

WHEN TECHNOLOGY BECOMES A BARRIER

Rethinking Digital Equity



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Presenters



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Identify

Identify digital equity barriers within instructional practices and institutional systems using academic digital capital and digital literacy frameworks.

Design

Design course activities, assessments, and learning materials to increase digital equity and learner agency.

Select

Select one feasible change to increase digital equity within their institutional context.

Outcomes

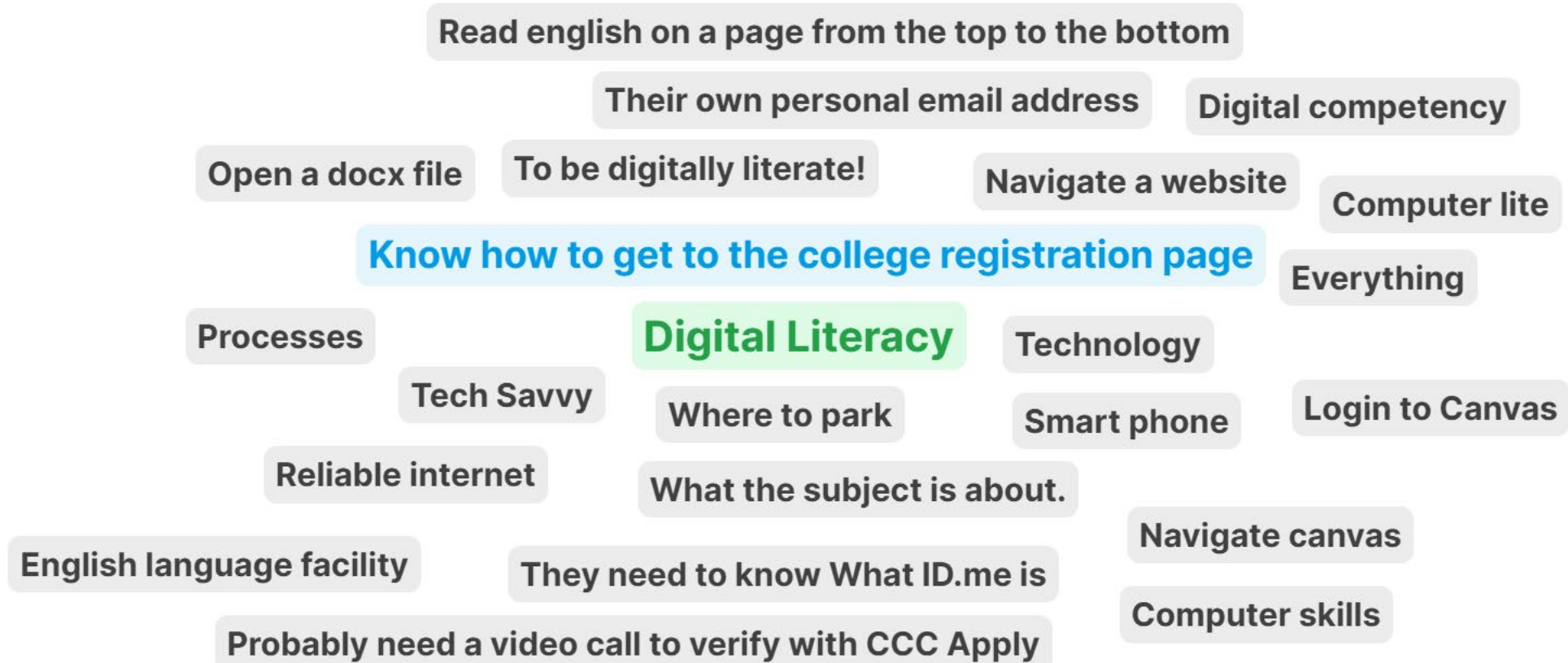
Scenario: Accessing & Attending College

Imagine you are a first-time college student using an older phone with limited data and a cracked screen as your primary device.

Before class even begins, how do you

- Apply to college?
- Submit financial aid forms?
- Find required classes and locations?
- Access course materials?

