granted yet it yielded what has been called one of the greatest animated films of all time.

Aristotle has been credited and misquoted (Who Said "The Whole Is Greater than the Sum of the Parts"?, n.d.) as saying "The whole is greater than the sum of the parts" (The Internet Classics Archive | *Metaphysics* by Aristotle, n.d.). Dissecting the meaning and commenting on the translation would be beyond the scope of this article, for LIS 131 and 264 we take the phrase at face value. The submission challenges are, in a way, wholes made up of parts. When we take photos there will be a foreground, and a background. When we edit raster images there are layers. When we make vectors, 3d models, or page layouts, there are groups, items and objects. In video and audio editing there are tracks and clips. Students of the subjects come up with "wholes" which are greater than the "parts" which they work on.

Some Selected Topics

Due to the limited time frame for the semester, the following topics were included:

- a. Photographs and Photography
- b. Graphics and Layout
- c. Audio
- d. Video

Additional short discussions on the following were included:

- e. 3D
- f. Livestreaming
- g. Computer-Mediated Storytelling

The One with Photographs

The module on photographs and photography starts with how light affects how we perceive an object. Light hits an object and the light reflected from that object reaches our eyes and we can "see" the object. The same process translates to producing photographs. The discussion segues into film and digital photography with a focus on how analog and digital processes produce photographs. The last part shows examples and use demos of film, lenses, and analog and digital cameras.

To better equip the students, the module further tackles: a. Functional Considerations, and b. Composition. First to be discussed are focusing and the exposure triangle; i.e. shutter speed, ISO and aperture. The discussion then segues to image indexing, file formats, metadata and exif (which the values of the exposure triangle are part of). The discussion ends with photography techniques for taking better photos (e.g. Rule of Thirds, Golden Ratio, Golden Triangles, etc.).

The following are suggested links for students:

- a. The Exposure Triangle: Understanding How Aperture, Shutter Speed, and ISO Work Together
<https://fstoppers.com/education/exposure-triangle-understanding-how-aperture-shutter-speed-and-iso-work-together-72878>
- b. The Exposure Triangle – A Beginner’s Guide
<https://photographylife.com/what-is-exposure-triangle>
- c. The Exposure Triangle Explained in Plain English
<https://www.photographytalk.com/beginner-photography-tips/the-exposure-triangle-explained>
- d. Rule of Thirds
<https://digital-photography-school.com/rule-of-thirds/>
- e. 20 Composition Techniques That Will Improve Your Photos
<https://petapixel.com/2016/09/14/20-composition-techniques-will-improve-photos/>

The module's submission challenge is for the students to submit five photos applying what they learned about the exposure triangle and photography techniques.

The One with Graphics

The module on graphics is divided into three parts:

- a. Raster Graphics,
- b. Vector Graphics, and
- c. Design and Layout.

Raster Graphics

In raster graphics, the basic pixel by pixel definition is pointed out. Then the paid and free or open source software are discussed. Below are just some examples of raster software tackled:

Free Options:

- a. Paint.NET - <https://www.getpaint.net>
- b. Krita - <https://krita.org>
- c. MediBang Paint - <https://medibangpaint.com>
- d. MyPaint - <http://mypaint.org>
- e. GIMP - <https://www.gimp.org>
- f. Fire Alpaca - <https://firealpaca.com>
- g. Autodesk Sketchbook - <https://sketchbook.com>
- h. Microsoft Paint (bundled with Windows)

Paid Options:

- a. Pixlr (browser-based, freemium) - <https://pixlr.com>
- b. Adobe Photoshop - <https://www.adobe.com/products/photoshop.html>
- c. Clip Studio Paint - <https://www.clipstudio.net/en/>
- d. Affinity Photo - <https://affinity.serif.com/en-us/photo/>
- e. Procreate (for iPad) - <https://procreate.art>
- f. PaintTool SAI - <https://www.systemax.jp/en/sai/>
- g. Pixelmator - <https://www.pixelmator.com/pro/>
- h. Corel PHOTO PAINT - <https://www.coreldraw.com/en/pages/photo-paint/>
- i. Corel PaintShop Pro - <https://www.paintshoppro.com/en/products/paintshop-pro/>

To better equip the students, the next part of the module tackles the interface, features, and tools common to all, if not most of, the applications. Paint.NET is used to illustrate this. The basic assumption pursued by the course is that familiarity

with one software will allow you to at least aid in the transition to another application of similar function. A demonstration of basic use of tools, the concept of layers, and action history are done. The layers feature is emphasized since this echoes the "whole is greater than the sum of the parts" and is carried over to all of the succeeding modules.

