

An Introduction to Nemeth Code Symbols Used in Grades 2 to 5 and Strategies for Supporting Elementary Students in Building Math Skills

Lesson 7: The 3Cs of a Digital Workflow: Capture! Convert! Cloud! with Dr. Yue-Ting Siu



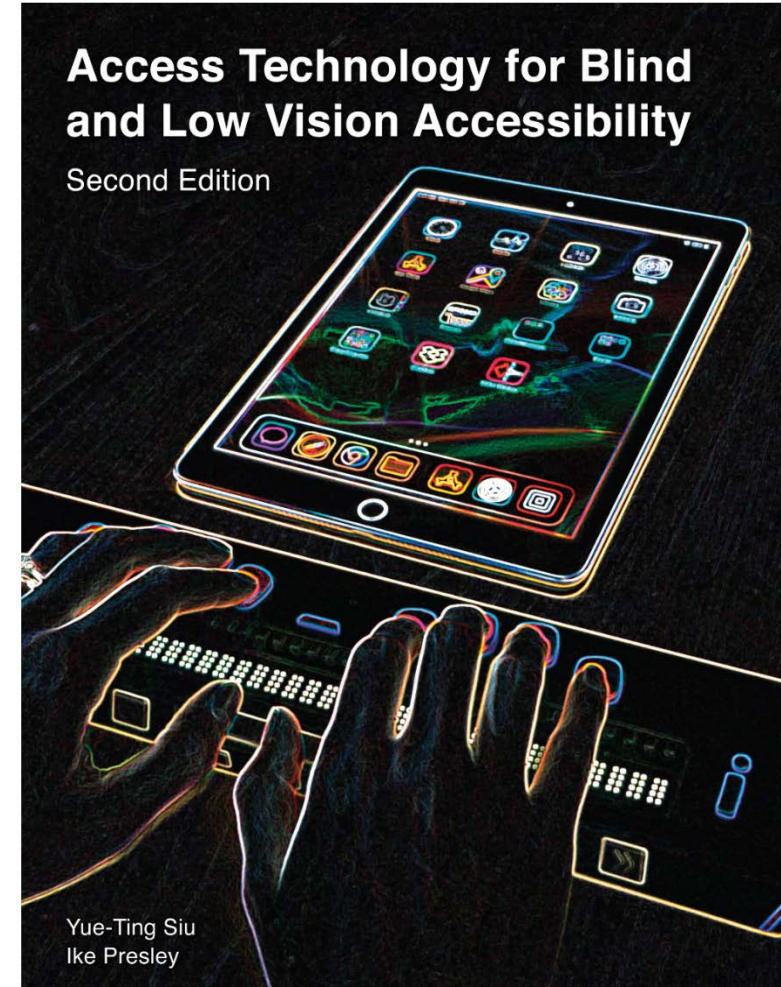
University of South Carolina Upstate, Spring 2020

Lesson 7 Objectives

Participants will be able to:

1. Define what a digital workflow means for blind and low vision students.
2. Capture print media in a digital format.
3. Convert digital media into accessible formats.
4. Share instructional materials in real time via the cloud.

***Digital Workflow =
An efficient electronic
system for accessing,
processing, sharing,
and storing work***



Siu, Y. & Presley, I. (2020). *Access Technology for Blind and Low Vision Accessibility*. APH Press.

Digital Workflow: Advantages

- Digital media can provide greater:
 - flexibility
 - portability
 - efficient multimodal access to information
- Empowers students to utilize their tool of choice with maximum independence and flexibility to change their method of access.
- Empowers general ed support of VI student
- Supports access to the Core Curriculum
- Models college and professional workflows

Digital Workflow: Disadvantages

- Dependent on infrastructure for:
 - cloud computing
 - training
 - technology toolbox



Requirements for Navigating a Digital Workflow

- Student has appropriate technology.
 - Multiple devices
- Student can select, use, and efficiently switch between tools as needed.
- Accessible media (digital multimedia accessibility)
 - Text
 - Images
 - Video

For More Info...