What is this student already expected to already know



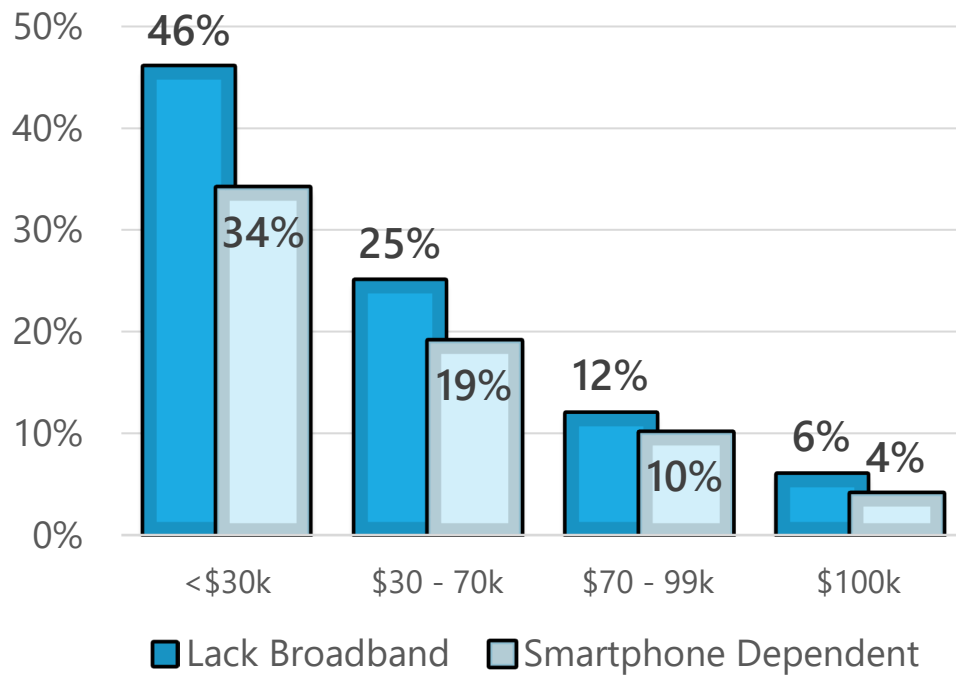
A UDL Lens for Digital Equity:

What Does the Environment Require & How are Students Supported?

- Barriers are in the Environment
 - Digital tasks often require tools, workflows, logins, files, formats, and support pathways before students can demonstrate learning
- Variability is the Rule
 - Students vary in access, time, disability, language proficiency, prior experience, confidence, and available support
- Inclusion by Design
 - Access works best when it is built in from the beginning, not retrofitted after students encounter barriers

Access Gaps Become Learning Gaps

Income & Internet Access



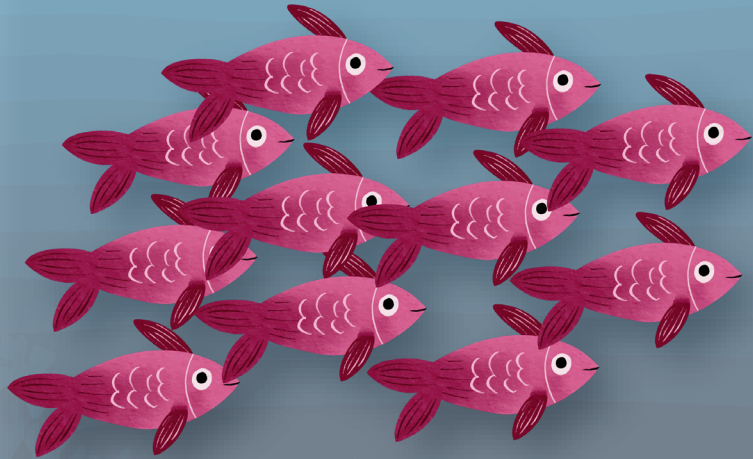
(Pew Research Center, 2025)

Groups Most at Risk

- Low-Income Individuals
- Older Adults
- Racial & Ethnic Minorities
- New Immigrants & Refugees
- Indigenous Groups
- Individuals with Disabilities
- Women

(Raihan et al., 2025)

The digital environment students are expected to navigate.....
It's like a fish describing water



Technology Access

- Reliable Device
- High-Speed Internet
- Required Software
- Quiet Space
- Time to Work