If the student finds himself or herself in a bind, a google search will yield a lot of results. The following though, are some recommended links to save them the trouble:

- a. Tutorials section of the Paint.NET forum
<https://forums.getpaint.net/forum/18-tutorials-publishing-only/>
- b. JustinTheOreo's Beginner's Guide to Paint.NET
<https://www.youtube.com/playlist?list=PLx1sCguOPZGorLZOEjfBM1aajhJmvHwKj>
- c. Yakobelt's Paint.NET Tutorials
<https://www.youtube.com/playlist?list=PLGmahgA5bCaZPaELuFdV0OOX-jqKxtU51>

The module ends with a submission challenge for the students requesting them to submit a raster graphic. It is suggested that it be related to school or work.

Vector Graphics

In vector graphics, the basic difference between raster's pixel by pixel approach versus vector's math / cartesian plane approach are pointed out. Paid and free or open source software are then discussed. Below are just some examples of vector software tackled:

Free Option:

- a. Inkscape - <https://inkscape.org/>

Paid Options:

- a. Adobe Illustrator - <https://www.adobe.com/sea/products/illustrator.html>
- b. CorelDRAW - <https://www.coreldraw.com/en/product/coreldraw/>
- c. Affinity Designer - <https://affinity.serif.com/en-gb/designer/>

As with raster graphics, the next part of the module further tackles the interface, features, and tools common to all vector applications. A demonstration of basic use of tools and the concept of layers and groups are done. To facilitate the demonstration, Inkscape is used.

The following are some recommended links for students:

- a. Logos By Nick: Inkscape Beginner Tutorials
<https://www.youtube.com/playlist?list=PLynG8gQD-n8BMplEVZVsoYlaRgqzG1qc4>
- b. Logos by Nick: Inkscape Explained
https://www.youtube.com/playlist?list=PLynG8gQD-n8Byyq30_FOq9ylUFL1nTkGC
- c. Logos By Nick: Inkscape basics
<https://www.youtube.com/playlist?list=PLynG8gQD-n8AB8eeoRuae-Pm0koebv9iC>
- d. TJ FREE's Inkscape Tutorials
<https://www.youtube.com/playlist?list=PLqazFFzUAPc5lOQwDoZ4Dw2YSXtO7IWNv>

The module's submission challenge is for the students to submit a vector graphic and it is suggested that it be related to school or work.

Design and Layout

The part of the module focusing on design and layout attempts to bring together text with the outputs possible with raster and vector graphics applications. The part of the module discusses desktop publishing software which, unlike most raster and vector applications, are specifically built to handle multiple-page projects. All three do use some sort of implementation of layers and objects, but it's worth noting that desktop publishing is synergistic and can use existing raster and vector images as externally linked sources. Updating and editing the original raster or vector results in an update of the image in the layout when refreshed. Paid and free or open source software are discussed. Below are just some examples of layout software tackled:

Free Option

- a. Scribus - <https://www.scribus.net/>

Paid Options:

- a. Adobe InDesign - <https://www.adobe.com/>

[sea/products/indesign.html](https://www.adobe.com/sea/products/indesign.html)

- b. QuarkXPress - <https://www.quark.com/Products/QuarkXPress/>
- c. Affinity Publisher - <https://affinity.serif.com/en-us/publisher/>
- d. Microsoft Publisher - <https://www.microsoft.com/en-us/microsoft-365/publisher>

As with previous parts, the next part of the module further tackles the interface, features, and tools common to all desktop publishing and layout applications. A demonstration of basic use of tools, the concept of layers and groups, and the differences between leading, kerning and tracking are also done. To facilitate the demonstration, Scribus is used.