- Ting's Accessibility Tip Sheet
 - <http://bit.ly/a11ytips-siu>
- AT Book (Siu & Presley, 2020)
 - Chapter 3, Technologies for Accessing Digital Text
 - Chapter 6, Strategies for Accessing Multimedia and Data

The 3Cs of a Digital Workflow: Capture! Convert! Cloud!



Capture!

Capture paper media in a digital format


- Camera & scanning apps
 - Scanner Pro, MS Office Lens, Claro PDF, etc.
 - Integrated with a cloud storage app
- Artificial Intelligence (AI)
 - Seeing AI
- Digital snapshots/screenshots
- Recreate

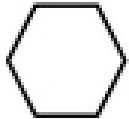
Sample Worksheets


Name: _____ Date: _____

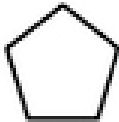
Identifying 2D Shapes


Directions: Write the name of each shape below. Use the word bank to help you. Use your pencil to shade/fill in the shape if it is a quadrilateral (a closed shape with 4 straight sides).

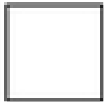
1. 


2. 

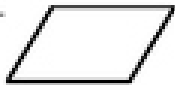
3. 

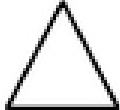
4. 

5. 

6. 

7. 

8. 

9. 

circle	square	rectangle	triangle	hexagon
trapezoid	parallelogram	pentagon	rhombus	