Technology Skills

- LMS Navigation
- File Management
- Troubleshooting

Information Competency

- Search
- Evaluate
- Verify
- Use Information

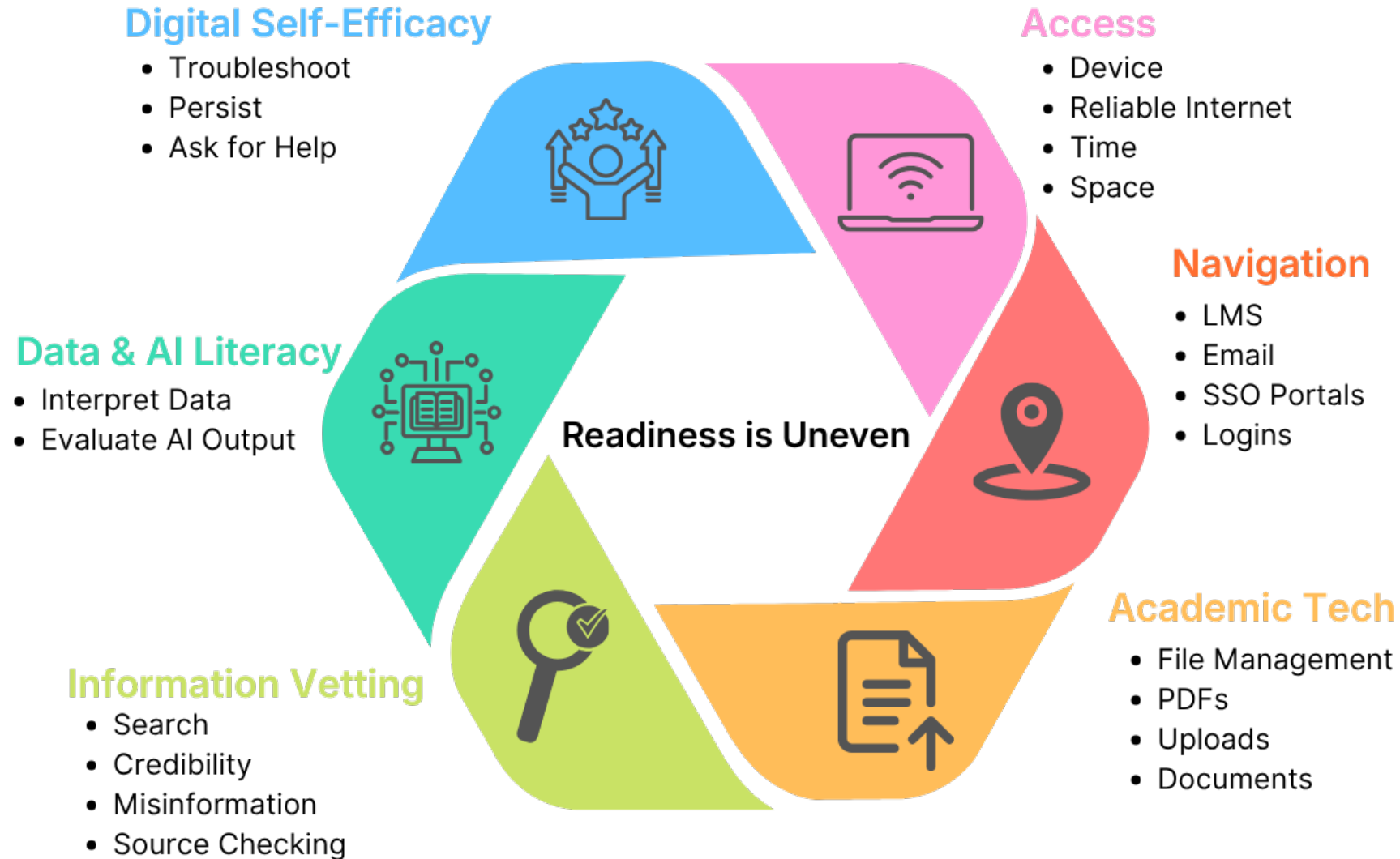
Academic Technology Capital (ATC)
helps us ask what
access, skills, and supports
are required?