The following are some recommended links for students:

- a. TJ FREE's Scribus Tutorials
https://www.youtube.com/playlist?list=PLqazFFzUAPc6U1RcNRBMeCK6Hg3g_S6aN
- b. Silas Emmanuel's Scribus Tutorial
<https://www.youtube.com/watch?v=CqocalJNsas>
- c. Jodi Becker's Scribus Tutorial
<https://www.youtube.com/watch?v=8KrHrLpgQf8>
- d. What's the Difference Between Leading, Kerning and Tracking? by Creative Market
<https://creativemarket.com/blog/whats-the-difference-between-leading-kerning-and-tracking>

The module's submission challenge is for the students to submit a layout and it is suggested that it be related to school or work like a layout for an activity of their organization, a service or event of their library, an upcoming webinar, etc.

The One with Sound

The module focuses on audio. As a means of introduction, a discussion of air and vibration producing sound is juxtaposed with how light reflecting from an object allows us to see. Paid and free or open source software are discussed. Below are just some examples of audio software tackled:

Free Options:

- a. Audacity - <https://www.audacityteam.org/>
- b. LMMS - <https://lmms.io/>
- c. Cakewalk by Bandlab - <http://www.cakewalk.com/>
- d. Ardour - <https://ardour.org/>
- e. SoundBridge - <https://soundbridge.io/>

Paid Options:

- a. Adobe Audition - <https://www.adobe.com/products/audition.html>
- b. Ableton Live - <https://www.ableton.com/>
- c. GarageBand - <https://www.apple.com/mac/garageband/>
- d. FL Studio - <https://www.image-line.com/>
- e. Pro Tools - <https://www.avid.com/pro-tools>
- f. Cubase - <https://new.steinberg.net/cubase/>
- g. Sound Forge - <https://www.magix.com/us/music/sound-forge/>
- h. ACID Pro - <https://www.magix.com/us/music/acid/acid-pro/>
- i. Reaper - <https://www.reaper.fm/>

Some of these software are DAWs or Digital Audio Workstations and MIDI (Musical Instrument Digital Interface) capable wherein computers are hooked up to keyboards for music production. They are included for students to explore if they are so inclined.

The next part of the module further tackles the interface, features, and tools common to all audio applications. A demonstration of basic use of tools, effects, and the concept of tracks and channels are done. To facilitate the demonstration, Audacity is used.

The following are some recommended links for students:

- a. How Music Works - Acoustics for Musicians
<https://www.youtube.com/playlist?list=PLIuyaIoM30LL3bl8t6nsF86CXFUagTHJw>
- b. How to Use Audacity 2020
https://www.youtube.com/watch?v=YUULn71_G74

The module's submission challenge is for the students to submit a processed audio file. The

submission may be a podcast, a storytelling session, an audiobook, a song, etc.

The One with Video

In the previous module on photography we noted the role of light and reflection, leading us to see things. In the case of sound, it's air and vibration. In the module on video one of the concepts emphasized is "persistence of vision". To further equip students on the nature of video, there are discussions on shot types (close up, medium shot, etc.) and camera movement (zoom, dolly, pan, track, tilt, pedestal, etc.). Note that all the outputs from previous modules can be used as part of this module, hence the outputs of this module are synergistic as well. Paid and free or open source software are discussed. Below are just some examples of video editing software tackled:

Free Options:

- a. Blender - <https://www.blender.org/>
- b. Shotcut - <https://shotcut.org/>
- c. OpenShot - <https://www.openshot.org/>
- d. Avid Media Composer First - <https://www.avid.com/media-composer>
- e. DaVinci Resolve - <https://www.blackmagicdesign.com/products/davinciresolve/>

Paid Options:

- a. Adobe Premiere Pro - <https://www.adobe.com/products/premiere.html>
- b. Adobe After Effects - <https://www.adobe.com/products/aftereffects.html>
- c. Final Cut Pro X - <https://www.apple.com/final-cut-pro/>
- d. Avid Media Composer - <https://www.avid.com/media-composer>
- e. DaVinci Resolve Studio - <https://www.blackmagicdesign.com/products/davinciresolve/howtobuy>

The next part of the module further tackles the interface, features, and tools common to all video applications. A demonstration of basic use of tools, effects and transitions, and the concept of audio and video tracks are done. To facilitate the demonstration, Shotcut is used.