Name : _____ Score : _____

Teacher : _____ Date : _____

$$\begin{array}{r} 710 \\ - 488 \\ \hline \end{array}$$

$$\begin{array}{r} 304 \\ - 165 \\ \hline \end{array}$$

$$\begin{array}{r} 900 \\ - 175 \\ \hline \end{array}$$

$$\begin{array}{r} 217 \\ - 128 \\ \hline \end{array}$$

$$\begin{array}{r} 717 \\ - 692 \\ \hline \end{array}$$

$$\begin{array}{r} 296 \\ - 252 \\ \hline \end{array}$$

$$\begin{array}{r} 500 \\ - 153 \\ \hline \end{array}$$

$$\begin{array}{r} 777 \\ - 717 \\ \hline \end{array}$$

$$\begin{array}{r} 800 \\ - 356 \\ \hline \end{array}$$

$$\begin{array}{r} 374 \\ - 310 \\ \hline \end{array}$$

$$\begin{array}{r} 847 \\ - 781 \\ \hline \end{array}$$

$$\begin{array}{r} 900 \\ - 340 \\ \hline \end{array}$$

$$\begin{array}{r} 543 \\ - 531 \\ \hline \end{array}$$

$$\begin{array}{r} 800 \\ - 383 \\ \hline \end{array}$$

$$\begin{array}{r} 560 \\ - 124 \\ \hline \end{array}$$

$$\begin{array}{r} 478 \\ - 469 \\ \hline \end{array}$$

$$\begin{array}{r} 970 \\ - 439 \\ \hline \end{array}$$

$$\begin{array}{r} 490 \\ - 252 \\ \hline \end{array}$$

$$\begin{array}{r} 900 \\ - 309 \\ \hline \end{array}$$


$$\begin{array}{r} 800 \\ - 705 \\ \hline \end{array}$$

$$\begin{array}{r} 700 \\ - 215 \\ \hline \end{array}$$

$$\begin{array}{r} 706 \\ - 359 \\ \hline \end{array}$$

$$\begin{array}{r} 246 \\ - 200 \\ \hline \end{array}$$

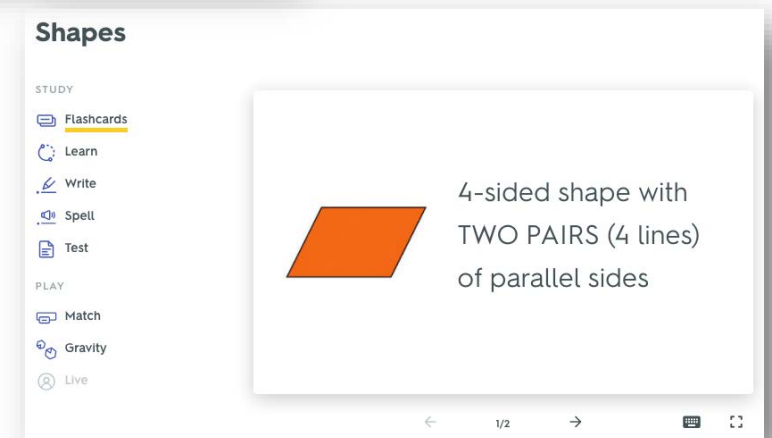
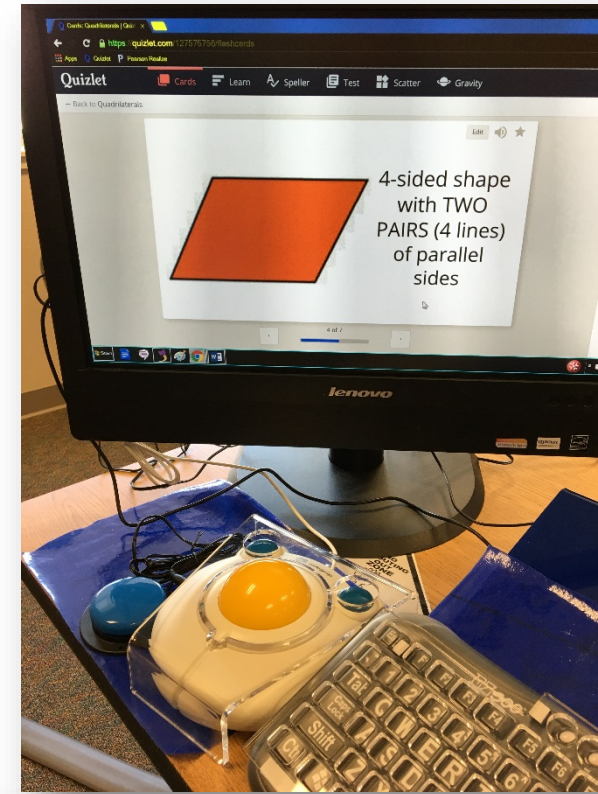
$$\begin{array}{r} 706 \\ - 484 \\ \hline \end{array}$$

 Math-Aids.Com

Turn Paper Notes into Digital Formats

Notetaking apps

- Notability
- Evernote
- MS OneNote
- GoodNotes
- Quizlet*



Example: Math Worksheets

The screenshot shows a Google Docs interface with the title '2.4 Subtraction Math'. The document content is titled '2.4 Math Lesson: Subtraction' and contains two numbered problems, each with a 3x3 grid of numbers.

1.

5	7	6
2	4	6
3	3	0

2.

3	9	8
2	3	5
1	6	3



Considerations for Digital Math: Accessible Math Workflow Using Equatio and MSWord (YouTube: AT Neal)

- <https://www.youtube.com/watch?v=wzarEOCPma8&feature=youtu.be&app=desktop>

Convert!

Convert digital media to accessible formats

- Optical character recognition (OCR)
- “Open with” Google Docs
- Annotation ready
 - Adobe Fill & Sign
 - SnapType
 - Skitch
 - Claro PDF
 - iBooks, VoiceDream Reader

Cloud!

Share instructional materials in real time

- Save/sync across devices
- Access via secure login
- Collaborative work with teachers and peers
- Cloud storage
 - Dropbox
 - Google Drive
 - iCloud

Workflow Design and Implementation

(AT Book, Chapter 8)

Needs Assessment (Siu, 2020)

- Aggregate data from FVA & LMA
- Identify sensory access needs
- Identify areas for improved independence or efficiency
- Identify technology features

Needs Assessment for Technology Your Name

Student Info

Name (pseudonym):

Age at time of assessment:

Grade:

Classroom placement:

Background Information

Student Sensory Learning Channels

Primary learning channel

Tasks the student can do efficiently using this sense:

•

Tasks with limited success using this sense:

•

Secondary learning channel

Tasks the student can do efficiently using this sense:

•

Tasks with limited success using this sense:

•

Tertiary learning channel

Tasks the student can do efficiently using this sense:

•

Tasks with limited success using this sense:

•

Classroom, school, and community activities that the student currently requires assistance to engage in – and has the potential to be more independent.