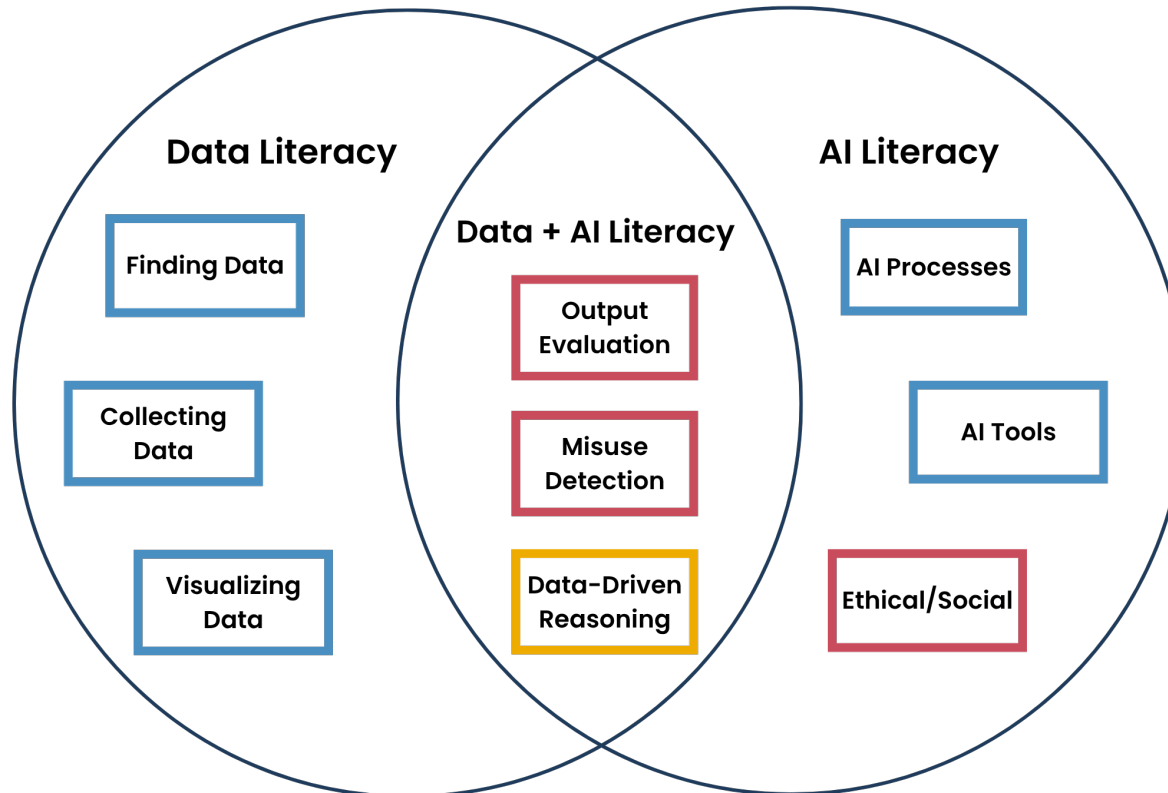
ACADEMIC TECHNOLOGY CAPITAL

More Technology ≠ More Equity

- There is a Digital Divide and many of our students are on the wrong side of it.
- Yet we continue to add more layers of technological complexity like AI and LTIs to our digital environment, and this necessarily widens equity gaps.
- We must mitigate these inequities by assessing and supporting the development of Academic Technology Capital