The following are some recommended links for students:

- a. Persistence of Vision by motintitleTV
<https://www.youtube.com/watch?v=ecgfCJVyYGM>
- b. What is Persistence of Vision? by Mr. Wizard
<https://www.youtube.com/watch?v=YismwdgMIRc>
- c. Zoetrope by Educational Innovations
https://www.youtube.com/watch?v=5_8fX-N3ji4
- d. Zoetrope Animation of a Galloping Horse by Zoetrope Praxinoscope Animations
<https://www.youtube.com/watch?v=SBg6dAE3mI0>
- e. Animation basics: The optical illusion of motion by TED-Ed
<https://www.youtube.com/watch?v=V8A4qudmsX0>
- f. Filmmaking 101: Camera Shot Types by Justin Dise for Explora
<https://www.bhphotovideo.com/explora/video/tips-and-solutions/filmmaking-101-camera-shot-types>
- g. Shot Types (CS, CU, ECU, ELS, FS, LS, MCU, MS) by Comicbook Glossary
<https://comicbookglossary.wordpress.com/shot-types/>
- h. Shot Types by Media College
<https://www.mediacollege.com/video/shots/>
- i. 7 Basic Camera Movements by Storyblocks
<https://blog.storyblocks.com/video-tutorials/7-basic-camera-movements/>
- j. Camera Movement Techniques by Videomaker
<https://www.videomaker.com/article/c10/14221-camera-movement-techniques>
- k. Basic Camera Movements - Terms in Video by Transformation Marketing
<https://www.transformationmarketing.com/basic-camera-movements/>
- l. Shotcut tutorials
<https://www.shotcut.org/tutorials/>

The module's submission challenge is for the students to submit an edited video file. The submission must try to demonstrate shot types and camera movement and ideally be for school or work.

With the pandemic came a shortened semester with everyone scrounging for time and resources so the succeeding topics were relegated to supplementary information with the caveat that these would be nice to know down the line.

The One with 3D

This micro-topic is something to look into nowadays with makerspaces making appearances in libraries and information centers. It basically boils down to designing the 3D object and getting it 3D printed, hence the programs associated with them are tackled. The lack of physical access to 3D printers and the cost of having designs printed by third-party suppliers and shipped to student's or the professor's house was quite prohibitive. The challenge to students was shifted to exploring this on their own and revisiting the topic when circumstances permit.

Software Suggestions:

- a. Tinkercad - <https://www.tinkercad.com>
- b. Microsoft 3D Builder
- c. Ultimaker Cura - <https://ultimaker.com/software/ultimaker-cura>

The One with Livestreaming

With the stay and work from home quarantine situations we experienced, the ability to deliver synchronous and asynchronous content is now definitely a must. Webinars have become a staple during the pandemic. Docherty and Faiks (2004) provide a capsule view of how streaming software can actually be used:

Webinar technology has the capability of bringing people together to share information using both visual and audio communication; this is the synchronous model. In addition, Webinar sessions can be recorded for later viewing; this is the asynchronous model. (p. 213)

Like the modules on layout and video, this micro-topic is synergistic and essentially allows students you to use all of the lessons learned from previous modules to come up with a live output. Students are appraised on the use of these applications for school and work with the emphasis on the possibility of

layering live camera feeds, desktop display, specific application windows, image masks, and recorded media over one another and either record a video file or livestream over the internet. Like 3D printing, the challenge for this micro-topic had to be shifted to self-exploration due to varying bandwidth and connection capabilities as well as device availability for students. Again, it was advised to revisit the topic when circumstances permit.

Software Suggestions:

- a. OBS Studio - <https://obsproject.com/>
- b. XSplit Broadcaster - <https://www.xsplit.com/broadcaster>

The One with Computer-Mediated Storytelling

Mostly due to time constraints, this module had to be converted to a micro-topic. Computer-Mediated Storytelling in this micro-topic is accomplished with the use of visual novel software. It is emphasized that you can create digital docents which guide users through linear or branching adventures, library tours, reading programs, museum curations, and the like. A lot of past projects of this class have used outputs from these for their institutions.

Software Suggestion:

- a. Renpy - <https://www.renpy.org/>

The Hope for the Future

A lot of how the classes were handled were affected by the current situation. Pre-pandemic, all the demos were done in class with my students closely huddled around the table. Photowalks were done in groups one day with a digital camera per group, the next week they went out again with a film camera. The software could be used in the computer applications lab, though a lot would prefer to use their own laptops (makes sense since some had more powerful computers than the lab can offer). 3D printing could be done with the school's printer, Renpy was demonstrated step-by-step so they could come up with a basic product.