Remember: you are not identifying present levels of performance

•

Types of (non-adapted) educational materials and instructional media that the student needs to access in various classes, labs, and electives

Language Arts

•

STEAM (Science, Technology, Engineering, Arts, Math)

•

Other

•

Technology Features That Would Benefit the Student

Remember: Use generic terms and avoid naming brands – each feature should match a sensory learning channel)

•

Digital Workflow Planning Tool (McDowell, 2019)

- Identify student's infrastructure
- Identify needed training or support
- Identify future considerations

Planning Tool: Digital Workflow for Students who are Visually Impaired

Student Name:		
School:	Age:	Grade:
District:	Date Completed:	
Persons Completing Summary:		

Digital workflow refers to an efficient electronic system for accessing, processing, sharing and storing work. Digital workflow can reduce a student's reliance on others for accessible materials. Use of digital workflow is tied to assessment and goals and aims to increase a student's independence and self-advocacy. Digital workflow addresses needed skills for future access to work environments and higher learning. Considerations when planning for digital workflow:

- Developmentally appropriate practice and sequenced learning
- Environmental considerations and back up plans when using technology
- Teaching successful use of digital workflow does not happen in one session
- Allow for diversity of workflows
- Develop workflows collaboratively (students and teachers)

Information from Functional Vision Assessment (FVA) and Learning Media Assessment (LMA)

Student's primary and secondary learning media or student's use of dual-media or multi-media:

Considerations:

Information from Access Technology (AT) Assessment

Student uses:

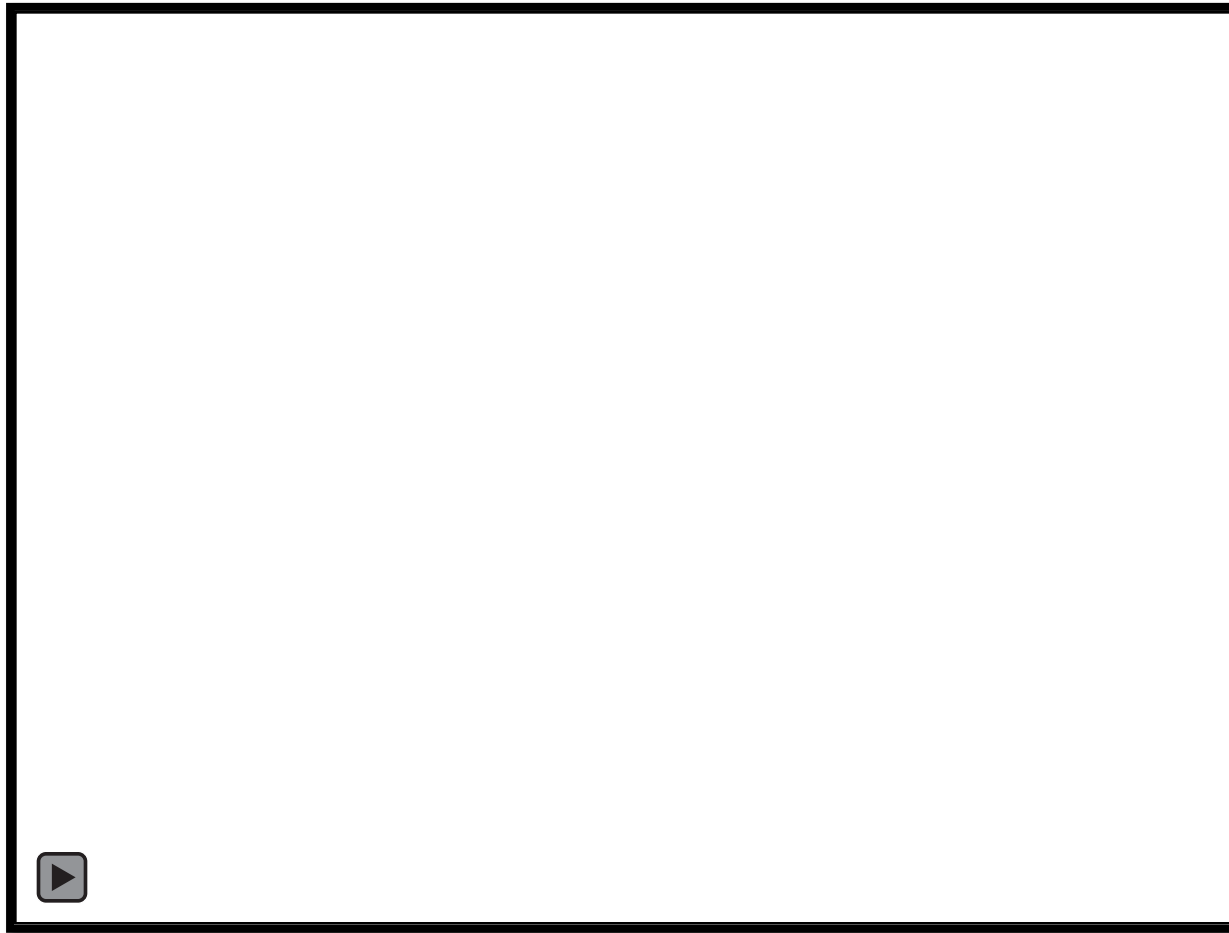
- | | | |
|---|--|---|
| <input type="checkbox"/> Large print | <input type="checkbox"/> Computer with magnification settings/software | <input type="checkbox"/> Hand-held magnifier or monocular |
| <input type="checkbox"/> Braille | <input type="checkbox"/> Dedicated braille notetaker | <input type="checkbox"/> Writing tools: |
| <input type="checkbox"/> Digital Books (Daisy, Bookshare) | <input type="checkbox"/> Touchscreen tablet such as iPad | <input type="checkbox"/> dictation |
| <input type="checkbox"/> Text-to-speech (TTS) | <input type="checkbox"/> Reading stand/slant board | <input type="checkbox"/> bold pen |
| <input type="checkbox"/> Narrated audio books (Learning Ally, BARD/NLS, public library service) | <input type="checkbox"/> Enhanced visual presentation such as increased spacing, large font, reverse contrast (white font on black background) | <input type="checkbox"/> 6-key braille keyboard |
| <input type="checkbox"/> Computer w/screen reader and/or refreshable braille display (RBD) | <input type="checkbox"/> Video magnifier | <input type="checkbox"/> on screen writing with stylus |
| <input type="checkbox"/> Specialized lighting | | <input type="checkbox"/> Audio described videos |
| | | <input type="checkbox"/> Other: |

Notes on current access technology and considerations:

Data Literacy: Considerations

(AT Book, Chapter 8)

Orientation Between Physical and Virtual Environments (YouTube: AT Neal)



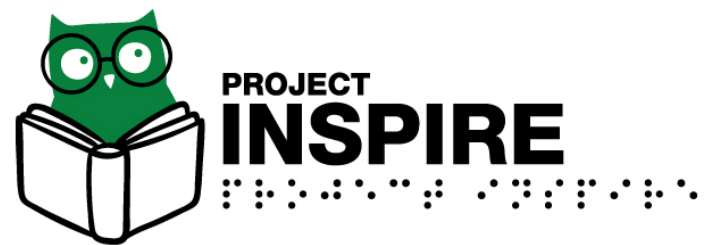
Scaling Up Digital Literacy Skills

(AT Book, Ch. 10, www.sascha-kasper.com)



Video Tutorials: YouTube Channels

- AT Neal (distance and remote tips)
- viteacherJes (digital workflows)
- Diane Brauner (Apple, nonvisual)
- Luis Perez (Apple)
- Dr. Denise M. Robinson (PC, nonvisual)
- VI Program SFSU (TechTalks)
- Vignettes
 - bit.ly/coursea11y → Guest Interviews



University of South Carolina Upstate, Summer 2020