Digital Readiness is Not One Skill





SKILL DIMENSIONS PRESENT ACROSS ALL THREE LITERACY CATEGORIES

Critical Thinking

Problem Solving

Communication

Information Vetting

Digital Literacy - Foundational

Online Resources

Access

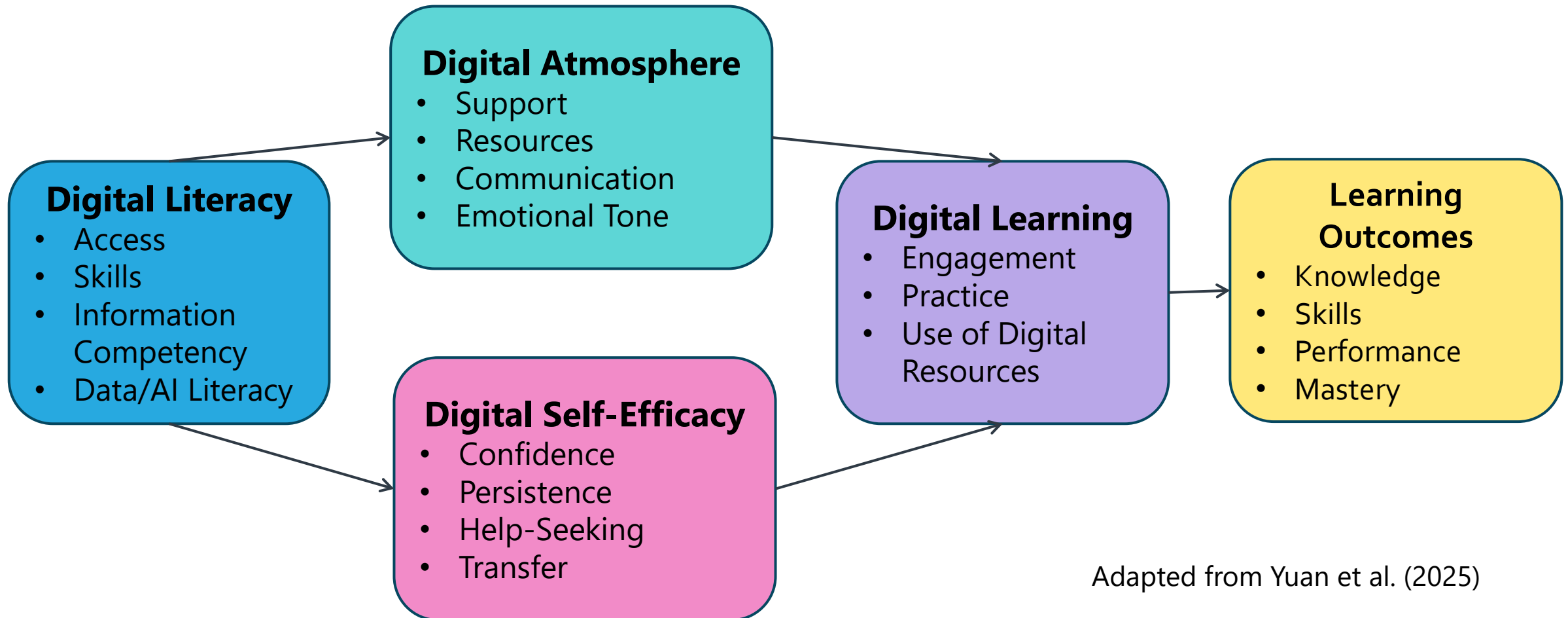
Computer Skills

Navigation/Tools

DIGITAL, DATA, & AI LITERACY OVERLAP

From Digital Literacy to Learning Outcomes

Digital literacy works through environment, self-efficacy, and digital learning



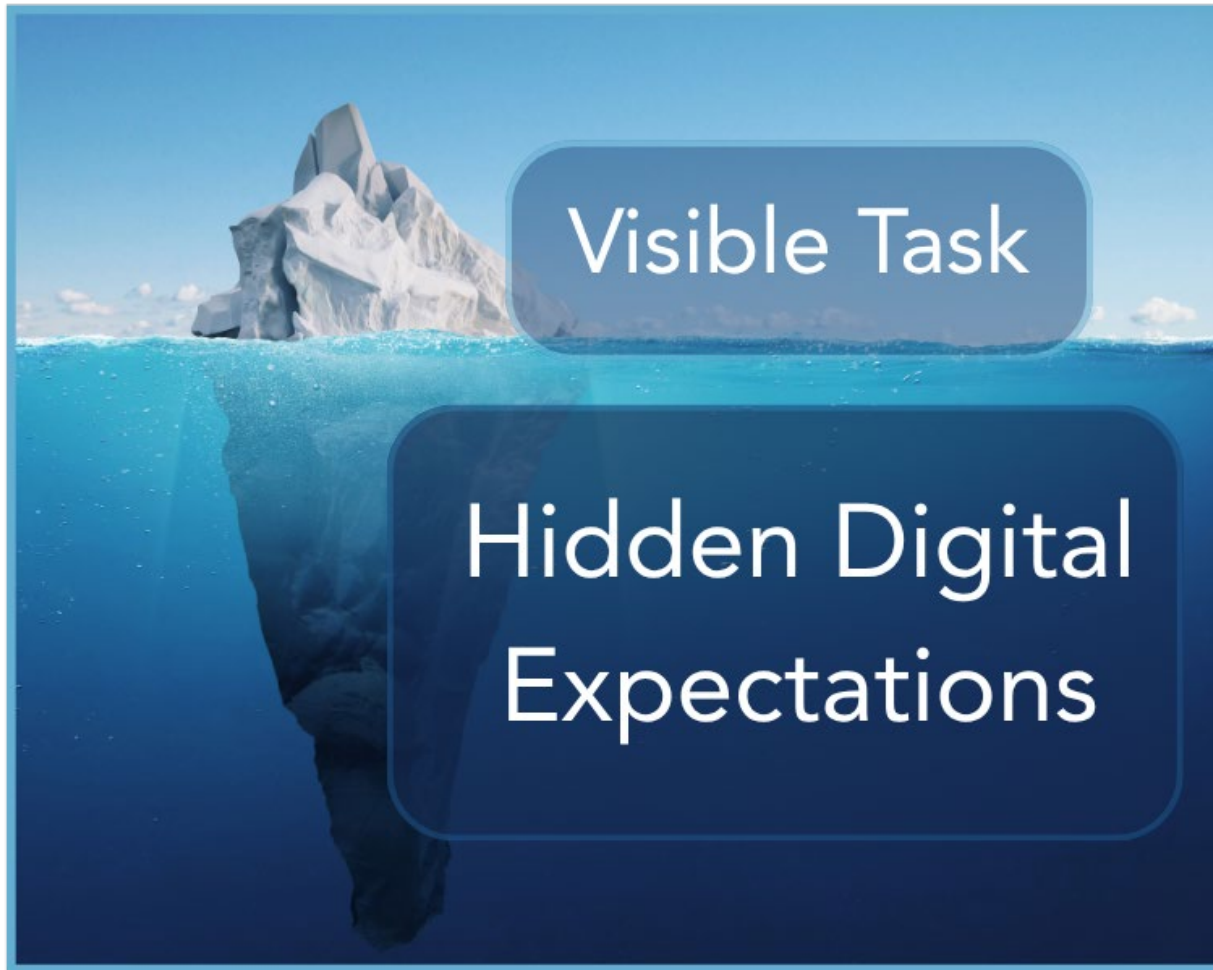
Adapted from Yuan et al. (2025)

Digital Self-Efficacy for College Students

Students can

- accurately evaluate their technology skills
- transfer skills to new digital tasks
- seek appropriate support for access, troubleshooting, and unfamiliar digital learning environments

(Bandura, 1977; Bandura & Locke, 2003; Caprara et al., 2008; Dlamini, 2023; Yuan et al., 2025)