Only time will tell as to which approach benefitted the students more but for the time being, I believe that the current situation merits the current

approach. In the meantime, all we can hope for is a better world and a healthier environment in the future so that these media materials and technology in libraries and information centers subjects can be taught to their fullest potential.

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APPENDIX

Software Options Mentioned

- Ableton Live - <https://www.ableton.com/>
- ACID Pro - <https://www.magix.com/us/music/acid/acid-pro/>
- Adobe After Effects - <https://www.adobe.com/products/aftereffects.html>
- Adobe Audition - <https://www.adobe.com/products/audition.html>
- Adobe Illustrator - <https://www.adobe.com/sea/products/illustrator.html>
- Adobe InDesign - <https://www.adobe.com/sea/products/indesign.html>
- Adobe Photoshop - <https://www.adobe.com/products/photoshop.html>
- Adobe Premiere Pro - <https://www.adobe.com/products/premiere.html>
- Affinity Designer - <https://affinity.serif.com/en-gb/designer/>
- Affinity Photo - <https://affinity.serif.com/en-us/photo/>
- Affinity Publisher - <https://affinity.serif.com/en-us/publisher/>
- Ardour - <https://ardour.org/>
- Audacity - <https://www.audacityteam.org/>
- Autodesk Sketchbook - <https://sketchbook.com>
- Avid Media Composer - <https://www.avid.com/media-composer>
- Avid Media Composer First - <https://www.avid.com/media-composer>
- Blender - <https://www.blender.org/>
- Cakewalk by Bandlab - <http://www.cakewalk.com/>
- Clip Studio Paint - <https://www.clipstudio.net/en/>
- CorelDRAW - <https://www.coreldraw.com/en/product/coreldraw/>
- Corel PaintShop Pro - <https://www.paintshoppro.com/en/products/paintshop-pro/>
- Corel PHOTO PAINT - <https://www.coreldraw.com/en/pages/photo-paint/>
- Cubase - <https://new.steinberg.net/cubase/>
- DaVinci Resolve - <https://www.blackmagicdesign.com/products/davinciresolve/>
- DaVinci Resolve Studio - <https://www.blackmagicdesign.com/products/davinciresolve/howtobuy>
- Final Cut Pro X - <https://www.apple.com/final-cut-pro/>
- Fire Alpaca - <https://firealpaca.com>
- FL Studio - <https://www.image-line.com/>
- GarageBand - <https://www.apple.com/mac/garageband/>
- GIMP - <https://www.gimp.org>
- Inkscape - <https://inkscape.org/>
- Krita - <https://krita.org>
- LMMS - <https://lmms.io/>
- MediBang Paint - <https://medibangpaint.com>
- Microsoft 3D Builder
- Microsoft Paint (bundled with Windows)
- Microsoft Publisher - <https://www.microsoft.com/en-us/microsoft-365/publisher>
- MyPaint - <http://mypaint.org>
- OBS Studio - <https://obsproject.com/>
- OpenShot - <https://www.openshot.org/>
- Paint.NET - <https://www.getpaint.net>
- PaintTool SAI - <https://www.systemax.jp/en/sai/>
- Pixelmator - <https://www.pixelmator.com/pro/>
- Pixlr (browser-based, freemium) - <https://pixlr.com>
- Procreate (for iPad) - <https://procreate.art>
- Pro Tools - <https://www.avid.com/pro-tools>
- QuarkXPress - <https://www.quark.com/Products/QuarkXPress/>
- Reaper - <https://www.reaper.fm/>
- Renpy - <https://www.renpy.org/>
- Scribus - <https://www.scribus.net/>
- Shotcut - <https://shotcut.org/>
- SoundBridge - <https://soundbridge.io/>
- Sound Forge - <https://www.magix.com/us/music/sound-forge/>
- Tinkercad - <https://www.tinkercad.com>

Ultimaker Cura - <https://ultimaker.com/software/ultimaker-cura>
 XSplit Broadcaster - <https://www.xsplit.com/broadcaster>

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