Reframe

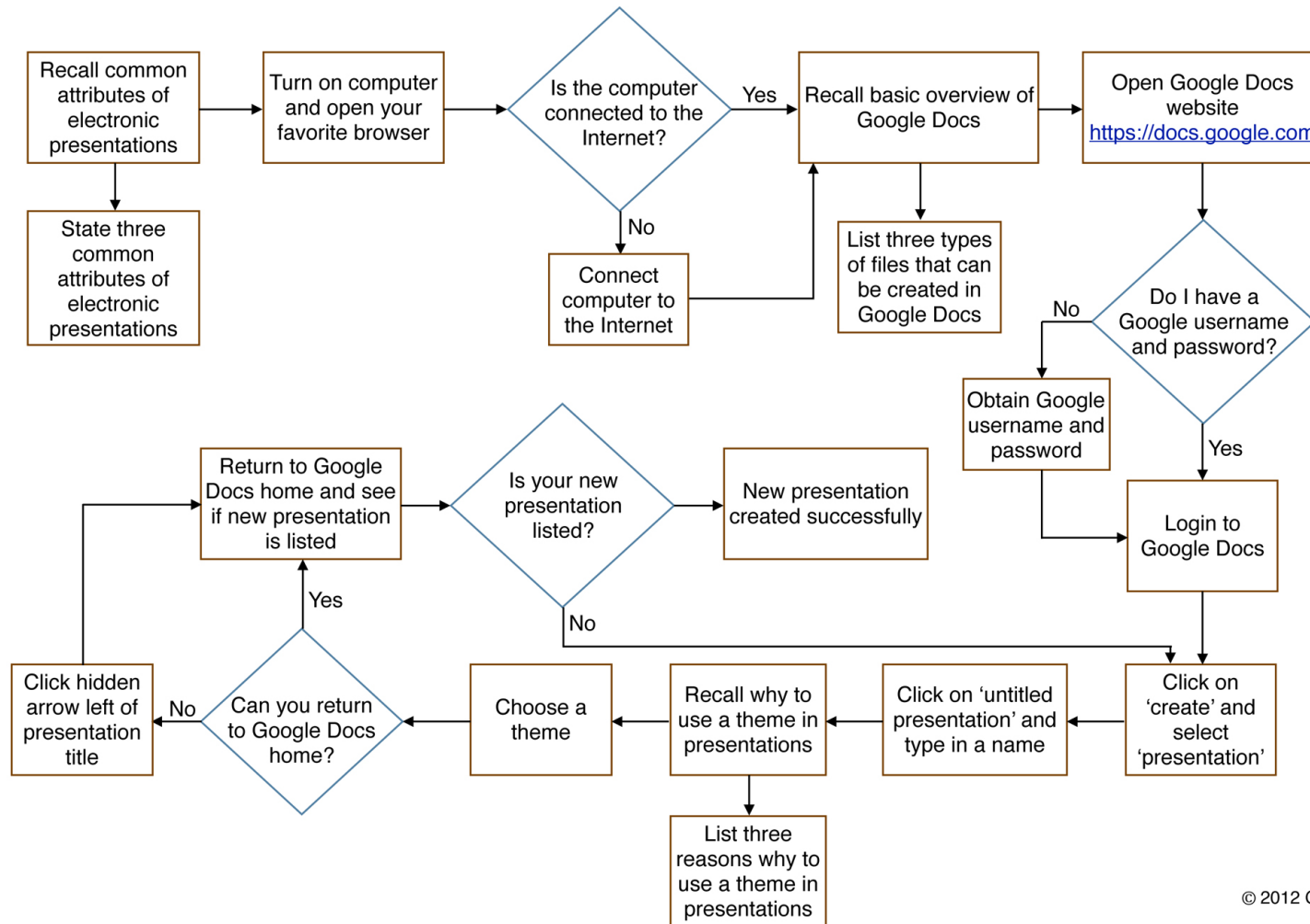
- Technology didn't create the barrier
 - It exposed what students were already expected to know
 - Shift to making digital expectations visible

(Mertala, 2020; Robiullah et al., 2026)

Most Digital Learning Happens Below the Surface.



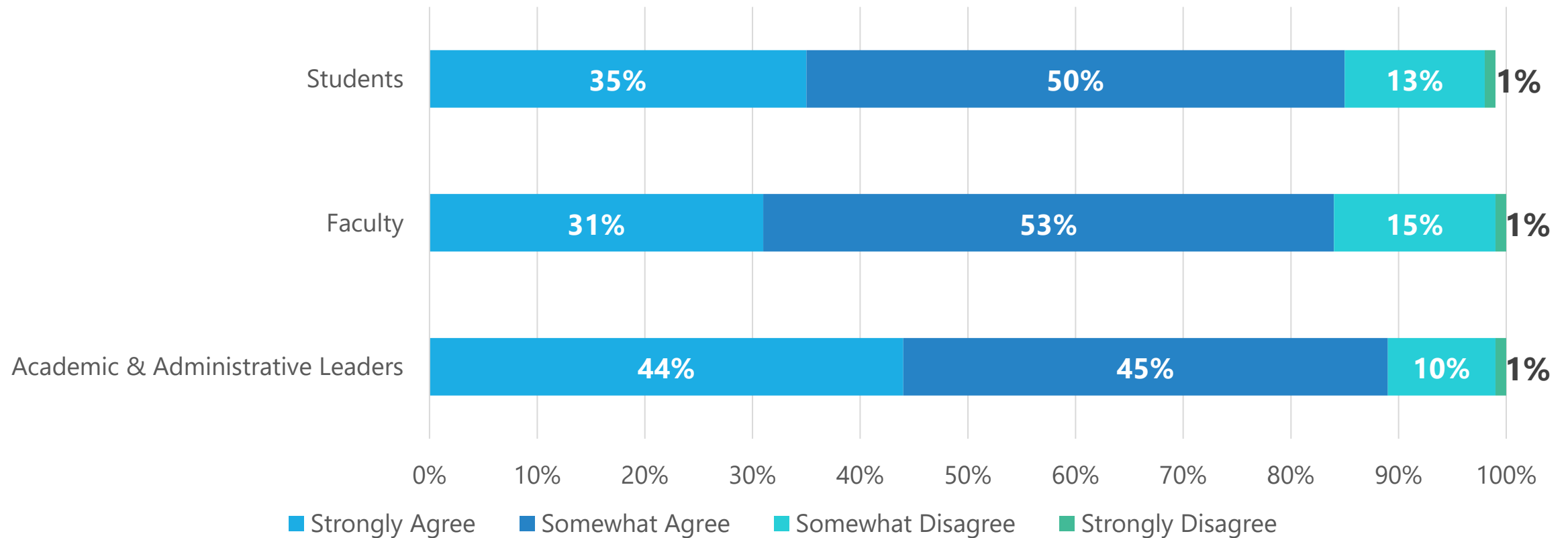
A student must submit a short reflection as a pdf in Canvas. The only instructions given were "Upload your reflection as a pdf in Canvas by 11:59 p.m. on Sunday." What are the hidden digital expectations in this task.
(Check all that apply.)



© 2012 Gretel Patch

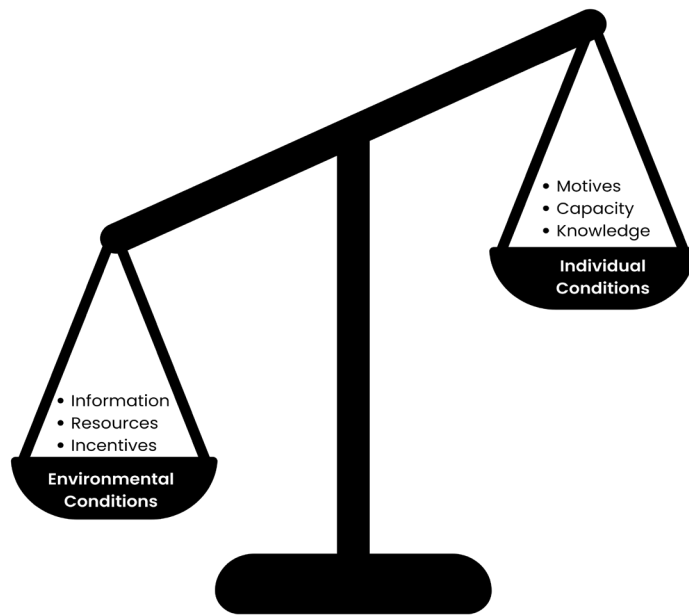
TASK ANALYSIS: CREATING A GOOGLE SLIDES PRESENTATION

Teaching Digital Skills Should Be a Bigger Part of My Institution's Curriculum



N = 433 faculty members, 421 academic and administrative leaders, and 432 students.

Performance Improvement Lens for Institutional Improvement



Environmental Performance Drivers

- Information
- Resources
- Incentives

Individual Performance Drivers

- Knowledge
- Capacity
- Motives

Environmental Barriers:

A Performance Improvement lens for institutional improvement

“If you pit a good performer against a bad system, the system will win almost every time.”

– Rummler & Brache (1995, p. 13)

- When digital barriers show up repeatedly, the improvement question is not only **“What does this student need?”**
- It’s also **“What environmental or system changes need to occur so support is visible, available, coordinated, and sustainable?”**

Repeated digital barriers are system feedback.

Ask → Assess → Refer → Practice → Recheck → Redesign

From Guessing to Support

- Ask: What access, skills, and supports are required?
- Assess: Identify student's digital readiness using tools such as ATC check or Northstar DL assessment
- Refer: Connect students to visible support pathways
- Practice: Provide low-stakes opportunities before high-stakes tasks
- Recheck: Follow up before barriers become failures (e.g. case management for low Academic Technology Capital - ATC)
- **Redesign:** If the same barrier keeps appearing, redesign the task, process, or support structure

From Individual Support to Institutional Infrastructure

Northstar can help identify specific digital skill gaps

However, the institution needs the infrastructure to respond:

- In-person training for lower-levels of literacy and skills
- Shared campus digital readiness language
- Assessment and referral pathways
- Coordinated support across all instructional modalities, tutoring, library, accessibility, technology, and student services
- Low-stakes practice spaces
- Feedback loops that show where barriers keep appearing

Digital readiness data should inform systemic improvements.

Northstar Standards

You can [download a copy of Northstar's recently updated standards](#) (also [available in Spanish](#)), which define the basic skills needed to perform tasks on computers and online. You can also [access a list of standards linked with curated learning resources from the web](#). Online, self-guided assessment modules assess the ability of individuals to perform tasks based on these standards. Northstar's standards and modules cover the three categories below.

Standards for Essential Computer Skills



Phone Keyboard Basics & Logging In



Basic Computer Skills



Internet Basics



Using Email



Windows 10



Windows 11

Standards for Essential Software Skills



Microsoft Word



Microsoft Excel



Microsoft PowerPoint



Google Docs

Standards for Using Technology in Daily Life



Social Media



Information Literacy



Career Search Skills



Supporting K-12 Distance Learning



Accessing Telehealth Appointments



Your Digital Footprint

[Modules currently available](#) for our 15 most popular topics. [Additional modules](#) are in development.

Currently Available

- Basic Computer Skills
- Internet Basics
- Using Email
- Windows 10
- Windows 11
- Mac OS
- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint
- Google Docs
- Social Media
- Information Literacy
- Career Search Skills
- Your Digital Footprint
- Accessing Telehealth Appointments

NORTHSTAR

Training Modules

UDL-Informed Ed Tech & AI Use:
A **Human-Centered** Lens for Digital Equity



Image developed by Dr. Janet Williams, 2026

Adapted from CAST. (2024). Universal Design for Learning Guidelines version 3.0 [graphic organizer].

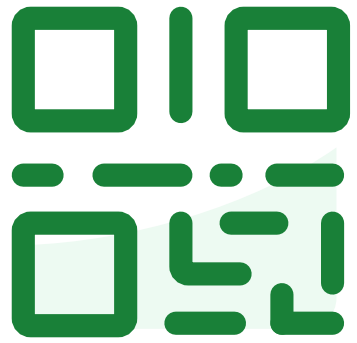
INCLUSIVE TECHNOLOGY USE

One Feasible Change

Choose one course, assignment, student support process, or institutional workflow.

What is

1. One hidden digital expectation you make visible or reduce or one digital self-efficacy move I can support?
2. What partners or support pathway will you need to achieve your digital equity goal?
3. Impact: How will you know it worked or needs to be redesigned?



**The Slido will remain open until
June 30, 2026 so feel free to keep
the conversation going!
Join at slido.com
#2263932**

One hidden digital expectation that you plan to make visible or a digital self-efficacy move you'll support?

More embedded tutorials on well classes for technology

Addressing logging on assumptions

What partner or support pathway will you need to achieve your digital equity goal?

Instructional designer

Impact: How will you know it worked or needs to be redesigned?

Surveys

Post survey



THANK YOU!

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References (1 of 2)

- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. <https://doi.org/10.1037//0033-295x.84.2.191>
- Bandura, A., & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *The Journal of Applied Psychology*, 88(1), 87–99. <https://doi.org/10.1037/0021-9010.88.1.87>
- Caprara, G. V., Fida, R., Vecchione, M., Del Bove, G., Vecchio, G. M., Barbaranelli, C., & Bandura, A. (2008). Longitudinal analysis of the role of perceived self-efficacy for self-regulated learning in academic continuance and achievement. *Journal of Educational Psychology*, 100(3), 525–534. <https://doi.org/10.1037/0022-0663.100.3.525>
- Chevalier, R. (2003). Updating the behavior engineering model. *Performance Improvement Journal*, 42(5), 8–14. <https://doi.org/10.1002/pfi.4930420504>
- Dlamini, R. (2023). Interactivity, the heart and soul of effective learning: The interlink between internet self-efficacy and the creation of an inclusive learning experience. *South African Journal of Higher Education*, 37(2). <https://doi.org/10.20853/37-2-5105>
- Greene, J. A., & Crompton, H. (2024). Synthesizing definitions of digital literacy for the web 3.0. *TechTrends : For Leaders in Education & Training*, 69(1), 21–37. <https://doi.org/10.1007/s11528-024-01015-3>

References (2 of 2)

Knudson, K. (2022). *Academic technology capital self-assessment*.

Luthfia, A., & Angeline, M. (2026). Local wisdom and pre-bunking strategies: Building digital resilience against misinformation in Indonesia. *Media and Communication*, 14(11439). <https://doi.org/10.17645/mac.11439>

Northstar Digital Literacy. (2026). <https://www.digitalliteracyassessment.org/>

Polomoshnov, J., Masso, A., & Lobanova, K. (2026). Comparing digital, data, and AI literacy: A narrative review. *Information Polity*, 31(1), 13–26. <https://doi.org/10.1177/15701255251401863>

Raihan, M. M. H., Subroto, S., Chowdhury, N., Koch, K., Ruttan, E., & Turin, T. C. (2025). Dimensions and barriers for digital (in)equity and digital divide: a systematic integrative review. *Digital Transformation and Society*, 4(2), 111–127. <https://doi.org/10.1108/dts-04-2024-0054>

The Chronicle of Higher Education. (2023). *The myth of the digital native: How colleges are dealing with student digital literacy gaps*.

Williams, J. (2025). *CourseAlign: Student learning by design*. CourseAlign. <https://www.coursealign.ai/>

Yuan, N., Yu, Q., & Liu, W. (2025). The impact of digital literacy on learning outcomes among college students: the mediating effect of digital atmosphere, self-efficacy for digital technology and digital learning. *Frontiers in Education*, 10(1641687). <https://doi.org/10.3389/feduc.2025.1641687>